NORTHWEST RAPID TRANSIT

PROJECT INTEGRATED MANAGEMENT SYSTEM

VISUAL AMENITY MANAGEMENT PLAN

FOR

NORTH WEST RAIL LINK
OPERATIONS, TRAINS and SYSTEMS PPP

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Visual Amenity Management Plan Approval Records

Approval Record

FUNCTION	POSITION	NAME	SIGNATURE	DATE
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Reviewed by	Infrastructure Director	David Jackson		12-11-18
Reviewed by	Trains & Systems Director	Roger Ho		18-11-18.
Reviewed by	D&D Director	Malachy Breslin		19/11/18
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Amendment Record

Changes made to this document since its last revision, which affect its scope or sense, are marked in the right margin by a vertical bar (|).

DATE	REV	AMENDMENT DESCRIPTION	BY	INITIALS
04/03/2016	02.01	Updated to include Norwest Pedestrian Link works and 33kV Underground Feeder Powerline works	Alex Bamford Cameron Newling	AB CN
21/07/2016	03	Yearly update	Cameron Newling	CN
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Certification Record

DATE	REV	AMENDMENT DESCRIPTION	BY	INITIALS
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1 Introduction

This *Visual Amenity Management Plan* (VAMP) outlines the construction environmental management arrangements by which Northwest Rapid Transit (NRT), in partnership with Transport for NSW (TfNSW), is delivering the Operations, Trains and Systems Public Private Partnership (OTS PPP) component of the Northwest Rail Link (NWRL) Project, now renamed as 'Sydney Metro Northwest'.

Note: In June 2015, TfNSW changed the project's name to Sydney Metro Northwest (from the North West Rail Link) to reflect its role in Sydney's new railway network. Any references to the North West Rail Link in this plan can be assumed to be referring to the Sydney Metro Northwest.

1.1 OTS PPP

Sydney Metro is Australia's largest public transport project. Sydney Metro Northwest, formerly known as the North West Rail Link, is the first stage of Sydney's new fully-automated metro system and will open to customers in the first half of 2019.

Stage 2, Sydney Metro City & Southwest, will extend metro rail under Sydney Harbour, through the CBD and southwest to Bankstown.

The $8.3 billion Sydney Metro Northwest will deliver eight new railway stations and 4,000 commuter car parking spaces to Sydney's growing North West. Services will start with a train every four minutes in the peak. The project also includes the upgrade and conversion of five existing railway stations to metro standards.

The Operations, Trains and Systems (OTS PPP) contract is a 15-year Public Private Partnership project – the largest in the history of New South Wales as well as the largest of the three delivery contracts for Sydney Metro Northwest.

Northwest Rapid Transit is delivering Sydney's new generation metro trains; building the new stations and car parks; installing tracks, signalling, mechanical and electrical systems; building and operating the Rapid Transit Rail Facility at Tallawong Road; upgrading and converting the railway between Epping to Chatswood to rapid transit standards; and operating Sydney Metro Northwest – including all maintenance work.

1.2 Purpose and Application

This Visual Amenity Management Plan (VAMP) describes how the Northwest Rapid Transit (NRT) team will manage visual amenity issues during Phase 1, ECRL Conversion, Phase 2, Norwest Pedestrian Link, 33kV Underground Feeder Powerline Works and Rouse Hill Temporary Bypass Powerline Works of the delivery of the North West Rail Link (NWRL) Operations, Trains and Systems contract.

Figure 1 below illustrates the delineation of the Phase 1, ECRL Conversion and Phase 2 of the OTS Works.

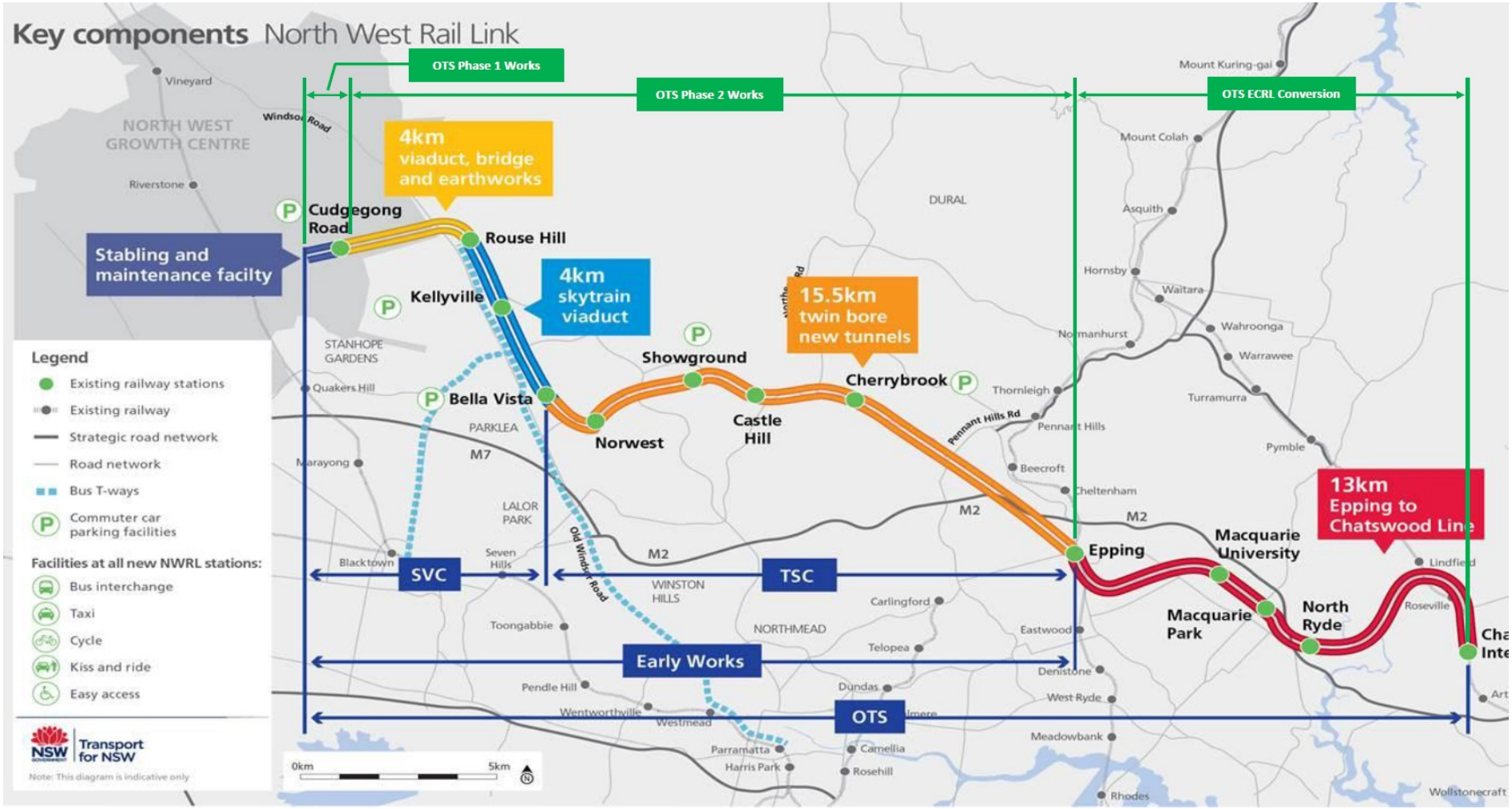

Figure 1 Schematic of NWRL OTS Phase 1, ECRL and Phase 2 Works

In summary, NWRL OTS Phase 1 covers the works associated with the delivery of the NWRL Rapid Transit Rail Facility and the Cudgegong Precinct Enabling Works, being the works west of Cudgegong Road and including the initial earth works in the vicinity of Cudgegong Station – see Figure 2 below.

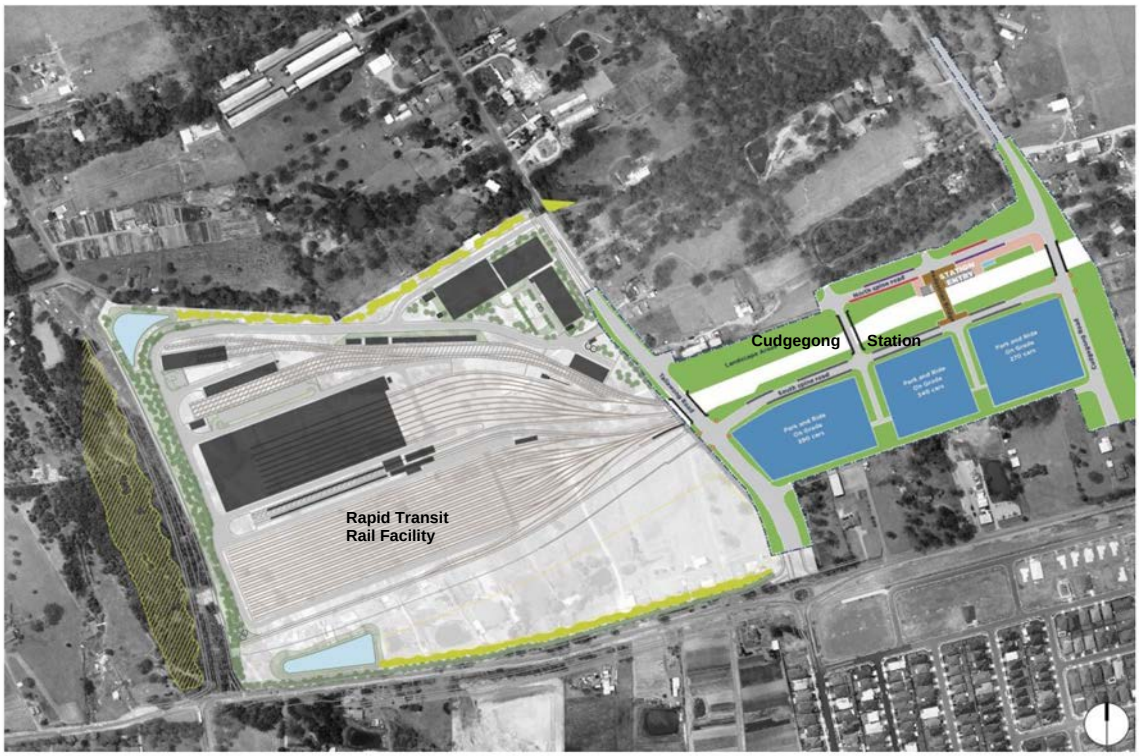

Figure 2 Indicative Layout of NWRL OTS Phase 1 Site – RTRF and Cudgegong Station

ECRL Conversion works refer to the conversion of the existing Epping to Chatswood Rail Link to rapid transit – see Figure 3 below.

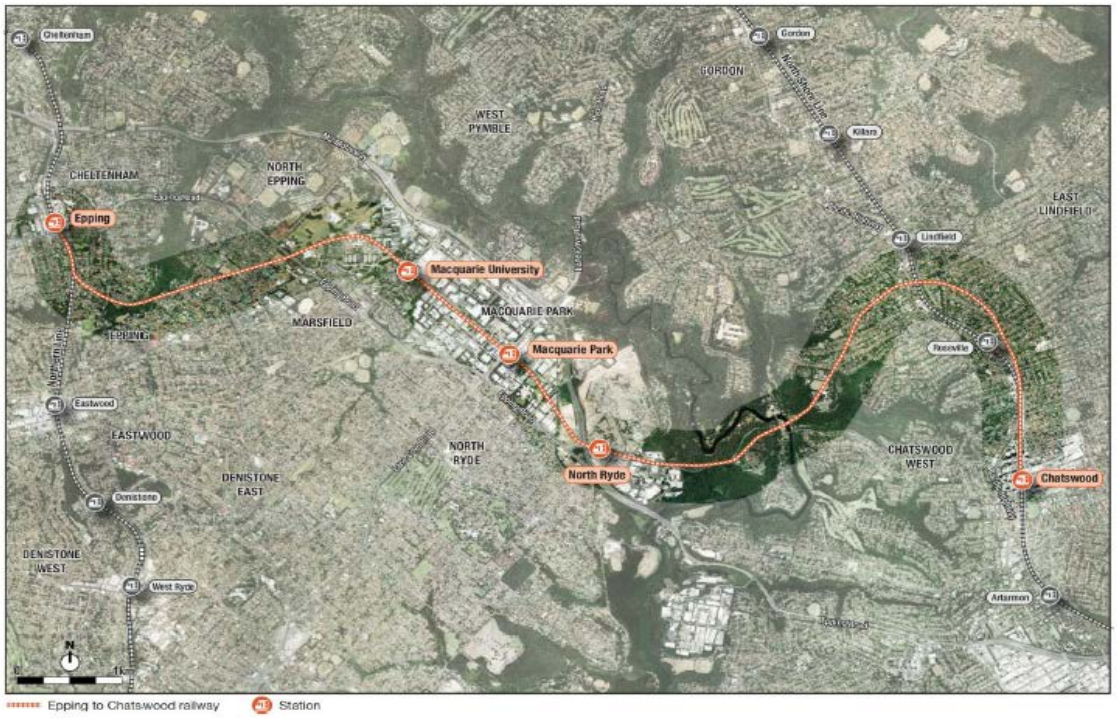

Figure 3 Indicative ECRL Conversion Works Area

Phase 2 Works refer to the construction of:

- New railway stations and precincts at Rouse Hill, Kellyville, Bella Vista, Norwest, Showground, Castle Hill and Cherrybrook (connecting to the Phase 1 works to the west and ECRL conversion works to the south-east. These works include the major civil construction work areas, including but not limited to the seven stations sites and six sites associated with the above rail corridor from Bella Vista to the Phase 1 work areas.
- Services facilities at Cheltenham and Epping
- Rail infrastructure and systems
- Infrastructure such as road works, pedestrian/cycle facilities, landscaping associated with construction of precincts and stations.

The scope of Phase 2 Works is illustrated in Figure 4 below.

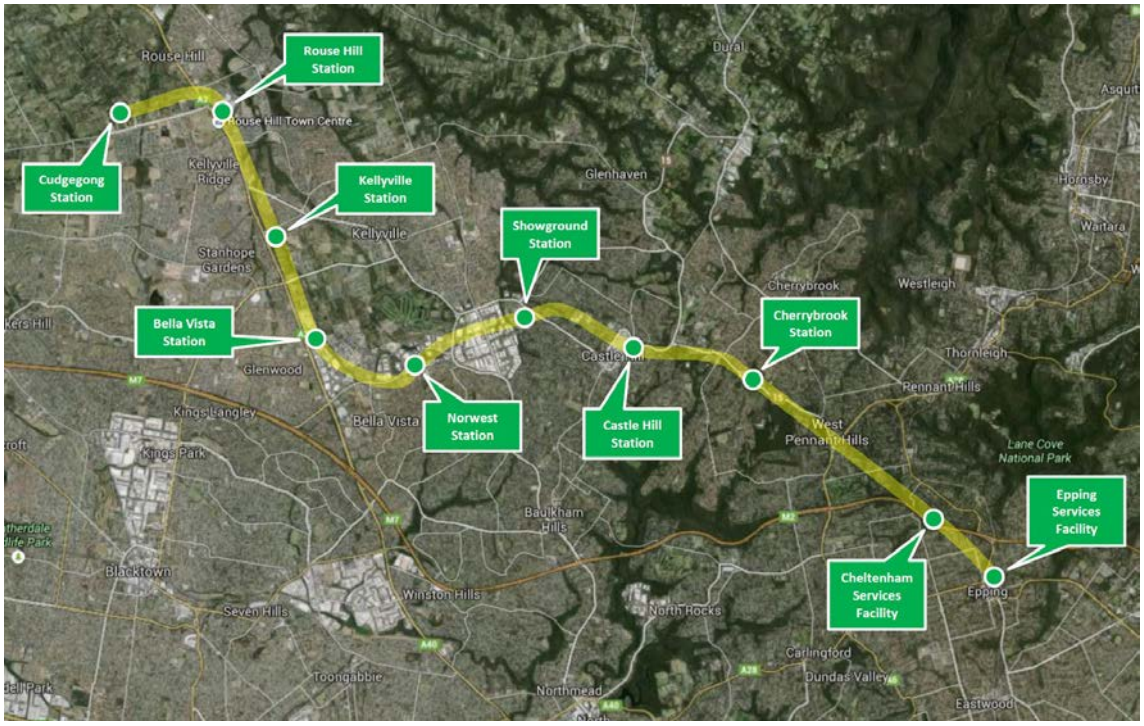

Figure 4 Indicative NWRL OTS Phase 2 Works Area

Norwest Pedestrian Link works refer to the installation of an underground pedestrian link and second station entry on the northern side of Norwest Boulevard at Norwest Station. See Figure 5 below.

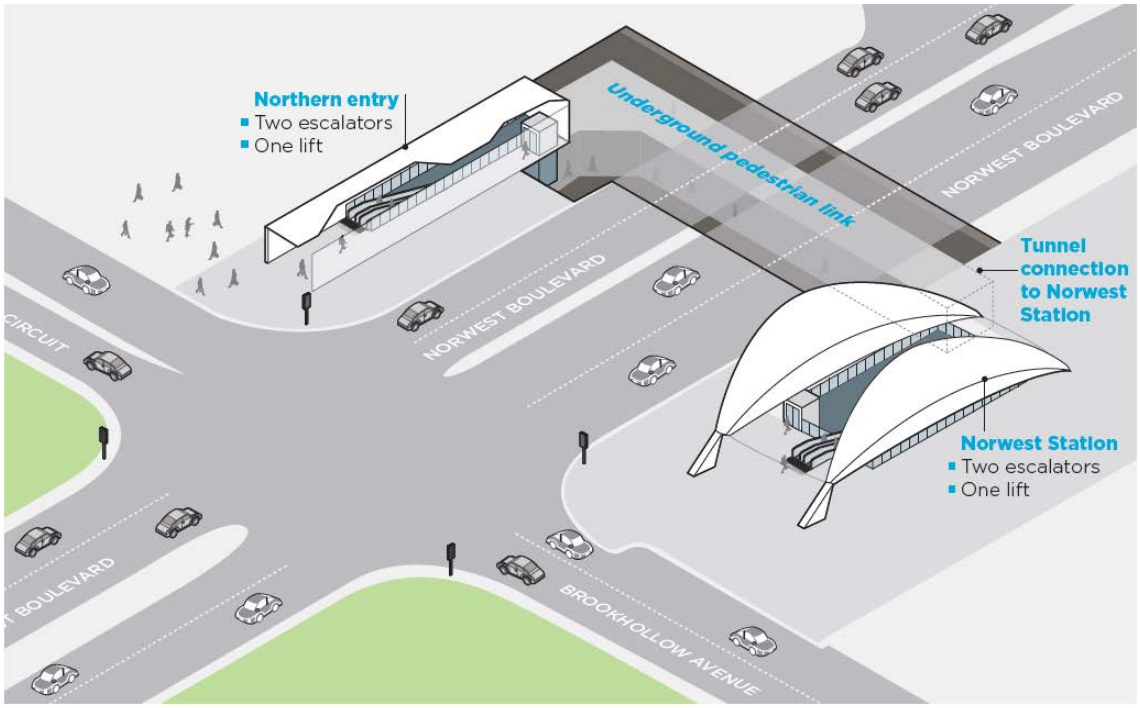

Figure 5 Artist Impression of the Underground Pedestrian Link

The 33kV Underground Feeder Powerline works refer to the building and maintaining a new five-kilometre 33kV feeder power line between Ausgrid's Willoughby Subtransmission Substation and the TfNSW Chatswood North Traction Substation. The proposal is required to provide dedicated, independent 33kV connection in order to meet the reliable supply of electricity requirements for this project. See Figure 6.

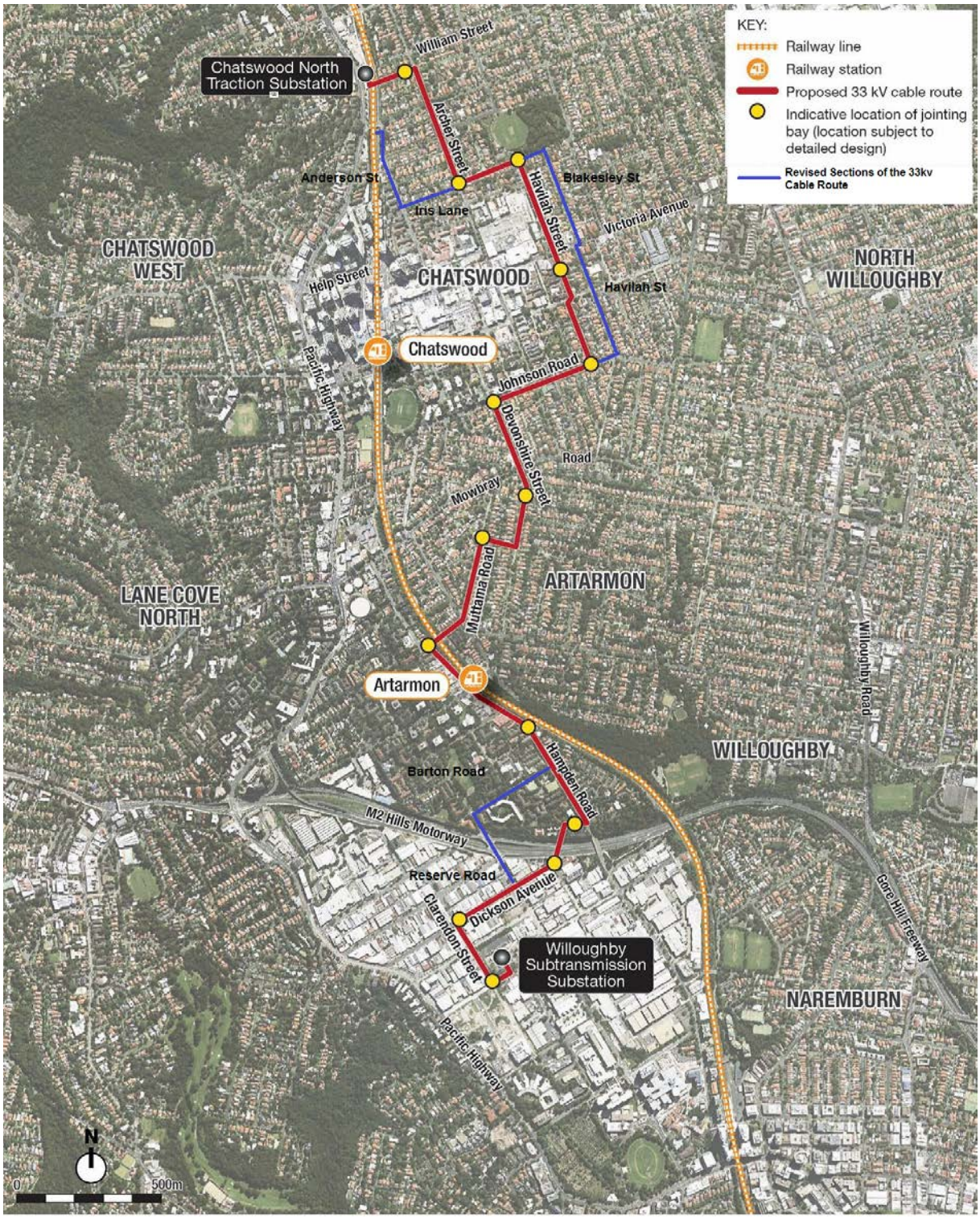

Figure 6 Overview of the 33kV Underground Feeder Powerline Route

The Rouse Temporary Bypass Powerline involves the construction of a temporary powerline from the southern side of the Sydney Metro Windsor Road Bridge crossing Schofields Road, running underground through Castlebrook Memorial Park transitioning back to overhead and crossing Windsor Road to the Rouse Hill traction substation located south of Sanctuary Drive. The purpose of the temporary powerline is to enable energisation and commissioning of the rail systems associated with the construction of Sydney Metro Northwest. See Figure 7 below:

Figure 7 Rouse Hill Temporary Bypass Powerline Works

Specifically, this Sub Plan identifies the processes and procedures that will be used for the incorporation of the principles of crime prevention through environmental design in the design and construction of temporary site facilities.

This Plan is a Sub Plan of the Phase 1, ECRL Conversion, Phase 2, Norwest Pedestrian Link and 33kv Underground Feeder Powerline Works Construction Environmental Management Plan (CEMP). The relationship of this Plan to other NRT Plans is described in detail below in Section 1.4.

1.3 Scope and Objectives

This VAMP addresses the following requirements:

- OTS Project Deed, Operations, Trains and Systems, Exhibit 1, Scope and Performance Requirements, Appendix 54 – Project Plan Requirements, Section 3.17
- Project Planning Approval – Rapid Transit Rail Facility (SSI-5931) – All Conditions applicable to Phase 1 NWRL OTS works
- Project Planning Approval (and Modification 20 May 14) – NWRL Stage 2 – Stations, Rail Infrastructure & Systems (SSI-5414) – applicable to Phase 1 and Phase 2 NWRL OTS works, as defined in Staging Report

- ECRL Conversion Determination Report Conditions of Approval
- Applicable Environmental Management Measures from Project EISs:
  - Environmental Impact Statement 2 (EIS2) and Submissions Report (including – NWRL Stage 2 Stations, Rail Infrastructure and Systems (2012/3)
  - Environmental Impact Statement and Submissions Report – Tallawong Road, Rouse Hill Rapid Transit Rail Facility (RPS 2013)
- ECRL Conversion Review of Environmental Factors (Parsons Brinkerhoff, 10 October 2014) and Submissions Report (Parsons Brinkerhoff, 5 February 2015)
- Norwest Pedestrian Link Review of Environmental Factors (Parsons Brinkerhoff 4 June 2015) and Submissions Report (Parsons Brinkerhoff, 1 October 2015)
- Norwest Pedestrian Link Determination Report Conditions of Approval
- Willoughby to North Chatswood 33kV Underground Feeder Powerline Review of Environmental Factors (Parsons Brinkerhoff 20 October 2015) and Submissions Report (Parsons Brinkerhoff 9 March 2016)
- 33kV Underground Feeder Powerline Determination Report Conditions of Approval
- Rouse Hill Temporary Bypass Powerline Environmental Impact Assessment (EIA)
- NWRL Construction Environmental Management Framework (Rev 1.4)
- Applicable Legislative Obligations.

The Compliance Matrix in Annexure A details how the VAMP complies with the requirements of the applicable CoAs requiring the Plan to be prepared, consulted and approved. Annexure A provides a comprehensive list of compliance requirements, environmental documents and the contract documents. Additional detail on compliance management is also contained in Section 2.2.

NRT's visual amenity management objectives and targets for the delivery of the Phase 1, ECRL Conversion, Phase 2, Norwest Pedestrian Link, 33kV Underground Feeder Powerline Works and Rouse Hill Temporary Bypass Powerline works of the OTS Contract are:

Minimise impacts on the existing landscaped features as far as feasible and reasonable.

- Ensure the successful implementation of the Landscape Design
- Reduce visual impact of construction to surrounding community
- Ensure CPTED requirements are considered for permanent and temporary facilities.

These objectives conform to TfNSW's objectives as described in the NWRL Construction Environmental Management Framework.

1.4 NRT Environmental Management System

In accordance with the OTS Project Deed, Exhibit 1, Scope and Performance Requirements, Section 5.2, NRT must implement and maintain an effective Management System, which addresses all its obligations under the Deed.

The Management Systems must seamlessly integrate all NRT's systems and processes, including those related to rail safety and rail accreditation quality, environmental, sustainability, health and safety and they must accommodate, coordinate and give effect to the Project Plans.

Details of NRT's Integrated Management System including the integrated relationship of the VAMP with the other Project Plans and with the delivery Core Processes are contained in the Project Management Plan. As improvements are made to the processes and systems, these will be reflected in updates to the relevant Project Plans. All elements of the Integrated Management System will reside on Aconex as controlled copies. An intranet will contain a front page to the Integrated Management System with links between documents, processes and forms utilising the Aconex search engine.

1.5 Approval Before Submission

The VAMP and future updates are to be approved by NRT's CEO before being submitted to TfNSW.

1.6 Certification by Independent Certifier

This updated VAMP and any future update is to be submitted, in accordance with the provisions of clause 8 of the Deed, to TfNSW for comment and to the OTS Independent Certifier for certification prior to its implementation by NRT.

1.7 Update and Ongoing Development

The VAMP is incorporated as Appendix 76 of the Deed.

The VAMP will be updated regularly in accordance with the requirements of the *Deed,* clause 8 and annually as required in *Exhibit 1, Scope and Performance Requirements, Appendix 54 – Project Plan Requirements, Table 1.*

NRT will undertake the ongoing development, amendment and updating of the VAMP to ensure it remains consistent with Project priorities, risk management, client requirements and Project objectives, taking into account:

- The status and progress of NRT's activities
- Changes in the design, delivery and operations processes and conditions
- Lessons learnt during delivery and operations
- Changes in other related Project Plans
- Requirements and matters not covered by the existing Project Plans
- Changes to Plans resulting from any comments from the OTS Independent Certifier
- Changes to Project Plans as directed by TfNSW's Representative under the Deed.

1.8 Agency and Stakeholder Consultation

The VAMP does not require any agency or stakeholder consultation.

2 Legal and Other Requirements

2.1 Relevant Legislation

The key legislation relevant to visual amenity management includes:

- *Environmental Planning and Assessment Act 1979*

Refer to the Construction Environmental Management Plan for further details.

2.2 Compliance Requirements

Visual amenity management requirements from the Project Deed, Project Approval and Revised Environmental Management Measures are included in Annexure A.

All compliance requirements associated with this sub plan including the Revised Environmental Mitigation Measures from the NWRL Project environmental impact assessments, the ECRL Conversion Determination Report and Submissions Report, the Norwest Pedestrian Link Determination Report and Submissions Report and the 33kV Underground Feeder Powerline Determination Report and Submissions Report that are pertinent to this sub plan are tracked and reported via the OTS compliance tracking program developed in accordance with CoA D5((a)-(h)).

2.3 Relevant Guidelines

Additional guidelines and standards relating to the management of visual amenity include:

- Crime Prevention through Environmental Design (CPTED) principles
- *NWRL Style Guidelines (Co-branding)* (TfNSW, November 2012)
- AS 4282-1997 Control of the obtrusive effects of outdoor lighting
- *Guidelines for landscape character and visual impact assessment,* EIA-N04, Version 1.0 (RTA, March 2009).

2.4 Key NRT Personnel

The roles and responsibilities of key NRT Personnel with respect to visual amenity are as follows:

Table 1 Roles and Responsibilities

Project Director	Managing the delivery of the NRT Works including overseeing implementation of Visual Amenity management Act as Contractor's Representative

Environment Manager (EM)	Oversee the implementation of all Visual Amenity management initiatives. Responsible for managing ongoing compliance with the CoA and environmental document requirements
Commercial Manager	Ensure that relevant Visual Amenity management requirements are considered in procuring materials and services
Construction Managers Site Superintendent (SS)	Manage the delivery of the construction process, in relation to Visual Amenity management across all sites in conjunction with the Environment Manager
Sustainability Manager	Track and report Visual Amenity requirements against sustainability targets
Environment Coordinators (EC)	Manage the on-ground application of Visual Amenity management measures during construction (e.g. hoarding, graffiti) Monitor and report on Visual Amenity management measures during construction
Project Engineers	Implement Visual Amenity management measures during construction works
Specialist Consultant	Specialist consultants will be engaged to undertake visual impact assessments as required

3 Existing Environment

3.1 Phase 1 Works

Table 2 below provides a brief description of the NRT worksites and the surrounding areas, as well as the Visual Amenity contexts of each site. Information has been drawn from EIS 2 and RTRF EIS.

Table 2 Visual Environment Summary – Phase 1

Construction Site	Site character from EIS RTRF SSI 5931	Visual elements during construction	Potentially Sensitive Receivers
RTRF (RTRF EIS) **And** **Cudgegong Road to Tallawong Road (EIS 2)**	Existing Character The character of the site is influenced by Schofields Road and Tallawong Road which form the southern and eastern boundaries of the site, the riparian corridor to the west and rural properties to the north. The primary use of the land in the area is agricultural in nature with small market garden properties as well as larger rural residential properties. The land is gently undulating, generally cleared and grass covered with individual and stands of trees scattered throughout the landscape. Future Character The future planning for this area would change the character of the area from a rural setting to an urban and suburban character. Areas to the south of Schofields Road are currently being developed for residential neighbourhoods. The area to the east of Tallawong Road will become a town centre. Areas to the north and west of the site are being planned for low to medium density residential. The areas directly adjacent to the north and south of the site would be zoned for employment uses. This represents a dramatic transformation of the locality.	The following elements and activities are likely to be visible: • Construction of bridges and retaining structures where the alignment crosses Cudgegong and Tallawong Roads. • Construction of station building and platforms. • Construction of Rapid Transit Rail Facility including stabling yard, maintenance sheds, and associated infrastructure. • Construction of on-grade park-and-ride areas. • Clearing of vegetation within the project boundary. • Laying rail track. • Erecting power lines • Retaining walls around the site and detention ponds The visual impact of the facility are assessed as being of a minor to negligible level with the application of mitigation measures to screen and shield view corridors, primarily through the inclusion of perimeter landscaping around the facility.	• Surrounding residents • Surrounding agricultural premises • Place of Worship

3.2 ECRL Conversion Works

Table 3 Visual Environment Summary – ECRL

Construction Site	Site characteristics from the ECRL REF	Visual elements during construction	Potentially Sensitive Receivers
Epping	Existing Character The site sits on the outer edges of the main Epping commercial centre, within the rail corridor and alongside High Street. On the opposite side of High Street is the boundary between the commercial shopping area which extends to the north, and housing which extends to the south. It is a low scale environment, with the shops and housing no higher than two storeys. The landform is such that it drops away from High Street towards the rail corridor, and continues to fall on the eastern side. The housing on the opposite side of High Street is situated slightly higher and there are some views possible from this area towards the Sydney city skyline in the distance. Future Character No significant changes expected.	The following elements and activities are likely to be visible: • Construction of the chiller unit • Delivery of materials It is considered that there would be a minor impact to the visual amenity and no more than a minor visual impact to surrounding viewpoints as a result of the proposed chiller unit at Epping.	• Surrounding residents • Places of Worship
Macquarie University	Existing Character The site is located on the northern side of Waterloo Road and close to a main entry to Macquarie University and the large Macquarie Shopping Centre. On the opposite side of Waterloo Road is a high density residential area consisting of closely spaced residential flat buildings and a public park known as Eloura Reserve. It is a medium - height scale environment, with the residential flat buildings and shopping centre several storeys high. The landform falls from west to east along Waterloo Road, and has a moderate slope Future Character No significant changes expected.	The following elements and activities are likely to be visible: • Construction of the chiller unit • Delivery of materials It is considered that there would be a minor impact to the visual amenity and no more than a minor visual impact to surrounding viewpoints as a result of the proposed chiller unit at the Macquarie University site.	• Surrounding residents • Educational Facilities

Construction Site	Site characteristics from the ECRL REF	Visual elements during construction	Potentially Sensitive Receivers
Macquarie Park	Existing Character The site is located along the quite busy Waterloo Road, within an urban environment dominated by commercial buildings that are mostly of a large-scale and several storeys high. The buildings are generally of contemporary design and separated by intervening areas of car parking and generous landscaping. Near the corner of Lane Cove Road and Waterloo Road is the Macquarie Park Railway Station. Lane Cove Road is a high use arterial road and one of the main roads through this part of Sydney. The landform falls gently from the Lane Cove Road end of Waterloo Road, down past the site to the south-eastern (city) end of Waterloo Road. The site is currently covered with an attractive landscaped area that includes lawn, shrubs and semi-mature native trees up to approximately 4m height Future Character Continued commercial development	The following elements and activities are likely to be visible: • Construction of the chiller unit • Delivery of materials Overall, it is considered that there would be a minor impact to the visual amenity and no more than a minor visual impact to surrounding viewpoints as a result of the proposed chiller unit at the Macquarie Park site.	• None
North Ryde	Existing Character The site is located on Delhi Road across from the Macquarie Grove Cemetery and Crematorium. To the east are a number of commercial buildings and to the west is the North Ryde Railway Station and the M2 Motorway. The landform falls from a high point within the cemetery to the north, dropping south towards Delhi Road and the site, and dropping also towards the east. Future Character Residential Development	The following elements and activities are likely to be visible: • Construction of the chiller unit • Delivery of materials Overall, it is considered that there would be a minor impact to the visual amenity and no more than a minor visual impact to surrounding viewpoints as a result of the proposed chiller unit at the North Ryde site.	• Macquarie Grove Cemetery and Crematorium

The track work reconfiguration within the rail corridor between Epping and Chatswood and platform works at Chatswood was not assessed in any detail in the REF. The elements of these works would be visible however; it is considered that these would have a minor visual impact to the surrounding environment. There are no other aspects of the proposed works that would be visible, as the works are either underground or within the station precincts or rail corridor.

3.3 Phase 2 Works

Table 4 below provides a brief description of NRT's Phase 2 worksites and the surrounding areas, as well as the Visual Amenity contexts of each site. Information has been drawn from EIS 2.

Table 4 Visual Environment Summary – Phase 2

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
Epping Services Facility	<u>Existing Character</u> The Epping Services Facility site is within a property located on Beecroft Road (Lot 21, DP700406, 244 Beecroft Road) north of Carlingford Road and south of Devlins Creek, approximately 3,400m^2 in area. The property located to the west of Beecroft Road is adjacent to residential and commercial uses. The surrounding area is a mixture of residential, commercial and rail transport infrastructure. Epping comprises densely vegetated streets and nature reserves, with the nearby Lane Cove National Park providing a green backdrop to this predominantly low density residential area. A mixture of high density residential and commercial exists around Epping station, which services the surrounding area. Housing in the Epping area is generally traditional in nature, with single storey brick dwellings making up a large proportion of housing in the area. The site has already been modified due to construction activities by the TSC contractor. <u>Future Character</u> The Epping Services Facility will include a traction power substation, a ventilation and equipment building and onsite stormwater detention. The facility will require maintenance access via Beecroft Road and would also be used for rail personnel (not heavy equipment) to access the tunnel during track/tunnel maintenance periods. A suspended slab constructed within the services facility compound would allow for safe turning movements for	The following elements and activities are likely to be visible during construction: • Construction of the services building, access roads and parking areas. • Future development site between Beecroft and Ray Roads. • Establishment of landscape buffer and new pedestrian footpath along Beecroft Road. Negligible to Moderate Adverse	• Surrounding residents

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	maintenance vehicles. The remainder of the acquired site will provide a potential development site that will contribute to the Epping Town Centre future mixed town centre core.		
Cheltenham Services Facility	Existing Character The Cheltenham Services Facility is located adjacent to Cheltenham Oval between Castle Howard Road and the M2 Motorway. The Cheltenham Oval is in a bushland setting and is accessed from Castle Howard Road. The surrounding area is a mixture of residential, recreational areas and bushland. The site has already been modified due to construction activities by the TSC contractor. Future Character Following construction of the facility, items that have been displaced will be re-established, such as the netball training courts. The areas of bushland cleared as a result of major civil construction works will be rehabilitated following completion of the services facility, including reinstatement of the bush trail where it has been disrupted due to construction.	The following elements and activities are likely to be visible during construction: • Construction of the services/community building, access roads and parking areas. • Relocation of multi-use courts (behind the services/community building). • Removal of existing trees in the centre island of Castle Howard Road (adjacent to site entry). Negligible to Moderate Adverse	• Surrounding residents
Cherrybrook Station	Existing Character Cherrybrook is a predominantly residential neighbourhood located 23.5 km north west of the Sydney CBD. The station is located in Hornsby Shire, north of Castle Hill Road between Franklin Road and Robert Road. It has steep topography, views to the west and existing forest canopy. The station is located close to the ridge and near Castle Hill Road servicing existing residential areas and schools. The site has already been modified due to construction activities by the TSC contractor.	The following elements and activities are likely to be visible during construction: • Construction of the station building, services buildings, ancillary buildings, access roads and car parks. • Construction of landscape works and new pedestrian footpath along Castle Hill Road. • Future development site adjacent to the new access road. • Road works and construction of new signalised intersection where Glenhope Road	• Surrounding residents • Educational Facilities

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	Future Character The station is a shallow open cut arrangement with a mid platform entry and concourse. The station has been designed as a suburban park and ride station that integrates with the surrounding natural and built environment. The station precinct has been designed to respond to the area's character. The station will provide rail access and a public transport interchange to the residents of Cherrybrook, West Pennant Hills and Dural. The station would serve existing residents within walking and cycling distance, local schools and create a focus for the local area. The station will be in a cutting, sitting at the top of a ridge. The open side of the rail corridor opposite the station platform will be a landscaped embankment with retaining walls which allows visual connectivity to Castle Hill Road. The station cladding materials and finishes would be in response to the local environment and conditions. The station island platform would be located approximately seven metres below street level. A proportion of the platform area would be covered by a canopy to provide shading and protection for passengers.	meets Castle Hill Road. Negligible to Minor Adverse	
Castle Hill Station	Existing Character Castle Hill is a town centre surrounded predominantly by residential uses and located 26 km north west of the Sydney CBD. The station is located within The Hills Shire, in Arthur Whitling Park between Old Northern Road and Old Castle Hill Road. The station is located at the top of a ridge at the intersection of key local roads, which service the town centre. The site has already been modified due to construction activities by the TSC contractor. Future Character Castle Hill Station will be a major public transport interchange that	The following elements and activities are likely to be visible during construction: • Construction of the station building, services buildings and ancillary buildings. • Construction of landscape works through Arthur Whitling Park and new pedestrian footpath along Old Northern Road. • Road works and construction of new signalised intersection where Old Northern Road meets Terminus	• Surrounding residents

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	contributes to the growth and operation of Castle Hill as an accessible and vibrant major centre. The station will provide rail access and a public transport interchange to residents and people working at Castle Hill. The station provides an opportunity to become a focal point for future regeneration of the town centre. There is no park and ride facility provided at this station precinct. The urban arrangement is focused on addressing the town centre structure and character and providing priority to pedestrian and bus connectivity. The underground station will be located adjacent to the town centre, integrated within Arthur Whitling Park. The park will be redesigned and incorporate interpretation of historic items within the park, in consultation with stakeholders. The remodelled park would be high quality public open space within Castle Hill town centre. The station entry plaza will be located in the prominent western end of Arthur Whitling Park, at the intersection of Old Northern Road and Old Castle Hill Road with good access and visual links in all directions providing an opportunity for high visibility.	Street. • Road works along Old Castle Hill Road. Minor Adverse to Moderate Adverse	
Showground Station	<u>Existing Character</u> The station is at the corner of Carrington Road and Doran Drive. The station is located within The Hills Shire in close proximity to the Castle Hill Showground with residential development to the north and east and employment to the south and west. The station is 28.5 km north west of the Sydney CBD. Castle Hill Showground is adjacent to Hills Shire Council Chambers. The showground has retained its rural past with the preservation of corrugated metal cattle sheds, pavilions and stables, scattered around the main oval and bounded by Showground and Carrington Roads. Housing in the area is mainly one to two storey brick dwellings.	The following elements and activities are likely to be visible during construction: • Construction of the station building, services buildings, ancillary buildings, access roads and multi-storey park-and-ride. • Construction of landscape works and new pedestrian footpath along Carrington Road. • Stabilisation of future development site. • Road works and construction of new signalised intersection at Showground Road.	• Surrounding residents

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	The site has already been modified due to construction activities by the TSC contractor. Future Character The proposed station will reinforce one of the few remaining functioning showgrounds in Sydney and also provide direct rail access to existing residential areas and employment facilities. Pedestrian access would be provided primarily from Carrington Road, but a range of local connections would be accommodated. A significant proportion of station users would arrive by private car and park in a 600 space three level car parking structure adjacent to Doran Drive. In addition, Doran Drive would provide the primary street address for kiss and ride users. Service buildings will be located at both ends of the station box. The western service building will incorporate traction substation facilities and be integrated into the proposed car parking structure. To provide access to the carparks and precinct new precinct access roads will be constructed or extended.	• Demolition of the Hills Centre building. Minor Adverse to High Adverse	
Norwest Station	Existing Character Norwest Station is located within the "Norwest Business Park", a major employment centre 30.5 km north west of the Sydney CBD. Norwest Business Park itself is a densely developed commercial precinct with wide roadways, fast moving traffic and insufficient pedestrian connectivity. Views are restricted to the immediate area and carry only to the nearby ridges of Bella Vista Farm. The station is located adjacent to Norwest Boulevard and within The Hills Shire. A large area of recent residential development lies to the south of the station. The site has already been modified due to construction activities by the TSC contractor.	The following elements and activities are likely to be visible during construction: • Construction of the station building, services buildings and ancillary buildings. • Construction of landscape works along Norwest Boulevard and Brookhollow Avenue. • Stabilisation of a future development site, between Brookhollow Avenue and Norwest Boulevard. • Road works and construction of a new signalised intersection where Brookhollow Avenue meets Norwest Boulevard. Negligible to Minor Adverse	• Surrounding residents

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	Future Character Norwest Station will be an underground station, located within the Norwest Business Park close to the Norwest Marketown Shopping Centre, commercial and residential developments, and within close proximity to the Hillsong Church. The station is located to improve access to Norwest Business Park and has the potential to be a catalyst for future growth of the area. The station will service the existing business centre and introduce a strong pedestrian oriented environment serving future employment and residential catchments. The station architecture consists of a street edge pavilion that will be integrated into the scale and built form of the surrounding business park development. To facilitate access to the station, sections of surrounding roads and footpaths will be modified and upgraded as needed, including on parts of Norwest Boulevard and Brookhollow Avenue. Weather protected bus stops and waiting areas will be located on either side of Norwest Boulevard. Taxi and kiss and ride stops / waiting areas also with weather protection will be located along Brookhollow Avenue.		
Bella Vista Station	Existing Character Bella Vista is a suburb in the Norwest Business Park and is located 33 km north west of the Sydney CBD. The station is located on the corner of Old Windsor Road and Celebration Drive. Celebration Drive is a key access road and east of Old Windsor Road and lies within The Hills Shire. A large area of residential development is located to the east of the station with a business park to the south. It has gently undulating topography, wide valleys and open views. The station is located in a business	The following elements and activities are likely to be visible during construction: • Laying rail track. • Erecting power lines above rail track. • Construction of the station building, services buildings, ancillary buildings, access roads and parking areas. • Construction of landscape works and new pedestrian footpath along Celebration Drive and Lexington Drive. • Road works and	• Surrounding residents

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	park which has been designed for predominately vehicular access. The site has already been modified due to construction activities by the TSC contractor. <u>Future Character</u> Bella Vista Station precinct is located at a critical linking point between the existing edge of Norwest Business Park and the southern edge of a future growth corridor that runs between Elizabeth Macarthur Creek and Old Windsor Road. The station has the potential to be a key landmark within this new commercial / mixed use centre. Pedestrian access is provided primarily from the new precinct road with a range of local connections. The station has been designed as a park and ride station and would improve public transport access to the Norwest Business Park. The station entry plaza addresses the new extended Lexington Drive and its intersection with Celebration Drive. The station entry and concourse will be at street level and have been designed to provide access to the emerging town centre of Bella Vista and the localised walk-up residential catchment. A service building will be located adjacent to Old Windsor Road, west of the proposed carpark and will include a traction and station substation.	construction of new signalised intersection where Lexington Drive meets Celebration Drive. • Future development site, between Celebration Drive and Lexington Drive Extension. • Construction of cycleway along existing T-way. • Construction of new pedestrian bridge over Old Windsor Road. Negligible to Minor Adverse	
Bella Vista Rail Corridor, Balmoral Road and Memorial Avenue	<u>Existing Character</u> The existing environment consists of open space and rural character landscapes. The landscape character changes to a mixture of open space and large residential lots to the east of Old Windsor Road, with a more concentrated low density residential development to the west. Native vegetation in this area is largely confined to the creek lines and buffer zones of the T-way bus lanes. The site has already been modified due to construction activities by the	The following elements and activities are likely to be visible during construction: • Laying rail track. • Erecting power lines on viaduct. Negligible to Moderate Adverse	• Surrounding residents • Surrounding agricultural premises

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	SVC contractor. Future Character Sections of elevated rail on the viaduct will be present through this section of the project alignment. There are plans for residential expansion, which would transform the area into a densely developed residential landscape.		
Memorial Avenue to Kellyville Station	Existing Character The existing environment consists of open space and rural character landscapes. The landscape character changes to a mixture of open space and large residential lots to the east of Old Windsor Road, with a more concentrated low density residential development to the west. Native vegetation in this area is largely confined to the creek lines and buffer zones of the T-way bus lanes. The site has already been modified due to construction activities by the SVC contractor. Future Character Sections of elevated rail on the viaduct will be present through this section of the project alignment. There are plans for residential expansion, which would transform the area into a densely developed residential landscape.	The following elements and activities are likely to be visible during construction: • Laying rail track. • Erecting power lines on viaduct. • Construction of the Station building, Services buildings, ancillary buildings, viaduct, access roads and parking areas. • Future development site between Samantha Riley Drive and the new access roads. • Road works and construction of new signalised intersection where the new access road meets. • Samantha Riley Drive. • Construction of new pedestrian bridge over Old Windsor Road. Negligible to Moderate Adverse	• Surrounding residents • Surrounding agricultural premises
Kellyville Station	Existing Character Kellyville Station is located east of Old Windsor Road, south of Samantha Riley Drive, and just north of a large area of proposed greenfield development. The station is 34 km north west of the Sydney CBD. The station is located close to Old Windsor Road and within The Hills Shire. The gently undulating topography, wide valleys and open views.	The following elements and activities are likely to be visible during construction: • Construction of the Station building, Services buildings, ancillary buildings, viaduct, associated access roads and parking areas. Negligible to Moderate Adverse	• Surrounding residents • Surrounding agricultural premises

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	The station would service existing residential and future residential areas. The station is adjacent to the Riley T-way Station on the south-eastern corner of Old Windsor Road and Samantha Riley Drive. The site has already been modified due to construction activities by the SVC contractor. <u>Future Character</u> The station would be a significant destination for park and ride users of the rail network and T-Way system, with extensive parking facilities adjacent to the station. A two level park and ride facility would be located to the east of the station entry, and two on grade facilities would be located beneath the rail viaduct north and south of Samantha Riley Drive. Additional car parking spaces will also be provided to replace affected T-way parking. The rail and station will be located on an elevated viaduct through this precinct and provisions made for connectivity between transport modes at ground level. Platforms on each side of the track will be elevated and accessed from the ground level station entry and concourse. The station entry addresses a new boulevard connector parallel to Old Windsor Road. To facilitate access, new roads would be constructed and surrounding roads and footpaths would be modified and upgraded. A pedestrian bridge will be constructed over Old Windsor Road and the T-way at the intersection with Samantha Riley Drive and Newbury Avenue.		
Samantha Riley Drive to Windsor Road and Old Windsor Road to White Hart Drive	<u>Existing Character</u> The landscape character is a mix of low density residential, medium density commercial development and rural lots. A lawn cemetery and crematorium to the west provides a green backdrop to the Rouse Hill town centre, with low undulating hills and cultural plantings dotting the landscape. Native vegetative cover is	The following elements and activities are likely to be visible during construction: • Laying rail track. • Erecting power lines on viaduct. Negligible to High Adverse	• Surrounding residents • Surrounding agricultural premises • Cemetery

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	confined again to creek lines, the T-way bus corridor and The Outlook Nature Reserve. Residential development around the town centre consists of one to two storey dwellings, rising gently to the east towards Beaumont Hills. The dominant ridgeline in this area provide regional views to the distant Blue Mountain ranges to the west and more locally to the Rouse Hill Town Centre and NWRL corridor. The worksite has already been modified due to construction activities by the SVC contractor. Future Character Sections of elevated rail on the viaduct will be present through this section of the project alignment. There are plans for residential expansion, which would transform the area into a densely developed residential landscape.		
Rouse Hill Station	Existing Character The Rouse Hill Town Centre is 37 km north west of the Sydney CBD and located within The Hills Shire. The station is above the existing T-way, in between Windsor Road and Tempus Street, directly to the west of Rouse Hill Town Centre. Area 20, within the north west growth sector, is located to the north and future development is also expected to the north east. Recent residential development lies to the south of the station. The site has already been modified due to construction activities by the SVC contractor. Future Character Rouse Hill Station provides a structured and integrated transport function to the Rouse Hill town centre retail and commercial core. The station would be located adjacent to the existing western town centre entry forecourt. The rail and station will be located on an elevated viaduct through this precinct and provisions made for connectivity between transport modes	The following elements and activities are likely to be visible during construction: • Laying rail track. • Erecting power lines on viaduct. • Construction of Station building, Services buildings, ancillary buildings, viaduct, access roads and shade structures. • Construction of landscape works along Windsor Road. Negligible to Minor Adverse	• Surrounding residents • Surrounding agricultural premises

Construction Site	Site character from EIS 2 SSI-5414	Visual elements during construction	Potentially Sensitive Receivers
	at ground level. The station entry will address a combined interchange plaza that will provide circulation between each transport type and the town centre. Sections of surrounding roads and footpaths will be modified and upgraded as needed to facilitate access to the station.		
Windsor Road Viaduct to Cudgegong Road	<u>Existing Character</u> The landscape character changes dramatically from dense residential to a more homogenous rural setting. The area consists of large lots dominated by grazing land and pockets of dense native vegetative cover. The land is gently undulating with clumps of remnant bushland vegetation throughout. The site has already been modified due to construction activities by the SVC contractor. <u>Future Character</u> The future planning for this area would change the character of the area from a rural setting to an urban and suburban character. Areas to the south of Schofields Road are currently being developed for residential neighbourhoods. The area will also contain viaduct and at-grade sections of the North West Rail Link.	The following elements and activities are likely to be visible during construction: • Laying rail track. • Erecting power lines on viaduct. • Construction of viaduct crossover where Schofields Road meets Windsor Road. • Construction of viaduct and rail on-grade alignment running parallel with Schofields Road, set back approximately 200m. • Construction of service road. Negligible to Minor Adverse	• Surrounding residents • Surrounding agricultural premises • Places of Worship

3.4 Norwest Pedestrian Link Works

Table 5 below provides a brief description of the Norwest Pedestrian Link worksite and the surrounding areas, as well as the Visual Amenity context of the site. Information has been drawn from the Norwest Station Subsurface Pedestrian Link and Northern Entry Review of Environmental Factors.

Table 5 Visual Environment Summary - Norwest Pedestrian Link

Construction Site	Site character from Norwest Pedestrian Link REF	Visual elements during construction	Potentially Sensitive Receivers
Norwest Pedestrian Link	Existing Character Framed by Norwest Boulevard and a planted tree line, the area is characterised by a compact network of detached housing, wide urban streets and a managed urban landscape Modern planned developed comprising a well-spaced network of commercial multi-story low-rise buildings separated by managed vegetation and framed within the context of a network of planned non-linear tree-lined connecting roads. The Hillsong Church, Norwest Marketown shopping centre and Norwest Central provide distinctive reference points in the landscape. The landscape is undergoing transformation with the construction of the Norwest Station. Framed by Solent Circuit to the south, the area is characterised by an expanse of managed open land containing planted and remnant vegetation. Two key reference points are the Country Club golf course, comprising a large expanse of managed land and the retained character of the Strangers Creek riparian corridor	The following elements and activities are likely to be visible during construction: • Construction of the station second entrance. • Construction of the underground pedestrian underpass. • Construction of landscape works along Norwest Boulevard and Brookhollow Avenue. Negligible to Minor Adverse	• Shoppers and workers associated with the Norwest Marketown shopping centre and the adjacent service station • Road users travelling along Norwest Boulevard and Century Circuit • The Hillsong Church congregation

3.5 33kV Underground Feeder Powerline Works

Table 6 below provides a brief description of the 33kV Underground Feeder Powerline worksite and the surrounding areas, as well as the Visual Amenity context of the site. Information has been drawn from the Willoughby to North Chatswood 33kV Underground Feeder Powerline Review of Environmental Factors.

Table 6 Visual Environment Summary – 33kV Underground Feeder Powerline Works

Construction Site	Site character from 33kV Underground Feeder Powerline REF	Visual elements during construction	Potentially Sensitive Receivers
33kV Underground Feeder Powerline Route	The visual environment of the route consists of a mix of typical urban, industrial, commercial, bushland and parkland land uses adjoining various sections of the route. This visual environment consists of a range of low, medium and high levels of existing development.	The following elements and activities are likely to be visible during construction: • Erection of fencing, barricades, gates and lighting to provide safe and secure worksite • The presence of construction machinery and materials storage • General construction activities • Construction vehicle movements and minor traffic disruption • Potential light spill from night works Negligible to Minor Adverse	• Residents • Commercial properties • Industrial properties • Bushland and parkland users • Motorists

3.6 Rouse Hill Temporary Bypass Powerline

Table 7 below provides a brief description of the worksite and the surrounding areas, as well as the Visual Amenity context of the site. Information has been drawn from the Rouse Hill Temporary Bypass Powerline EIA.

Table 7 Visual Amenity Summary - Rouse Hill Temporary Bypass Feeder Works

Construction Site	Site character from EIA	Visual elements during construction	Potentially Sensitive Receivers
Entire alignment	The project area is in a landform pattern of rolling hills sloping north east. Most of the alignment is on what was originally a mid-hill slope. The land crossing Castlebrook Memorial Park features a number of ephemeral drainage depressions that flow in a north - easterly direction as tributaries of Caddies Creek that flows about 750 m to the west and north-west. The land surrounding the alignment has been cleared and subject to human activities that has disturbed the ground surface and subsurface to varying degrees.	• Erection of fencing, barricades, gates and lighting to provide safe and secure worksite • The presence of construction machinery and materials storage • General construction activities • Construction vehicle movements and minor traffic disruption	• Residents • Commercial properties • Industrial properties • Castlebrook Memorial Park • Motorists

4 Crime Prevention through Environmental Design Principles

The principle of *Crime Prevention Through Environmental Design* (CPTED) will be incorporated throughout the design and construction of temporary and permanent facilities. The key principles adopted in relation to the public realm at and around each of the station stops include:

- Increasing the perception of risk to criminals by increasing the possibility of detection, challenge and capture.
- Increasing the effort required to commit crime by increasing the time, energy of resources which need to be expended.
- Reducing the potential rewards of crime minimising by removing or concealing “crime benefits”.
- Removing conditions that create confusion about required norms of behaviour.

Access control minimise opportunities for crime and increase the effort required to commit crime. By making it clear where people are permitted to go or not go, it becomes difficult for potential offenders to reach and victimise people and their property. Fence and barriers are required to be secure however not create a hostile environment.

Natural surveillance increases the threat of apprehension by taking steps to increase the perception that people can be seen. Natural surveillance occurs by designing the placement of physical features, activities and people in such a way as to maximize visibility and foster positive social interaction among legitimate users of private and public space. Potential offenders feel increased scrutiny and limitations on their escape routes.

Territorial reinforcement promotes social control through increased definition of space and improved proprietary concern. By using fences, pavement, signs, lighting and landscape to express ownership and define public, semi-public and private space, natural territorial reinforcement occurs. Territorial reinforcement measures make the normal user feel safe and make the potential offender aware of a substantial risk of apprehension or scrutiny. Display security system signage at access points.

Table 8 which identifies the CPTED mitigation measures to be implemented for the design and construction of temporary and permanent facilities onsite. These measures are included in the Visual Amenity mitigation measures in Section 6.2.

Table 8 CPTED Mitigation Measures

Area	Requirement	Compliance
Natural Access control	Jagged edges of hoarding/noise walls to be avoided to maximize natural surveillance	Addressed in the mitigation measures Section 6.2
	Good levels of lighting	Addressed in the mitigation measures Section 6.2
Natural Surveillance	Jagged edges of hoarding/noise walls to be avoided to maximize natural surveillance	Addressed in the mitigation measures Section 6.2

Area	Requirement	Compliance
	Good levels of lighting	Addressed in the mitigation measures Section 6.2
Territorial Reinforcement	Clearly define and designate areas with respect to their intended use, e.g. ensure clear signage for no public access	Addressed in the mitigation measures Section 6.2
	Clear signage within site for car park, storage, amenities, etc.	Addressed in the mitigation measures Section 6.2
	Clear gate signage for heavy/light vehicle traffic	Addressed in the mitigation measures Section 6.2
	Use of common site elements like signage, lights etc.	Addressed in the mitigation measures Section 6.2
Recommended CPTED Applications	Maximising the use of easily maintained (anti-graffiti) materials and providing strict maintenance schedules	Addressed in the mitigation measures Section 6.2
	Providing good lines of sight from gate entrances to internal site circulation	Addressed in the mitigation measures Section 6.2
	Consider incorporating artworks within hoardings as a mitigation measure to deter graffiti	Addressed in the mitigation measures Section 6.2
	Review potential safety issues relating to vegetation heights between public spaces and hoardings. Consider placement of existing vegetation patterns/hedges against hoardings to reduce safety issues	Addressed in the mitigation measures Section 6.2
	Review potential for pruning of trees adjacent to outside hoardings, to reduce risk of climbing over hoarding	Addressed in the mitigation measures Section 6.2

5 Aspects and Potential Impacts

The key aspects and potential impacts associated with the management of visual amenity during the delivery of Phase 1, ECRL Conversion, Phase 2, Norwest Pedestrian Link and 33kV Underground Feeder Powerline Works are listed in Table *9*.

These identified risks have been taken into account in the development of the Visual Amenity management strategy and site-specific procedures for the works.

Table 9 Summary of Overall Aspects and Potential Impacts

Aspects	Potential impacts/opportunities	Risk level for Works (qualitative)
Litter	• Potential for waste to not be placed in appropriate bins and result in litter around the construction worksites • Increase security may reduce legal dumping move to new location near the worksite	M
Graffiti	• Potential for site hoardings or other exposed surfaces to be vandalised.	M
Lighting	• Potential for site lighting to effect the amenity of surrounding land uses	L
Traffic and transport	• Potential for required traffic control signage to increase visual clutter surrounding construction sites	M
Fencing	• Potential to create visual impacts and graffiti space	M

6 Visual Amenity Management

6.1 Scope and Objectives

NRT's visual amenity management objectives & targets for the delivery of the Phase 1 ECRL Conversion, Phase 2, Norwest Pedestrian Link and 33kV Underground Feeder Powerline Works are:

- Minimise impacts on the existing landscaped features as far as feasible and reasonable
- Ensure the successful implementation of the Landscape Design
- Reduce visual impact of construction to surrounding community.

6.2 Visual Amenity Mitigation Measures

Item	Responsibility
General	
Visual mitigation measures will be implemented as soon a feasible and practical and remain in place during the construction period.	Project Engineer
Permanent Works	
CPTED principals will be incorporated into each relevant design package, and detailed in the Design and Landscape Plan, and Urban Design and Corridor Landscape Plan and Design and Landscape Report	Design Manager
The section of powerline through the Memorial Park would be underground	Design Manager
Temporary Works	
Temporary Works to be designs and constructed as per the CPTED, including the use of Exterior surfaces and finishes with a high level of vandal resistance (graffiti shield)	Construction Manager / Design Manager
Vegetation to be retained where practical and feasible.	Project Engineer Environmental Coordinator
Site sheds will be located to minimise visual impact where it is feasible and reasonable to do so.	Project Engineer Environmental Coordinator
Site sheds to be installed as new and maintained in excellent condition. Existing buildings will be used where practical and feasible will be maintained to a high standard.	Construction Manager
All facilities utilised for the purpose of OpCo's Activities must be sited, constructed and maintained to meet the requirements of TfNSW and relevant Authorities.	Construction Manager

Item	Responsibility
Temporary site facilities must satisfy the sustainability requirements of Appendix 50.	Construction Manager Sustainability Manager
The work area shall be maintained in an orderly manner	Site Supervisor
Lighting Consideration	
Where outdoor lighting is required for security and safety reasons it will be installed and operated in accordance to the AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting. A lighting strategy will be developed during the site establishment and prior to any night works. Cut off or directional lighting will be implemented to ensure glare and light trespass does not affect sensitive receivers	Construction Manager / Project Engineer
All permanent lighting for the Project shall be designed, installed and operated in accordance with the requirements of AS 1158 "Road Lighting"	Design Manager
Hoarding Banners, Fencing and Signs	
Hoarding banners for the external faces of hoardings and fences at each construction site will be a non-obtrusive colour which will comply with the NWRL Style Guidelines (co-branding). Hoardings will be designed to visually recede in more rural or bushland settings.	Construction Manager / Design Manager
Hoarding will be maintained in an excellent condition with prompt removal of graffiti.	Superintendent / Environmental Coordinator
Fencing, walls, and hoarding will be designed and implemented to increase natural surveillance with straight runs.	Construction Manager / Design Manager
Fencing, walls, and hoarding will be designed and implemented with set back from infrastructure to avoid being used as a climbing aid. Including investigation of pruning vegetation if limbs are close infrastructure	Construction Manager / Environmental Coordinator
Signage will be utilised to clearly define and designate areas with respect to their intended use to the public and construction workers on access.	Superintendent / Project Engineer
No signage, advertising or branding (other than safety signage or other signage required to comply with Law or signage produced in accordance with designs provided by the TfNSW as required by section 6.5.12(c)) will be placed on the external face of any hoarding or fence without the prior written approval of the TfNSW 's Representative.	Construction Manager / Environmental Coordinator
Install and maintain hoarding banners for the external faces (visible to the public) of hoardings and fences that are constructed as well as signage that provides the community with details of the North West Rail Link information line and out of hours contact details. The hoarding and fencing banners must be in full colour and produced in accordance with designs provided by the TfNSW and to comply with the hoarding requirements of the North West Rail Link Style Guidelines (co-branding).	Construction Manager / Project Engineer
If the hoarding and fencing banners or hoarding and fencing signage are damaged with graffiti, it must be rectified within two hours of the graffiti being identified. If irreparably damaged, replacement fencing banners or fencing signage within 24 hours of this damage occurring.	Construction Manager / Project Engineer

Item	Responsibility
Every 12 months the existing hoarding and fencing banners for the external faces of fences and hoardings must be replaced with new hoarding and fencing banners. The TfNSW 's Representative will provide new artwork every 12 months for the replacement hoarding and fencing banners.	Construction Manager / Project Engineer
Hoardings and fencing installed must be made from as-new materials and must at all times be maintained in a neat and tidy condition and be sympathetic with the surroundings.	Construction Manager / Project Engineer
Install way finding signage to direct pedestrians, commuters and vehicles around the Construction Site.	Construction Manager / Project Engineer
Hoarding and fencing banners must be made from vinyl where banners are installed at the locations of future North West Rail Link Stations and made from shade cloth where hoarding and fencing banners are installed at other locations	Construction Manager / Project Engineer
NRT would assist impacted businesses by placing advertising in the local papers regarding Artarmon shops during construction to advise the community that the businesses within the shopping area will continue to be operational during the construction works	Project Engineer / Community and Stakeholder Manager
Where existing business signage or advertising is obstructed for a period of 48 hours or more by the proposed work, NRT are to provide temporary signage to ensure continued awareness of the existing businesses to the general community	Project Engineer / Community and Stakeholder Manager
Graffiti	
NRT must monitor and remove graffiti within the following timeframes: Offensive graffiti must be removed or covered within 1 hour Other graffiti on hoarding, fencing banners or fencing signage must be removed or covered within 2 hours All other graffiti must be removed or covered within 24 hours.	Construction Manager / Project Engineer

6.3 Visual Amenity Inspection and Monitoring Program

Site inspections will be undertaken by the Site Supervisor, Site and Project Engineers, and the Environmental Coordinators on a regular periodic basis. The visual inspections will target:

- Rubbish
- Litter
- Graffiti
- Surplus Material

Daily inspections by Site Supervisors, including inspection of the following:

- Construction site hoarding and perimeter site areas
- Scaffolding, acoustic sheds, and other site structures

- Lighting structures

Periodic Joint Environment Inspections attended by representatives of the Environment and Sustainability Team, Environment Representative, the Independent Certifier(if required), and representatives from TfNSW. This will include inspection of the following:

- Health of retained vegetation around site boundaries
- The condition of any site hoarding and acoustic sheds
- Position and direction of any site lighting.

Inspection reports will be prepared following site inspections to document any relevant observations made and identify any issues to be rectified in relation to visual amenity and timing for rectification.

7 Complaints Handling and Incident Response

The Community Liaison Implementation Plan defines the policies, protocols, procedures and processes for identifying and managing community specific issues arising from design and construction activities, including complaints relating to environmental issues.

The Environment Manager and Environmental Planning and Approvals Manager will assist the Stakeholder and Community Relations Manager in responding to environmental complaints and maintain a register of Environmental Complaints for reporting to the EPA and other relevant agencies.

8 Training, Reporting and Review

8.1 Training

All personnel working on the site will undertake a site induction, which will provide initial training on various environmental aspects including visual amenity.

Additional training will be provided to the workforce during toolbox talk which will explain the visual amenity requirements related to issues such as

- Hoarding
- Graffiti removal
- Lighting direction
- Vegetation planted for screening purposes.

8.2 Compliance and Reporting

Monitoring and inspection will be recorded on the Environmental Site Inspection Forms or the Weekly Environmental Inspection Form. The weekly environmental inspection form will be used as an instrument to record and issues related to visual amenity.

The Environmental Representative will inspect the site regularly and will inspect any visual amenity control measures.

Typical Compliance records would consist of:

- Inspections undertaken in relation to visual amenity measures management measures (such as graffiti and deterioration of hoarding or vegetation)
- Weekly Environmental Inspection forms
- Toolbox training records.

Results and outcomes of inspections, monitoring and auditing will be reported internally on a monthly basis. Six-monthly construction compliance reports will be prepared to report on compliance with the Project Approval.

8.3 Review and Improvement

A non-conformance is an action or omission that does not conform to the requirements of this Plan or any legal and other requirements. Any member of the project team or the Environmental Representative can identify a non-conformance or opportunity for improvement. The CEMP identifies the process for identifying, reporting, recoding and reviewing non-conformances. This will ensure continual improvement.

The processes described in the CEMP may result in the need to update or revise this Plan. This will occur as needed. This Plan will be audited within six months of the commencement

of construction and thereafter as per the CEMP. The Plan shall be reviewed and updated based on the findings of the audit.

Annexure A Visual Amenity Management Measures and Compliance Matrix

No.	Measure	Timing	Requirement	Responsibility	Reference
	Project Approval – Specific Management Plan Requirements				
1.	The SSI shall be constructed in a manner that minimises visual impacts resulting from construction sites, including retaining, where feasible and reasonable, existing vegetation around the perimeter of construction sites, providing temporary landscaping where appropriate to soften views of the construction sites, minimising light spillage, and incorporating architectural treatment and finishes within key elements of temporary structures that reflect the context within which the construction sites are located.	During Construction	RTRF Approval SSI-5931 CoA E3 OTS Approval SSI-5414 CoA E10	Environment Manager	Section 6.2
	EIS Environmental Management Measures				
2.	Existing vegetation around the perimeter of the construction sites would be retained where feasible and reasonable to act as a visual screen.		RTRF EIS REMM SSI-5931 V1 EIS 2 REMM SSI-5414 V1	Environment Coordinator Project Engineer	Section 5.2
3.	Cut-off and directed lighting would be used to ensure glare and light trespass are minimised.		RTRF EIS REMM SSI-5931 V2 EIS 2 REMM SSI-5414 V2	Environment Coordinator Project Engineer	Section 5.2
4.	Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti.		EIS 2 REMM SSI-5414 V3	Environment Coordinator Project Engineer	Section 5.2
5.	Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti.		RTRF EIS REMM SSI-5931 V4 EIS 2 REMM SSI-5414 V4	Environment Coordinator Project Engineer	Section 5.2

No.	Measure	Timing	Requirement	Responsibility	Reference
6.	Visual mitigation would be implemented as soon as feasible and reasonable, and remain for the duration of the construction period.		RTRF EIS REMM SSI-5931 V5 EIS 2 REMM SSI-5414 V5	Environment Coordinator Project Engineer	Section 5.2
7.	Monitoring of the effectiveness of mitigation measures would be undertaken by the relevant construction contractor. This would primarily include regular visual inspection of the condition of the various measures		RTRF EIS REMM SSI-5931 V6	Environment Coordinator Project Engineer	Section 5.2
8.	Hoardings would be designed to visually recede in more rural or bushland settings.		RTRF EIS REMM SSI-5931 V10 EIS 2 REMM SSI-5414 V10	Environment Coordinator Project Engineer	Section 5.2
	North West Rail Link Construction Environmental Management Framework				
9.	The following visual and landscape management objectives will apply to the construction of the project: i. Minimise impacts on existing landscape features as far as feasible and reasonable. ii. Ensure the successful implementation of the Landscape Design. iii. Reduce visual impact of construction to surrounding community.		NWRL CEMP Framework Section 12.1	Environment Manager	Section 5.2
10.	NWRL Principal Contractors will implement visual and landscape management as part of the CEMP and sub-plans. As a minimum, the following would be covered: i. The visual mitigation measures as detailed in the environmental approval documentation. ii. The responsibilities of key project personnel with respect visual management. iii. Monitoring requirements. iv. Compliance record generation and management.		NWRL CEMP Framework Section 12.2 a	Environment Manager	This document
11.	Visual & landscape measures will be incorporated into the Principal Contractor's regular inspections including checking health of retained vegetation around site boundaries, checking condition of any site hoarding and acoustic sheds, and checking position and direction of any site lighting.		NWRL CEMP Framework Section 12.2 b	Environment Coordinator Project Engineer	Section 6.3
12.	The Contractor will retain compliance records of any inspections undertaken in relation to visual and landscape measures.		NWRL CEMP Framework Section 12.2 c	Environment Coordinator Project Engineer	Section 8.2

No.	Measure	Timing	Requirement	Responsibility	Reference
13.	Examples of visual amenity mitigation measures include: - Wherever feasible and reasonable, vegetation around the perimeter of the construction sites will be maintained. - Temporary construction works will be designed with consideration of urban design and visual amenity as per Section 4.4. - Temporary site lighting, for security purposes or night works will be installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting.		NWRL CEMP Framework Section 12.3	Environment Manager	Section 5.2
	Project Deed				
14.	In addition to the plans required by the Environmental Documents, the Construction Environmental Management Plan must also include, as separate sub-plans: (i) Spoil Management Plan; (ii) Visual Amenity Management Plan; and (iii) Waste Management and Recycling Plan.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements Appendix 54 – Project Plan Requirements 3.17k	Environment Manager	This Plan
15.	The Visual Amenity Management Plan must identify the processes and procedures that will be used for the incorporation of the principles of crime prevention through environmental design in the design and construction of temporary site facilities. The Visual Amenity Management Plan must identify the processes and procedures that will be used for the incorporation of the principles of crime prevention through environmental design in the design and construction of temporary site facilities.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements Appendix 54 – Project Plan Requirements 3.17m	Environment Manager	Section 4
16.	Site sheds must be as-new and must be maintained in excellent condition.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.11 a	Environment Coordinator Project Engineer	Section 6.2

No.	Measure	Timing	Requirement	Responsibility	Reference
17.	Site sheds must be established at locations and positions that minimise the impact on adjoining properties and residents.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.11 b	Environment Coordinator Project Engineer	Section 6.2
18.	All facilities utilised for the purpose of OpCo's Activities must be sited, constructed and maintained to meet the requirements of TfNSW and relevant Authorities.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.11 c	Environment Coordinator Project Engineer	Section 6.2
19.	Temporary site facilities must satisfy the sustainability requirements of Appendix 50.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.11 e	Environment Coordinator Project Engineer	Section 6.2
20.	All temporary site facilities, including site sheds, must be maintained free of graffiti and any advertising material not authorised by the TfNSW 's Representative.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.11 f	Environment Coordinator Project Engineer	Section 6.2
21.	OpCo must carry out daily inspections of all temporary site facilities including site sheds.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.11 g	Environment Coordinator Project Engineer	Section 6.3
22.	OpCo must not place any signage, advertising or branding (other than safety signage or other signage required to comply with Law or signage produced in accordance with designs provided by the TfNSW SW as required by section 6.5.12(c) on the external face of any hoarding or fence without the prior written approval of the TfNSW SW 's Representative.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 a	Environment Coordinator Project Engineer	Section 6.2

No.	Measure	Timing	Requirement	Responsibility	Reference
23.	OpCo must prepare and install way finding signage to direct pedestrians, commuters and vehicles around the Construction Site.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 b	Environment Coordinator Project Engineer	Section 6.2
24.	OpCo must provide, install and maintain hoarding banners for the external faces (visible to the public) of hoardings and fences that are constructed by OpCo as well as signage that provides the community with details of the North W West Rail Link information line and out of hours contact details for OpCo. The hoarding and fencing banners must be in full colour and produced in accordance with designs provided by the TfNSW SW and to comply with the hoarding requirements of the North West Rail Link Style Guidelines (co-branding).		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 c	Environment Coordinator Project Engineer	Section 6.2
25.	Hoarding and fencing banners must be made from vinyl where banners are installed at the locations of future North West Rail Link Stations and made from shade cloth where hoarding and fencing banners are installed at other locations.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 d	Environment Coordinator Project Engineer	Section 6.2
26.	If the hoarding and fencing banners or hoarding and fencing signage are damaged with graffiti, OpCo must remove the graffiti within two hours of the graffiti being identified.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 e	Environment Coordinator Project Engineer	Section 6.2
27.	If the hoarding and fencing banners or hoarding and fencing signage are irreparably damaged, OpCo must install replacement fencing banners or fencing signage within 24 hours of this damage occurring		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 f	Environment Coordinator Project Engineer	Section 6.2
28.	OpCo must, every 12 months, replace the existing hoarding and fencing banners for the external faces offences and hoardings with new hoarding and fencing banners. The TfNSW S W 's Representative will provide new artwork every 12 months for the replacement hoarding and fencing banners.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.12 g	Environment Coordinator Project Engineer	Section 6.2

No.	Measure	Timing	Requirement	Responsibility	Reference
29.	OpCo must install and maintain temporary hoardings, fencing and walls on and around the Construction Site as necessary to provide safety and security in the performance of OpCo's Activities. The temporary hoardings, fencing and walls must be erected prior to commencing OpCo's Activities in the affected areas.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.13 a	Environment Coordinator Project Engineer	Section 6.2
30.	Hoardings and fencing installed by OpCo must be made from as-new materials and must at all times be maintained in a neat and tidy condition and be sympathetic with the surroundings		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.13 b	Environment Coordinator Project Engineer	Section 6.2
31.	Any hoardings, fencing or walls on or around the Construction Site must be maintained free of graffiti and any advertising material not authorised by the TfNSW SW 's Representative until the Date of Completion.		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.13 c	Environment Coordinator Project Engineer	Section 6.2
32.	OpCo must monitor and remove graffiti within the following timeframes: (i) offensive graffiti must be removed or covered within 1 hour; (ii) other graffiti on hoarding, fencing banners or fencing signage must be removed or covered within 2 hours; and (iii) all other graffiti must be removed or covered within 24 hours,		OTS Project Deed Exhibit 1 - Scope and Performance Requirements 6.5.16d)	Environment Coordinator Project Engineer	Section 6.2
ECRL Determination Report Conditions of Approval					
33.	Lighting Control All permanent lighting for the Project shall be designed, installed and operated in accordance with the requirements of AS 1158 "Road Lighting", AS 4282 "Control of the Obtrusive Effects of Outdoor Lighting"	During Construction	CoA 37	Design Manager	Section 6.2
34.	Graffiti and Advertising Control Hoardings, site sheds, fencing, acoustic walls around the perimeter of the site and any structures built as part of the Project are to be maintained free of graffiti and advertising not authorised by the Proponent during the construction period.	During Construction	CoA 38	Site Supervisor	Section 6.2
Norwest Station Subsurface Pedestrian Link and Northern Entry REF					

No.	Measure	Timing	Requirement	Responsibility	Reference
35.	Hoarding would be designed to be considered and appropriate with their surrounding. This may include project related artworks or project information. These would be installed as early as feasible and reasonable in the construction process. Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti	Before Construction During Construction	Norwest Pedestrian Link REF EMM 36	Site Supervisor	Section 4 Section 6.2
36.	Cut-off and directed lighting would be used to ensure glare and light trespass are minimised	During Construction	Norwest Pedestrian Link REF EMM 37	Environment Coordinator Project Engineer	Section 6.2
37.	Where feasible and reasonable the elements within construction sites would be located to minimise visual impact (e.g. setting particular equipment / structures back from the site boundaries to minimise their visual impact). The proposal shall be constructed in a manner that minimises visual impacts resulting from construction site, including retaining, where feasible and reasonable, existing vegetation around the perimeter, providing temporary landscaping where appropriate to soften views of the construction sites, minimising light spillage, and incorporating architectural treatment and finishes within key elements of temporary structures that reflect the context within which the construction sites are located	During Construction	Norwest Pedestrian Link REF EMM 38	Environment Coordinator Project Engineer	Section 6.2
Norwest Pedestrian Link Determination Report Conditions of Approval					
38.	Temporary urban design treatments consistent with the Sydney Metro Northwest shall be installed to minimised the visual impact from the construction of the Project	During Construction	CoA 28	Environment Coordinator Project Engineer	Section 6.2
Willoughby to North Chatswood 33kV Underground Feeder Powerline Determination Report Conditions of Approval					
39.	NRT would assist impacted businesses by placing advertising in the local papers regarding Artarmon shops during construction to advise the community that the businesses within the shopping area will continue to be operational during the construction works	Before Construction	CoA 20	Project Engineer Community and Stakeholder Manager	Section 6.2

No.	Measure	Timing	Requirement	Responsibility	Reference
40.	Where existing business signage or advertising is obstructed for a period of 48 hours or more by the proposed works, NRT are to provide temporary signage to ensure continued awareness of the existing businesses to the general community	During Construction	CoA 21	Project Engineer Community and Stakeholder Manager	Section 6.2
Willoughby to North Chatswood 33kV Underground Feeder Powerline Submissions Report Revised Environmental Management Measures					
41.	The following mitigation measures would be implemented during construction: ■ Visual mitigation measures would be implemented as soon a feasible and practical and remain in place during the construction period. ■ All effort would be made for vegetation to be retained where practical and feasible. ■ Site sheds, where required, would be located to minimise visual impact where it is feasible and reasonable to do so. ■ Hoarding banners for the external faces of hoardings and fences at each construction site would be a non-obtrusive colour, which would comply with the Sydney Metro Northwest style guidelines (cobranding). ■ Hoarding would be maintained in an excellent condition with prompt removal of graffiti. ■ No signage, advertising or branding (other than safety signage or other required signage) would be placed on the external face of any hoarding or fence without the prior written approval of TfNSW. ■ Temporary works to be designed and constructed as per the requirements of crime prevention through environmental design. ■ Temporary fencing, walls, and hoarding would be designed and implemented to increase natural surveillance with straight runs. ■ Way finding signage to direct pedestrians, commuters and vehicles around the construction site would be installed as required. ■ The storage of materials and construction machinery would be minimised as far as possible. ■ The proposal site would be maintained in an orderly and tidy fashion through good housekeeping. ■ Cut-off and directed lighting would be used to ensure glare and light spill are minimised lit during night work periods (where this is required).	Construction	REMM 7	Site Supervisor Environmental Coordinator	Section 6.2
Rouse Hill Temporary Bypass Powerline EIA					

No.	Measure	Timing	Requirement	Responsibility	Reference
42.	• The section of powerline through the Memorial Park would be underground. • The work area shall be maintained in an orderly manner • Any artificial lighting required during works shall be directed towards the work area and area from adjacent sensitive receivers	During Construction	EIA Control Measure	Design Manager Site Supervisor	Section 6.2

Annexure B Glossary

Term/Acronym	Definition
AEC	Areas of Environmental Concern
ANZECC	Australian and New Zealand Environment Conservation Council
AMS	(Construction) Activity Method Statement
ARMCANZ	Agriculture and Resources Management Council of Australia and New Zealand
ASS	Acid Sulfate Soil
Blue Book	Managing Urban Stormwater: Soils and Construction, published by Landcom in 2004. This document is recognised as defining best-practice erosion and sediment control during construction throughout NSW.
CEMF	Construction Environmental Management Framework (Appendix B of Submissions Report)
CEMP	Construction Environmental Management Plan
CNVIS	Construction Noise And Vibration Impact Statement
CoA	Conditions of Approval
CoPC	Contaminants of Potential Concern
CPESC	Certified Professional in Erosion and Sediment Control
DECC	Department of Environment and Climate Change (now OEH and EPA)
DECCW	Department of Environment and Climate Change and Water (now OEH and EPA)
DLWC	Department of land and water Conservation
DPI	Department of Primary Industries
ECRL	Epping to Chatswood Rail Link
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EIS 1	EIS for NWRL Early Works and Major Civil Construction Works (Incorporating Staged Infrastructure Modification Assessment) (SSI 5100)
EIS 2	EIS for Construction works associated with SSI 5100 including construction and operation of stations and wider precincts, service facilities, rail infrastructure and systems (SSI-5414) including modification
EIS RTRF	EIS for the Rapid Transit Rail Facility approval application (SSI-5931)
EMS	Environmental Management System developed within the framework of AS/NZS ISO 14001:2004
EPA	Environment Protection Authority

Term/Acronym	Definition
EPL	Environment Protection Licence
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
ER	Environmental Representative
ESCP	Erosion and Sedimentation Control Plan
GDE	Groundwater Dependant Ecosystems
IC	Independent Certifier
ITP	Inspection and Test Plan
NHMRC	National Health and Medical Research Council
NOW	NSW Office of Water
NTU	Nephelometric Turbidity Unit (used to describe turbidity)
NRT	Northwest Rapid Transit
NWRL	North West Rail Link (*now renamed as* 'Sydney Metro Northwest')
OEH	Office of Environment and Heritage
OTS PPP	Operations, Trains and Systems Public Private Partnership (the Project, including delivery and operation)
PASS	Potential Acid Sulfate Soil
PIMS	Project Integrated Management System
PMF	Probable Maximum Flood
POEO Act	*Protection of the Environment Operations Act 1997*
PPA	Project Planning Approval
The Project	The North West Rail Link Project
Project Approval	Minister for Planning and Infrastructure's Approval for the North West Rail Link Stage 1: Major Civil Works dated 25 September 2012 SSI-5414 SSI-5931
REF	Review of Environmental Factors
REMM	Revised Environmental Mitigation Measures
RFP	Request for Proposal
RTRF	Rapid Transit Rail Facility
Spoil	All material generated by excavation into the ground including the excavation of

Term/Acronym	Definition
	station boxes and tunnels
SEP	Site Environment Plan
SEPP	State Environmental Planning Policy
SPR	Scope and performance requirements
SSI	State Significant Infrastructure
SVC	Surface Viaduct and Civil Works for the North West Rail Link Project
TDS	Total Dissolved Solids
TfNSW	Transport for New South Wales
TRA	Task Risk Assessment
TSC Works	Tunnels and Station Civil Works for the North West Rail Link Project
TSS	Total Suspended Solids
VAMP	Visual Amenity Management Plan
VENM	Virgin Excavated Natural Material is natural material (such as clay, gravel, sand, soil and rock) that: a is not mixed with any other type of waste b has been excavated from areas of land that are not contaminated
WAD	Works Authorisation Deed
WRA	Workplace Risk Assessment