NSW GOVERNMENT

Redfern Station Upgrade – New Southern Concourse

Scoping Report

Transport for NSW | **November** 2019

Transport for NSW Redfern Station Upgrade - New Southern Concourse

Scoping Report

Client: Transport for NSW

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Abbreviations

Term	Meaning
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
BC Act	*Biodiversity Conservation Act 2016 (NSW).*
BDAR	Biodiversity development assessment report
C2E	Central to Eveleigh
CBD	Central Business District
CCTV	Closed Circuit TV
dB	Decibel
DBYD	Dial Before You Dig
DDA	*Disability Discrimination Act 1992* (Cwlth)
DECCW	Department of Environment, Climate Change and Water
DPE	Department of Planning and Environment (now DPIE)
DPIE	Department of Planning, Industry and Environment
DSAPT	*Disability Standards for Accessible Public Transport (2002)*
EES	Environment, Energy and Science Group
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPI	Environmental Planning Instrument
ESD	Ecologically sustainable development
GSC	Greater Sydney Commission
Heritage Act	*Heritage Act 1977* (NSW)
HV	High Voltage
ISCA	Infrastructure Sustainability Council of Australia
LEP	Local Environmental Plan
LGA	Local Government Area
LiDAR	Light Detection and Ranging
Mirvac	Mirvac Group

Term	Meaning
NSW	New South Wales
NPW Act	*National Parks and Wildlife Act 1974*
OEH	(former) NSW Office of the Environment and Heritage (now the Environment, Energy and Science Group)
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
RailCorp	(former) Rail Corporation of NSW
Roads and Maritime	NSW Roads and Maritime Services (now part of Transport for NSW)
RPA	Royal Prince Alfred Hospital
SDG	Sustainable Design Guidelines
SEARs	Secretary's environmental assessment requirements
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SIS	Building Momentum: State Infrastructure Strategy 2018-2038
SSD	State Significant Development
SSI	State Significant Infrastructure
SSP	State Significant Precinct
STAR	Sydney Terminal Area Reconfiguration
TAP	Transport Access Program
TfNSW	Transport for NSW
The Region Plan	The Greater Sydney Region Plan
Urban Growth	(former) Urban Growth NSW Development Cooperation (now part of Infrastructure NSW)
VENM	Virgin excavated natural material

Definitions

Term	Meaning
Acid sulfate soils	Naturally occurring soils, sediments or organic substrates (e.g. peat) that are formed under waterlogged conditions. These soils contain iron sulfide minerals (predominantly as the mineral pyrite) or their oxidation products. In an undisturbed state below the water table, acid sulfate soils are benign. However, if the soils are drained, excavated or exposed to air by a lowering of the water table, the sulfides react with oxygen to form sulfuric acid.
Australian Height Datum	The standard reference level used to express the relative height of various features. A height given in metres AHD is the height above mean sea level.
Average Recurrence Interval	The likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100 years.
Blue Book	Landcom, 2004, *Managing Urban Stormwater: Soils and Construction, Volume – 4th Edition*
Concept design	Broadly refers to the process that the Construction Contractor undertakes (should the Proposal proceed) to refine the scoping design to a design suitable for construction (subject to Transport for New South Wales acceptance).
Detailed design	Detailed design broadly refers to the process that the Construction Contractor undertakes (should the Proposal proceed) to refine the concept design to a design suitable for construction (subject to Transport for New South Wales acceptance).
Down	Down refers to tracks used by trains travelling away from Central Station.
Disability Standards for Accessible Public Transport	The Commonwealth *Disability Standards for Accessible Public Transport 2002* ("DSAPT") (as amended) are a set of legally enforceable standards, authorised under the Commonwealth *Disability Discrimination Act 1992* (DDA) for the purpose of removing discrimination 'as far as possible' against people with disabilities. The Transport Standards cover premises, infrastructure and conveyances, and apply to public transport operators and premises providers.
Ecologically Sustainable Development	As defined by clause 7(4) Schedule 2 of the EP&A Regulation. Development that uses, conserves and enhances the resources of the community so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased.
Feasible	A work practice or mitigation measure is feasible if it can be engineered and is practical to build and/or implement, given Project constraints such as safety, maintenance and reliability requirements.
Interchange	Transport interchange refers to the area/s where passengers transit between vehicles or between transport modes. It includes the pedestrian pathways and cycle facilities in and around an interchange.
Opal card	The integrated ticketing smartcard introduced by Transport for New South Wales. Opal is now the only way to travel via train, bus, ferry and light rail in NSW.
Out of hours works	Defined as works *outside* standard construction hours (i.e. outside of 7am to 6pm Monday to Friday, 8am to 1pm Saturday and no work on Sundays/public holidays).
Proponent	A person or body proposing to carry out an activity under Division 5.1 of the EP&A Act - in this instance, Transport for New South Wales.

Term	Meaning
Reasonable	Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure.
Sensitive receivers	Persons, facilities, structures or organisms that are sensitive to potential noise, vibration, air and visual impacts, such as residents, schools, heritage structures and medical facilities.
Sydney Trains	From 1 July 2013, Sydney Trains replaced CityRail as the provider of metropolitan train services for Sydney.
The Project	The construction and operation of the Redfern Station Upgrade – New Southern Concourse.
Track possession	Track possession means the temporary closure of part of the railway network for a specified period of time for the purposes of carrying out repair, maintenance or upgrading work on or adjacent to the railway network, , during which no trains operate.
Up	Up refers to tracks used by trains travelling towards Central Station.
Urban design	The process and product of designing human settlements, and their supporting infrastructure, in urban and rural environments.

Executive Summary

Transport for NSW is seeking approval to construct and operate an upgrade of Redfern Station (Redfern Station Upgrade – New Southern Concourse) ('the Project') as a component of the Transport Access Program. The Project involves the upgrade of Redfern Station through the construction of a new pedestrian concourse to the south of the existing Lawson Street concourse providing both lift and stair access to Platforms 1-10. The Project would connect Marian and Little Eveleigh Streets and include associated pedestrian upgrades.

The Transport Access Program (TAP) is a NSW Government initiative to provide a better experience for all public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

Redfern Station is an important destination and the sixth busiest station on the rail network, servicing the community, education centres and businesses. The current layout of the station constrains pedestrian movements in and out of the station, creating functionality and platform safety issues. Patronage at Redfern Station is set to increase with a pipeline of local development projects planned.

The station does not currently meet key requirements of the *Disability Standards for Accessible Public Transport 2002* (DSAPT). Existing platforms (with the exception of Platforms 6/7 which are serviced by an existing lift) are accessed by a single stairway at the northern end of the platforms. The stairs do not provide an accessible path of travel for people with a disability, limited mobility and parents/carers with prams. Additionally, as noted above, increasing levels of congestion being experienced at Redfern Station will result in further crowding and congestion at the entrance/exits and the platforms, which in turn are anticipated to lead to functionality and platform safety issues if nothing is done to improve the situation.

Upgrading Redfern Station is the first step in addressing these issues and accommodating increased demand associated with the renewal of the Redfern and North Eveleigh precincts. The Project would provide safe and equitable access to the above ground platforms (Platforms 1 – 10) and the surrounding pedestrian network, and improve customer facilities, amenity and platform safety. By connecting platforms to Little Eveleigh Street and expanding the existing Marian Street entrance, customers and the community would also have improved access to their homes, workplaces, and key destinations as well as the many local shops and community facilities.

Engagement with the community and stakeholders has been ongoing for a number of years regarding potential opportunities to upgrade Redfern Station. The Project was announced in February 2019 and in May 2019 consultation began with the local community and stakeholders.

Consultation to date has included distribution of newsletters and letters to surrounding residents and businesses, targeted door knocking, website updates, placement of project consultation signage at the station, community information sessions and meetings with key stakeholders including local Aboriginal organisations and government agencies as well as residents on Marian and Little Eveleigh Streets. Key outcomes from consultation has included a general support for the Project and improving accessibility at the station with concerns relating to traffic and pedestrian management on surrounding streets, amenity for surrounding residents, potential heritage impacts, integration of the project with future developments and the provision of lift access for Platforms 11 and 12.

Following support regarding providing lift access to Platforms 11 and 12 Transport for NSW has, as a separate exercise, begun preliminary investigations to help identify accessibility improvements to these platforms.

A Consultation Report[1] has been prepared with further details and analysis of community and stakeholder feedback. This feedback and the issues raised to date, together with issues put forward during ongoing consultation during preparation of the EIS, will be considered in the ongoing development of the Project.

[1] https://www.transport.nsw.gov.au/projects/current-projects/redfern-station-upgrade-new-southern-concourse

A preliminary environmental risk analysis for the Project has identified the following key environmental issues:

- traffic, transport and access
- noise and vibration
- Aboriginal heritage
- non-Aboriginal heritage
- social and business impacts
- landscape character, visual amenity and urban design.

Aboriginal heritage has been included as a key issue despite it being assessed as a medium (rather than high) environmental risk ranking, due to the significance of the Redfern area to the Aboriginal community. Detailed assessment of these key issues, as well as other potential environmental issues, would be undertaken as part of the Environmental Impact Statement.

Following the receipt of the Secretary's environmental assessments requirements, Transport for NSW will prepare an Environmental Impact Statement for public exhibition, in accordance with the requirements of Division 5.2 of the *Environmental Planning and Assessment Act 1979*. The Environmental Impact Statement will include:

- a description of the Project, including its components and construction activities
- identification of the strategic and statutory context
- a description of the existing environment and an assessment of potential direct and indirect impacts on key and other potential environmental issues during construction and operation of the Project
- identification of measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor potential impacts of the Project
- identification and consideration of issues raised by stakeholders and the community
- concluding comments on the overall merits of the Project.

1. Introduction

1.1 Project overview

Transport for NSW (TfNSW) is the lead agency for the integrated delivery of public transport services across all modes of transport in NSW and is responsible for the delivery of projects within the Transport Access Program.

The Transport Access Program (TAP) is an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure.

TfNSW is seeking approval to construct and operate an upgrade of Redfern Station (Redfern Station Upgrade – New Southern Concourse) ('the Project') which involves the construction of a pedestrian concourse connection across the railway corridor, extending between Little Eveleigh and Marian Streets in the suburbs of Redfern and Eveleigh. The concourse would include stairway and lift access for all surface platforms (1-10) at Redfern Station. New station entries would be provided at each end of the concourse, along with associated interchange upgrades.

The Project is described in more detail in Chapter 5 and the Project's context and location is shown in Figure 1.

Redfern Station is an important destination and the sixth busiest station on the rail network, servicing the community, education centres and businesses. The Project would enable the station to accommodate current and forecast increased demand in the local area, including the future renewal of the Redfern North Eveleigh precinct. It provides:

- easy access to all above ground platforms (1 to 10) with six new lifts and stairs
- better connectivity with the surrounding areas including key destinations such as South Eveleigh (formerly known as Australian Technology Park), Carriageworks, Royal Prince Alfred Hospital (RPA) and education centres.

By connecting platforms to Little Eveleigh Street and expanding the existing Marian Street entrance, customers and the community would also have improved access to their homes and workplaces, as well as local shops and community facilities.

TfNSW is undertaking ongoing consultation with key stakeholders and the community. The feedback received to date, as well as the feedback resulting from the ongoing consultation, will be considered in the development of the Project that will be assessed in the EIS. Information on this ongoing consultation and how it has been considered in the design and development of the Project will be presented in the EIS.

The Project is subject to assessment and approval by the Minister for Planning under Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This document supports an application to the NSW Department of Planning and Environment seeking the Secretary's environmental assessment requirements for the Environmental Impact Statement (EIS), as part of the first step in the environmental assessment and planning approvals process for the Project.

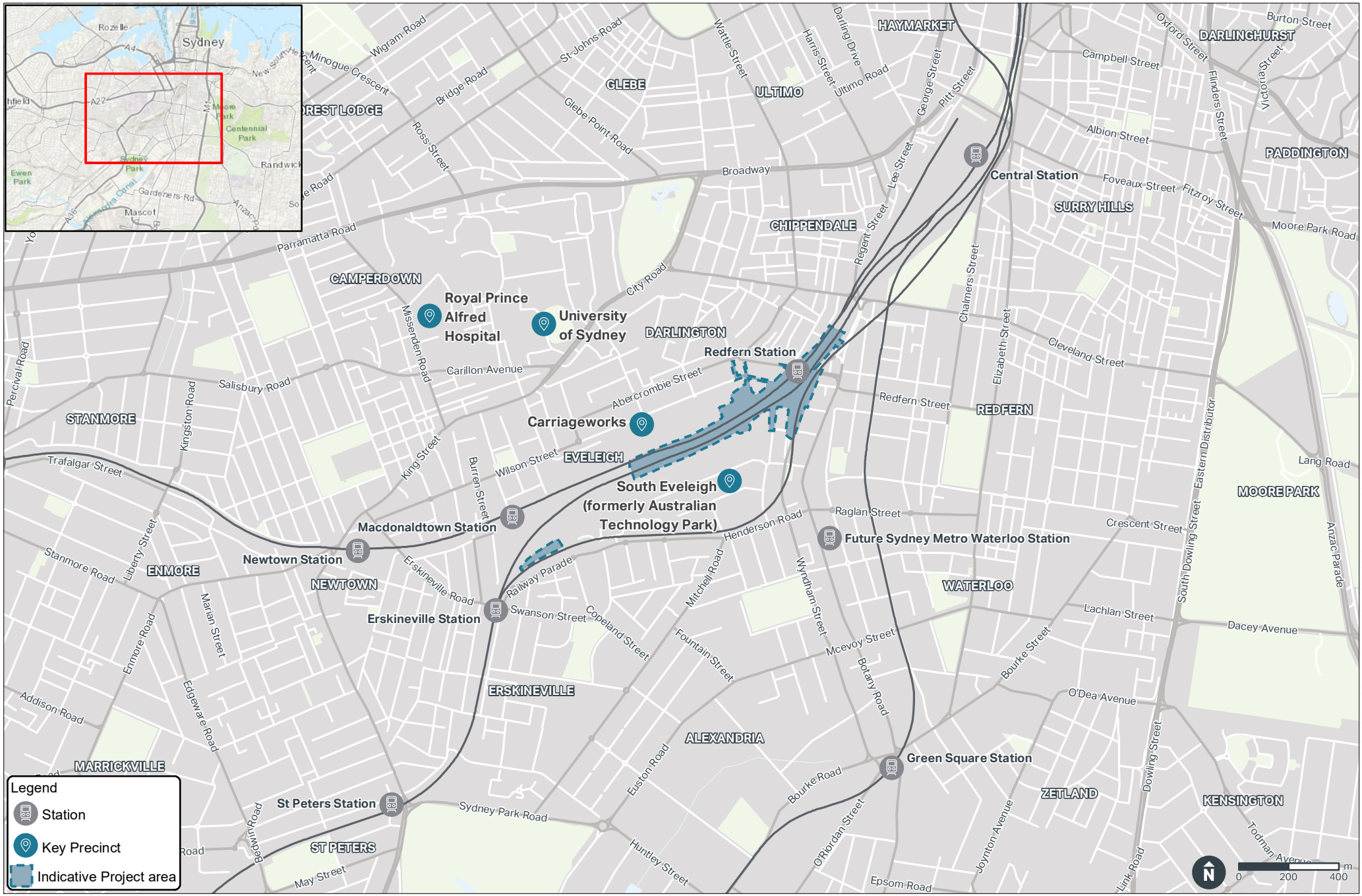

FIGURE 1 - PROJECT OVERVIEW AND LOCATION

1.2 Background

1.2.1 Transport Access Program (TAP)

The NSW Government is committed to facilitating and encouraging the use of public transport, such as trains, by upgrading railway stations to make them more accessible, and improving interchanges around stations with other modes of transport such as bicycles, buses and cars.

The TAP is a NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

The Transport Access Program aims to provide:

- stations that are accessible to those with disabilities, are less mobile and parents/carers with prams and customers with luggage
- modern buildings and facilities for all modes that meet the needs of a growing population
- modern interchanges that support an integrated network and allow seamless transfers between all modes for all customers
- safety improvements including extra lighting, lift alarm, fences and security measures for car parks and interchanges, including stations, bus stops and wharves
- signage improvements so customers can more easily use public transport and transfer between modes at interchanges
- other improvements and maintenance such as painting, new fencing and roof replacements.

Redfern Station does not currently meet key requirements of the *Disability Standards for Accessible Public Transport 2002* (DSAPT). Existing platforms (with the exception of Platforms 6/7 which are serviced by an existing lift) are accessed by a single stairway at the northern end of the platforms, and an additional set of stairs to the southern end of Platform 10. The stairs do not provide an accessible path of travel for people with a disability, limited mobility and parents/carers with prams.

The Project would provide safe and equitable access to the platforms and the surrounding pedestrian network along with generally improving customer facilities, amenity and safety. The improvements would in turn assist in supporting the growth in public transport use and would provide an improved customer experience for existing and future users of Redfern Station.

1.2.2 Local precinct activation

The NSW Government announced in 2018 its commitment to create a globally competitive innovation and technology precinct located in the Central to Eveleigh corridor (the 'Sydney Innovation and Technology Precinct'), and Redfern Station is located within this precinct. The vision for the 'Sydney Innovation and Technology Precinct' includes the development of circa 250,000 square metres of dedicated floorspace for technology companies with a focus on enabling the growth of new companies. The development of this Precinct aims to create 25,000 new innovation jobs and 100 new scale-up companies, as well as tripling NSW's technology exports. The Project is identified as a key infrastructure project which will be crucial to supporting the development of the Precinct.

The suburb of Redfern is the subject of various local urban renewal initiatives such as streetscape and cycleway improvements by City of Sydney and private developments that are providing more options for people to live, work and socialise in Redfern.

The Project footprint sits within the Redfern-Waterloo Authority Sites State Significant Precinct which includes the North Eveleigh West site, the South Eveleigh site (formerly Australian Technology Park) and Carriageworks, which is expecting growth from 1.2 to over 2 million visitors per year within the next few years.

In addition to the predicted growth trend in public transport customers, patronage at Redfern Station is set to increase as a result of a large-scale commercial development underway at South Eveleigh, where Commonwealth Bank of Australia has partnered with Mirvac Group (Mirvac) to redevelop the former Australian Technology Park as an innovation and technology hub. Due to this development

alone, the number of commuters at Redfern Station is expected to rise by approximately 4,500 workers in early to mid-2019, with approximately another 5,500 workers in 2020.

The University of Sydney's Camperdown-Darlington campus is a significant employment node and destination which has delivered four transformational projects as part of a substantial capital works program over the past five years. A further five major developments are proposed, including its Engineering and Technology Precinct which has been declared to be State Significant Development (SSD). As of 2016, the University of Sydney had over 52,000 students and 5,000 staff. The university plans to grow annual student numbers by 26,000 over the next 20 years to approximately 80,000. Staff numbers will increase in line with the student population. In the seven years between 2014 and 2020, 9,100 more students will attend the university annually and 400 more jobs will be created (Cardno, 2016).

RPA is the largest hospital in the Sydney Local Health District with approximately 900 beds and 11 medical research institutes. The hospital is located on both sides of Missenden Road between John Hopkins Drive and Gloucester House Drive adjacent to the University of Sydney and employs some 4,000 staff who in 2018, attended to 83,484 admitted patients, 79,446 emergency department patients and supported over half a million outpatients (Bureau of Health Information, 2019). As the population in the Sydney Local Health District continues to grow, RPA's services will also need to expand.

1.3 Project development

A number of alternative options have been investigated for the Project, prior to the identification of a preferred Project. These Project options were taken through a multi criteria analysis process, and four shortlisted options determined. These four options were then taken to the community for further consultation and feedback. Community representatives identified two additional options for consideration. Chapter 4 provides an overview of the options considered, the options identified by the community, and the justification for the preferred Project.

1.4 Project objectives

The objectives of the Project include:

- improve customer experience and accessibility
- reduce platform clearance times
- improve customer circulation and relieve congestion within Redfern Station
- cater for the forecast customer growth (greater than 15%) for Redfern Station up to 2036
- provide durable, sustainable and enduring infrastructure
- provide improved connectivity for pedestrians and the community to current and future key destinations
- support interfacing and upcoming works in the precinct
- minimise disruption to customers, staff and neighbours throughout planning and construction of the Project.

1.5 Project description

The Project involves the construction of a new six metre wide concourse connecting Little Eveleigh and Marian Streets to the above ground platforms at Redfern Station. The key features of the Project are expected to include:

- a six metre wide concourse between Little Eveleigh and Marian Streets
- new stair and lift access from the concourse to Platforms 1 to 10
- a new entrance at the south eastern end of the concourse at Marian Street
- a new entrance at the north western end of the concourse at Little Eveleigh Street

- works to Marian/Cornwallis/Rosehill Streets and Little Eveleigh Street to facilitate safe access to and from the concourse
- potential works along Ivy Street and Ivy Lane
- relocated on-street residential car spaces within existing road reserve or TfNSW owned land at the end of Little Eveleigh Street
- associated upgrades and/or adjustments to services, signalling, overhead wiring and utility upgrades.

Early works such as minor alterations to utilities and power would not form part of the Project and would be subject to a separate environmental assessment and approval process.

1.6 Structure of this report

The structure and content of this report is outlined in Table 1-1.

Table 1-1 Structure and content of this report

Chapter	Description
Chapter 1 Introduction	Provides an overview of the Project and its role in terms of the Transport Access Program and local precinct renewal.
Chapter 2 Planning and assessment process	Provides information on the statutory framework and approval pathway for the Project.
Chapter 3 Strategic context	Provides an overview of the strategic context and need for the Project.
Chapter 4 Project development and alternatives	Describes how the Project was developed and reviews the strategic alternatives and options considered to date.
Chapter 5 Project description	Identifies the key physical infrastructure anticipated for the Project and provides an overview of how the Project may be constructed.
Chapter 6 Engagement with community and other stakeholders	Outlines the consultation undertaken to date and the consultation that will occur during the EIS process.
Chapter 7 Preliminary environmental risk analysis	Provides a preliminary environmental risk analysis taking into account the current Project scope.
Chapter 8 Key environmental issues	Provides a preliminary assessment of the potential key environmental issues that may result during construction and operation of the Project.
Chapter 9 Other environmental issues	Provides a preliminary assessment of the remaining environmental issues that may result during construction and operation of the Project.
Chapter 10 Cumulative issues	Outlines projects having the potential to result in cumulative environmental impacts with the Project.
Chapter 11 Conclusion	Provides closing comments for consideration.

2. Planning and assessment process

2.1 Overview of the planning and assessment process

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning & Assessment Regulation 2000* (EP&A Regulation) provide the legislative framework for environmental planning in NSW. The act and associated regulation include provisions to ensure that all development proposals that have the potential to have an impact on the environment are subject to an appropriate level of assessment, while also providing opportunity for public involvement. They are supported by a range of environmental planning instruments including State environmental planning policies (SEPPs) and local environmental plans (LEPs).

TfNSW has considered the likely nature and extent of potential environmental impacts of the Project and has formed the opinion that the Project is likely to significantly affect the environment, therefore requiring the preparation of an EIS for the Project. Accordingly, as the Project represents infrastructure for which TfNSW would be the determining authority, the Project is identified as State Significant Infrastructure under the provisions of Clause 1(1) of Schedule 3 in *State Environmental Planning Policy (State and Regional Development) 2011*.

On this basis, and in accordance with sections 5.12 and 5.13 of the EP&A Act, the Project meets the criteria to be declared State Significant Infrastructure (SSI). Division 5.2 of the EP&A Act establishes the assessment and approval regime for SSI (refer to Section 2.2.1) and is illustrated in Figure 2.

2.2 NSW Environmental Planning and Assessment Act 1979

2.2.1 Planning approval process

This Scoping Report supports an application seeking the Secretary's environmental assessment requirements (SEARs) for the EIS for the Project, as well as to support an application for approval to carry out SSI under section 5.15 of the EP&A Act.

An EIS will be prepared in accordance with the SEARs and the requirements of Schedule 2, Part 3 of the EP&A Regulation. The Department of Planning, Industry and Environment (DPIE) will place the EIS on public exhibition. During the exhibition period, government agencies, stakeholders and the community will be able to review the EIS and will have an opportunity to make a written submission to the DPIE for consideration in its assessment of the Project.

At the completion of the public exhibition period, the DPIE will collate and provide TfNSW with a copy of all submissions received during the exhibition period. After reviewing the submissions, TfNSW will prepare a submissions report that responds to the relevant issues raised. If changes are required to the Project as a result of the issues raised or to minimise environmental impact, a preferred infrastructure report may also be required.

If this is required, TfNSW would prepare the report to address the changes to the design to minimise impacts and submit this for review to the DPIE. This report would be made available to the public.

Approval from the Minister for Planning is required before TfNSW can proceed with the construction of the Project.

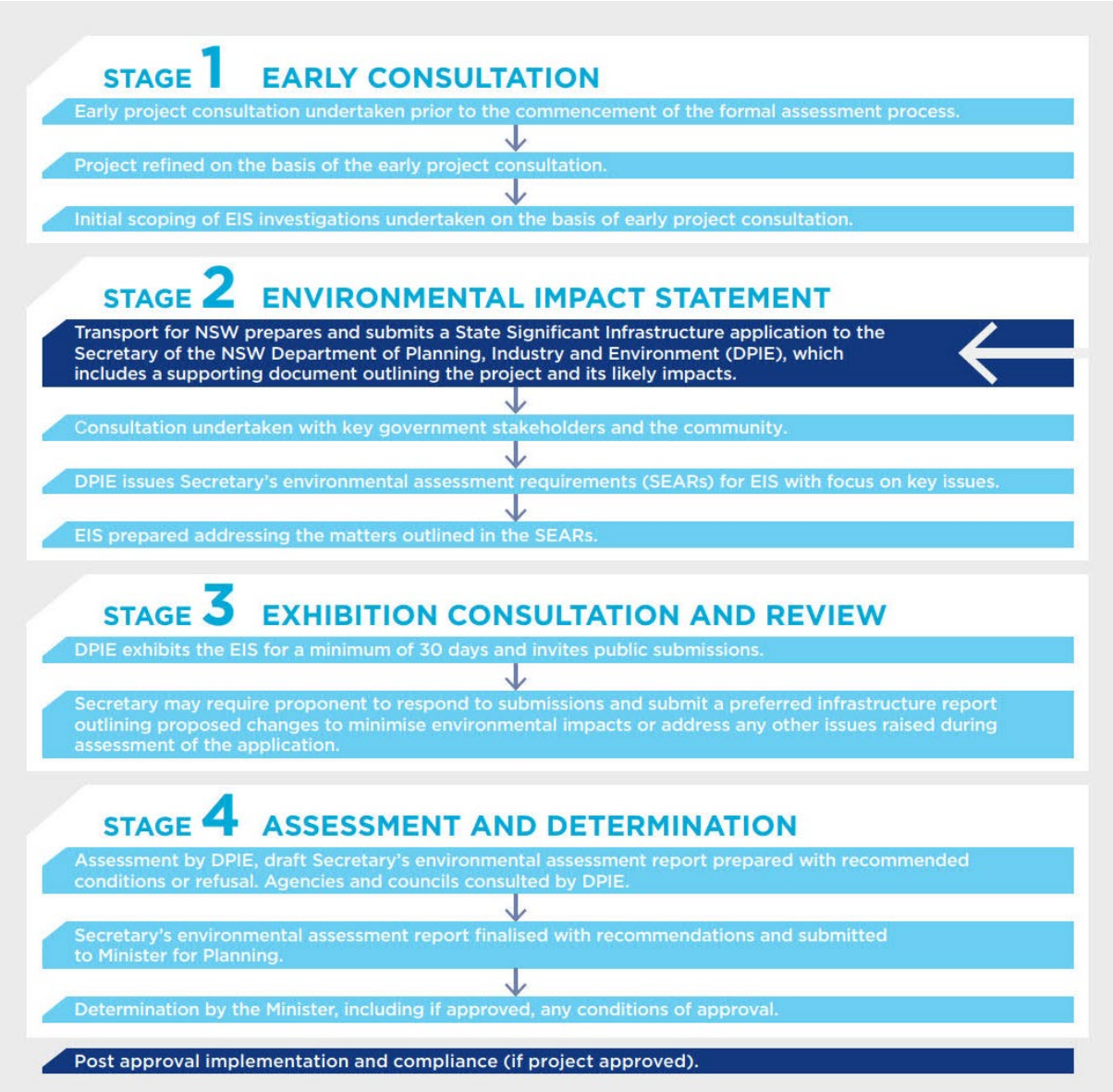

Figure 2 The assessment and approval process for State Significant Infrastructure

2.2.2 State Environmental Planning Policies

Section 5.22 of the EP&A Act provides that environmental planning instruments (such as LEPs and SEPPs) do not, with some exceptions, apply to SSI projects. Notwithstanding this, the environmental planning instruments that have been considered for consistency are summarised in Table 2-1.

Table 2-1 Environmental planning instruments relevant to the Project

Environmental planning instrument	Relationship to Project
State Environmental Planning Policy (State and Regional Development) 2011	This SEPP identifies development that is SSD, SSI and critical SSI. The Project is SSI as identified in Schedule 3 of this SEPP.
State Environmental Planning Policy (State Significant Precincts) 2005	This SEPP aims to facilitate the development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State so as to facilitate the orderly use, development or conservation of those State significant precincts for the benefit of the State The Project is located within the Redfern-Waterloo Authority Sites as identified within the State Significant Precincts SEPP. The SEPP identifies land zoning for the area and items of local heritage significance. The site is located in an area zoned as G: Special Purpose Zone – Infrastructure. Within this zone the alteration of or addition to a railway station may only be carried out with development consent. However, under section 5.22 of the EP&A Act, environmental planning instruments (including SEPPs) do not apply to SSI unless they apply to the declaration of SSI or are required to enable development to be carried out. The Project does therefore not require consent under the State Significant Precincts SEPP.
State Environmental Planning Policy (Urban Renewal) 2010	Redfern Station is located within the Redfern-Waterloo precinct outlined within this SEPP. Under clause 10 of this SEPP, development within urban renewal precincts with a capital investment value of greater than $5 million must not be granted development consent unless the development is consistent with the objective of developing the potential precinct for the purposes of urban renewal. This includes ensuring the development does not restrict or prevent the following: *a. development of the potential precinct for higher density housing or commercial or mixed development,* *b. the future amalgamation of sites for the purpose of any such development within the potential precinct,* *c. access to, or development of, infrastructure, other facilities and public domain areas associated with existing and future public transport in the potential precinct.* The Project supports the future development of the precinct for urban renewal through providing improved access to public transport and public spaces within the Redfern-Waterloo precinct.

Environmental planning instrument	Relationship to Project
Sydney Regional Environmental Plan No 26 – City West (SREP 26)	Redfern Station is located within the Eveleigh Precinct outlined within SREP 26. The aims of SREP 26 are to promote the orderly and economic use and development of land within City West, while establishing planning principles and development controls of regional significance to ensure that development within City West is consistent. The project would be consistent with the aims of SREP 26, however as outlined in clause 5 of the State Significant Precincts SEPP, the State Significant Precincts SEPP prevails to the extent of any inconsistency with regard to land within this area. As outlined above, pursuant to section 5.22 of the EP&A Act, environmental planning instruments (including SEPPs) do not apply to SSI unless they apply to the declaration of SSI or are required to enable development to be carried out. The Project does not therefore require consent under SREP 26 or the State Significant Precincts SEPP.

2.2.3 Approvals or authorisations that are not required

Section 5.23 of the EP&A Act specifies authorisations that are not required for approved SSI including:

- Permits under sections 201, 205 and 219 of the *Fisheries Management Act 1994* (NSW)
- Approvals under Part 4, excavation permits under section 139 and Division 8 of Part 6 of the *Heritage Act 1977* (NSW)
- Aboriginal heritage impact permits under section 90 of the *National Parks and Wildlife Act 1974*
- Various approvals under the *Water Management Act 2000*, including water use approvals under section 89, and activity approvals (other than aquifer interference approvals) under section 91.

Section 5.24 of the EP&A Act identifies approvals or authorisations that cannot be refused if they are necessary for carrying out approved SSI and are substantially consistent with the Division 5.2 approval. Statutory approvals or authorisations of potential relevance to this Project include:

- Environment protection licences under Chapter 3 of the *Protection of the Environment Operations Act 1997*
- Consent under section 138 of the *Roads Act 1993* from the relevant roads authority for the erection of a structure, or the carrying out of work in, on or over a public road, or the digging up or disturbance of the surface of a road.

2.3 Other NSW legislation and approvals

Related legislation and regulations that may still be applicable to an approved SSI project and may, based on its current scope, be relevant to the Project are listed in Table 2-2.

Table 2-2 Legislation and regulations that may still be applicable

Legislation	Requirement
Contaminated Land Management Act 1997	The *Contaminated Land Management Act 1997* outlines the circumstances in which the Environment Protection Authority should be notified in relation to the contamination of land.
Heritage Act 1977	In accordance with section 146 of the *Heritage Act*, the Heritage Council must be notified of the location of a relic, which is uncovered during construction and if it is reasonable to believe that the Heritage Council is unaware of the location of the relic.

Legislation	Requirement
Water Management Act 2000	The *NSW Aquifer Interference Policy* (NSW Office of Water, 2012) documents the NSW Government's intention to implement the requirement for approval of 'aquifer interference activities' under the *Water Management Act 200*0. While the Project may have the potential to intercept groundwater aquifers, the requirement for aquifer interference approvals has not yet commenced. No other approvals under this Act would be required, as outlined in Section 2.2.3
Waste Avoidance and Resource Recovery Act 2001	This Act encourages the most efficient use of resources in order to reduce environmental harm.

2.4 Local Government Planning Instruments

Redfern Station is located in the suburbs of Redfern and Eveleigh within the City of Sydney Local Government Area (LGA) to which the *Sydney Local Environmental Plan 2012* (Sydney LEP) applies. Under section 5.22 of the EP&A Act, environmental planning instruments (including LEPs) do not apply to SSI unless they apply to the declaration of SSI or are required to enable development to be carried out. The provisions outlined within the Sydney LEP therefore do not apply to the Project.

2.5 Commonwealth legislation

2.5.1 Environment Protection and Biodiversity Conservation Act 1999

Under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), approval from the Australian Minister of the Environment would be required for an action that:

- has, will have, or is likely to have a significant impact on a matter of national environmental significance
- is undertaken on Commonwealth land and has, will have, or is likely to have a significant impact on the environment
- is undertaken outside Commonwealth land and has, will have or is likely to have a significant impact on the environment of Commonwealth land
- is undertaken by the Commonwealth and has, will have or is likely to have a significant impact on the environment.

Matters of national environmental significance comprise:

- World heritage properties
- National heritage places
- Wetlands of international importance
- Commonwealth-listed threatened species and ecological communities
- Commonwealth-listed migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- Nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

Based on desktop assessments, no world, national or Commonwealth heritage items are located in the vicinity of the Project. The Project would not impact upon Commonwealth land or on

Commonwealth marine areas, the Great Barrier Marine Park or wetlands of international importance, and does not involve a nuclear action or coal seam gas or large coal mine development.

A total of five listed threatened ecological communities, 10 threatened flora species, 20 threatened fauna species and 18 migratory species listed under the EPBC Act are identified as having the potential to occur within one kilometre of the Project. Potential impacts on identified communities and species are considered unlikely and would be confirmed in the EIS.

Should significant impacts on a matter of national environmental significance be considered likely, a referral under the EPBC Act would be required.

3. Strategic context

3.1 Background

Improving transport customer experience and accessibility is the focus of the TAP. Transport interchanges and stations are important gateways to the transport system and as such play a critical role in shaping the customer's experience and perception of public transport.

As outlined in Chapter 1, the TAP is a NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most. It is designed to drive a stronger customer experience to deliver seamless travel to and between modes, encourage greater public transport use and improve station interchanges.

Redfern Station is within the Redfern Precinct of the Redfern Waterloo Growth Centre and TfNSW is working to shape the Redfern and North Eveleigh Precincts by involving the community in planning to help deliver holistic renewal outcomes.

Redfern Station performs an essential role in the Redfern Waterloo Growth Centre and in the wider Sydney CBD rail network. It is located immediately adjacent to the Redfern Street retail strip and is pivotal to the success and connectivity of key residential, commercial and educational/research sites in the precinct. It serves a broad patronage including nearby South Eveleigh, the University of Sydney, TAFE Eora, RPA and Carriageworks.

The Redfern community is actively involved with development occurring within the precinct and is expected to have a strong interest in the delivery of the Project at Redfern Station.

Redfern Station is within close proximity and has important ties to the local Redfern Aboriginal community. The station has historically served as an important transport connector between this local community and Aboriginal people from other areas of NSW.

3.2 Strategic context

3.2.1 Greater Sydney Region Plan

The *Greater Sydney Region Plan* (Greater Sydney Commission, 2018) (the Region Plan) sets the vision and strategy for the Greater Sydney Region. This vision is based on the concept of 'a metropolis of three cities' comprising the Eastern Harbour City (centred on the current Sydney CBD), the Central River City (centred on the emerging CBD of Parramatta), and a new Western Parkland City (centred on the Western Sydney Airport and the Western Sydney Aerotropolis).

The Region Plan identifies that the provision of adequate infrastructure to support population growth is essential to creating strong communities. Of the 40 objectives set out in the Region Plan, objectives 1 to 4 are relevant to the Project and support the direction of a city supported by infrastructure. These objectives include:

- infrastructure supports the three cities
- infrastructure aligns with forecast growth – growth infrastructure compact
- infrastructure adapts to meet future needs
- infrastructure use is optimised.

Through its location, and being one of Sydney's key stations, the Project would help achieve the objectives of the Region Plan by supporting the '30 minute city' and promoting north-south and east-west connections. The Project would provide enabling infrastructure to address the identified capacity needs of Redfern Station as well as the forecast patronage growth in the Redfern Waterloo Growth Centre, along with maximising the utility of existing infrastructure, thereby further supporting the objectives of the Region Plan.

3.2.2 NSW State Infrastructure Strategy 2018-2038

The *Building Momentum: State Infrastructure Strategy 2018-2038* (NSW Government, 2018) (SIS) recommends reforms, policies and projects that respond to NSW's changing economic, social, technological and environmental outlook. The SIS contains 122 recommendations spanning NSW's key infrastructure sectors of transport, energy, water, health, education, justice, social housing, culture, sport and tourism. The key strategic objective for transport is to ensure the transport system creates opportunities for people and businesses to access the services and support their needs. Relevant recommendations for the Project outlined within the SIS include:

- support the development of a three-city metropolis for Greater Sydney by investing in transport infrastructure that provides high frequency and high-volume access to, and connectivity between, each of the three cities, while enhancing local amenity
- invest in transport infrastructure that is integrated with land use to create opportunities for agglomeration and enhance productivity, liveability and accessibility, in support of the policy goal of a '30-minute city'
- further develop the Sydney rail network with new rail links and system-wide upgrades
- improve the resilience of the system to reflect its critical operational role, including during periods of acute and sustained shock.

The Project would help realise the recommendations of the SIS through providing an accessible and high volume connection to the Eastern Harbour City outlined in the Region Plan.

3.2.3 Future Transport Strategy 2056

The *Future Transport Strategy 2056* (NSW Government, 2018) is a 40 year strategy, harnessing technology to improve customer and network outcomes, and provide a long term vision for our communities. The Future Transport Strategy 2056 aligns future planning of the transport network with land use through collaboration with various government departments.

The *Disability Inclusion Action Plan 2018-2022*, a sub-plan to the *Future Transport Strategy 2056* places the needs of the customer at the centre of planning and decision-making for the transport system ensuring that high quality services are delivered to all customers, including those with a disability. The relevant strategic objectives of the Disability Inclusion Action Plan 2018-2022 are as follows:

- to deliver barrier-free end to end journeys for all customers
- to provide accessible planning and cutting-edge assistive technology
- to ensure people with a disability influence the future of transport in NSW.

The Project would support the objectives of the *Future Transport Strategy 2056* and *Disability Inclusion Action Plan 2018-2022* by improving accessibility at a key station in Sydney and planning for all customers in the context of significant forecast growth in the area surrounding Redfern Station.

3.2.4 Central to Eveleigh Urban Transformation Strategy

The *Central to Eveleigh Urban Transformation Strategy*, which was released by Urban Growth NSW (now Infrastructure NSW) in November 2016, guides renewal of 50 hectares of government-owned land in and around the rail corridor along five precincts being:

- North Eveleigh precinct
- South Eveleigh precinct
- Redfern Station precinct
- Central Station precinct (Western Gateway sub-precinct currently on exhibition)
- Waterloo Estate precinct.

The Project would support the implementation of the vision and key moves identified within the strategy, specifically key move 1 to renew Redfern Station and connect Redfern to Wilson Street, key

move 4 to connect the city with surrounding places and key move 7 to create a centre for Sydney's growing economies. The new southern concourse would constitute a significant upgrade to Redfern Station facilitating increased capacity and supporting the growth of economic and technological centres around the station. The concourse would also provide a direct connection between Marian Street and Little Eveleigh Street, providing an accessible path across the railway corridor between Redfern and Eveleigh.

3.2.5 Sydney Innovation & Technology Precinct

The NSW Government's vision for the Sydney Innovation and Technology Precinct (Central to Eveleigh) is a place where ambitious startups, world-class universities and research institutions, high-tech companies and the community collaborate to solve problems, socialise and spark ideas that change our world and support the jobs of the future.

The Sydney Innovation and Technology Precinct will be a leader in innovation within the region, taking a spirit of collaboration and entrepreneurship and translating Australia's world-leading research and development into globally successful businesses.

The Project would support the aims of the precinct by facilitating safe and accessible public transport to meet both current and future demands arising from new jobs, businesses and students within the precinct.

3.3 Why this Project?

Currently Redfern Station is the 6th busiest station in NSW, with up to around 70,000 trips into/out of Redfern Station per day (Opal data May 2018). Redfern Station has been identified as a priority station, in need of an upgrade for a number of reasons, including:

- to cater for growth in commuter use at Redfern Station for both transfers between services and as a destination station
- to improve customer experience and accessibility by providing lift access to all above ground platforms
- to develop a design that is flexible and can be integrated with any future station precinct upgrades
- to provide secondary access to Redfern Station platforms.

Patronage at Redfern Station is set to increase with the large scale commercial development underway at South Eveleigh. The Commonwealth Bank of Australia has partnered with Mirvac to redevelop South Eveleigh as an innovation and technology hub (formally known as Australian Technology Park) and due to this development alone, the number of commuters at Redfern Station increased by approximately 4,500 workers in early to mid-2019, with an additional approximately 5,500 workers expected in 2020.

Further increases to patronage are anticipated as a result of urban renewal projects in the area such as the Pemulwuy project, the Redfern-Waterloo Authority Sites' State Significant Precinct, Redfern and North Eveleigh precinct. and the Sydney Innovation and Technology Precinct - which aims to create 25,000 new innovation jobs and 100 new start-up and scale-up companies in the wider area.

To provide for accessible and safe access to the platforms for this growth in both the immediate and long term future, as well as the predicted growth in public transport patronage and increasing visitor numbers to Carriageworks, additional station and platform access points are required. The Project would provide for access to Redfern Station and platforms from both Little Eveleigh and Marian Streets through the inclusion of lifts to Platforms 1-10. Furthermore, the inclusion of additional stairs to the platforms provides a secondary entry/exit point which would serve to reduce capacity issues and improve customer movements within the station precinct.

The proposed concourse not only provides connectivity between the platforms at Redfern Station and access to both Marian Street and Little Eveleigh Street, but also provides cross corridor connectivity. This would address the existing desire line constraint, which is anticipated to increase as demand increases with the ongoing development of nearby major capital works projects at the University of Sydney and South Eveleigh.

Following support regarding providing lift access to Platforms 11 and 12 Transport for NSW has, as a separate exercise, begun preliminary investigations to help identify accessibility improvements to these platforms.

3.4 Project justification

The Project would support the objectives of relevant NSW government policies and plans along with providing safe and accessible access to a key Sydney station taking into account capacity needs and significant predicted future growth in the area surrounding Redfern Station.

The Project would also support the continued growth of the Redfern Waterloo Growth Area and improve access corridors to employment, health and learning centres including South Eveleigh, Carriageworks, RPA and education centres such as the University of Sydney and TAFE Eora.

4. Project development and alternatives

4.1 Planning for Redfern Station

Redfern Station has been subject to ongoing accessibility and user experience upgrades in recent years. Recent projects undertaken at Redfern Station include:

- Redfern Station Lift project (2014)
  - involved various works as part of the early TAP program works, including:
    - improved accessibility at Lawson Street (station entrance), including new access ramps to Redfern Station concourse level
    - a new lift connecting Redfern Station concourse to Platforms 6 and 7
    - extension of Platforms 6 and 7
    - reconfiguration of the pedestrian crossing and footpath at Lawson Street station entrance.
- Platform 6 and 7 reconstruction (ongoing)
  - involves the demolition and reconstruction of Platforms 6 and 7 to meet relevant Sydney Trains safety requirements and standards, and to mitigate hazards associated with the platform surface and structure.
- Redfern Station improvement works (2018)
  - involved a new station entrance on the corner of Gibbons and Lawson Streets and bike storage facility, replacing the old Gibbons Street entrance
  - provided improved customer movement through Redfern Station and interchange with Platforms 11 and 12
  - increased capacity to handle ongoing growth of patronage.

Redfern Station Lift project and Redfern Station improvement works have both been completed, with reconstruction of Platform 6 and 7 currently underway. However, as outlined in Chapter 3 above, ongoing accessibility and capacity constraints, together with future demand requirements, remain key justifications for proceeding with the Project. The development of the Project and alternatives considered are outlined further below.

4.2 Project planning and design process

4.2.1 Key stages and program

Development of the current preferred option for the Project has resulted from the ongoing planning and design process, including consultation with customers, the community and key stakeholders. The project alternatives discussed in Section 4.4 below build on previously considered concept designs, refined to consider both revised constructability and environmental constraints. In addition to the development and revision of designs by TfNSW, four of the designs were shortlisted through a multi criteria analysis and presented to the public for consultation and to inform the ongoing design development. From this, community group designed options were also developed. This is discussed further in Section 4.5.

4.2.2 Principles in project development

Preliminary design principles have been developed to guide the design of the Project. These principles will ensure that appropriate design quality is achieved for internal spaces and the public domain. The design principles will be described in the EIS and will consider the following aspects:

- functionality, accessibility and circulation – ensure that access between platforms and surrounding destinations is safe, quick, efficient and available to all members of the community, including those with accessibility issues such as people with a disability, limited mobility and parents/carers with prams

- customer information and wayfinding – ensure that movement around Redfern Station is made easy with clear signage, and that information about train services are readily available
- safety – ensure the safety of all customers and staff
- customer comfort and amenity – reduce overcrowding and provide for customer amenities
- urban design – an outcome that not only fulfils transport customer needs, but benefits the local area and its community by increasing precinct connectivity and amenity
- heritage – sensitive integration with and response to the heritage values of the station and surrounding precinct
- social and community values – consideration of the associations of the local Aboriginal community with the place and involvement of the community in general in the design process and outcome
- constructability in a live operating rail environment while minimising disruptions
- community feedback - ongoing evolution of the Project in response to community feedback
- environment and sustainability – integration of triple bottom line sustainability principles throughout all phases of the Project.

4.2.3 Process for integration of environment and sustainability in design

The Project has been designed with the consideration of the principles of ecologically sustainable development as outlined in the EP&A Regulation. These include:

a. the ***precautionary principle***, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
    i. careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment
    ii. an assessment of the risk-weighted consequences of various options.
b. ***inter-generational equity***, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations
c. ***conservation of biological diversity and ecological integrity***, that conservation of biological diversity and ecological integrity should be a fundamental consideration
d. ***improved valuation, pricing and incentive mechanisms***, that environmental factors should be included in the valuation of assets and services, such as:
    i. polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement
    ii. the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of waste
    iii. environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

A description of how the Project meets the principles of Ecologically Sustainable Development will be provided in the EIS.

The Project also aims to meet certain requirements outlined by the Infrastructure Sustainability Council of Australia (ISCA). The Project aims to receive an excellent ISCA As-built rating. This has been integrated throughout the design and will be considered further during the preparation of the EIS. In addition a Sustainability Management Plan will be prepared as part of the EIS.

4.3 Integration with other development

The Project has been designed to integrate with other approved and planned projects within the vicinity of Redfern Station, including South Eveleigh and Carriageworks. The Project would serve to improve connectivity to these precincts and provide an efficient transport solution for workers and visitors of these employment centres. Developments in the vicinity of the Project include (refer to Figure 1):

- South Eveleigh (formerly known as Australian Technology Park) (Mirvac - SSD 7317)
  - a business and technology centre primarily housing start-up hi-tech companies, especially biotech firms, and spin-offs from university research
  - approval was obtained in 2016 for the construction of three large buildings comprising of parking, retail, commercial, childcare, gym and community office uses along with extensive landscaping and public domain improvements throughout the precinct and extension and augmentation of physical infrastructure/utilities as required
  - works are continuing with Modification 16 to SSD 7317 lodged in March 2019
  - when complete, this development will result in an additional 15,000 workers within the precinct.
- Carriageworks
  - following redevelopment in 2007, this is now the largest multi-arts centre in Australia, housing numerous cultural and arts institutions and companies
  - regularly houses large events bringing in visitors from across Sydney.
- Sydney Metro Waterloo Station (Sydney Metro City and Southwest, SSI 15_7400)
  - a new metro underground station, located in Waterloo between Botany Road and Cope Street, Raglan Street and Wellington Street with an integrated mixed use development above (Waterloo Metro Quarter) that is subject to a separate combined SSP and SSD planning process
  - approval for Sydney Metro was obtained in January 2017 and construction is currently underway
  - the new Sydney Metro Waterloo Station is expected to open to the public in 2024.
- University of Sydney - Campus Improvement Program (2016 data)
  - 68 per-cent increase to its Camperdown-Darlington campus floor space by the end of 2020
  - accommodate a 21 per-cent increase in students on the campus as well as 4,000 units of student accommodation.
- RPA
  - expected increase in patient and research facilities.
- City of Sydney active transport improvements
  - Lawson Street separated cycleway and footpath improvements
  - Burren Street/Wilson Street separated cycleway and footpath improvements.
- Other transport related developments
  - More Trains, More Services Program
  - accessibility upgrades to Platforms 11 and 12.
- Various other residential and commercial developments:
  - 1 Lawson Square mixed use redevelopment
  - 60-78 Regent Street redevelopment

- 80-88 Regent Street redevelopment
- 90-102 Regent Street, Redfern
- Social housing, 11 Gibbons Street, Redfern
- The Regent Hotel, 56-58 Regent Street, Redfern
- Pemulwuy Student Accommodation project
- North Eveleigh affordable housing
- North Eveleigh West project.

4.4 Project alternatives considered

4.4.1 Overview

Throughout the design development phase, various options were developed with consideration of the following characteristics:

- Cross corridor connection or connection to eastern side only to:
  - cater for the short term patronage increase arising from the South Eveleigh development, and provide access to Redfern Station from the eastern side via Marian Street
  - cater for the precinct growth and extend the concourse from Marian Street to Platform 1, followed by a pedestrian walkway to Wilson Street, to allow access from the eastern and western sides of Redfern Station bypassing to the rear of properties on the western side of Little Eveleigh Street
  - cater for the broader precinct growth and extend the concourse from Marian Street to Little Eveleigh Street.
- Various concourse widths including:
  - a four metre wide concourse that would not cater for 2036 patronage demand, and would be replaced as part of future development at Redfern Station and North Eveleigh
  - a six metre wide concourse that would cater for patronage demand up to 2036 and beyond, have a higher aesthetic quality and would not preclude future development opportunities at Redfern Station and North Eveleigh.
- Various concourse entrances/ exits:
  - entrance at Little Eveleigh Street to the north west
  - entrance at Wilson Street to the north west
  - entrance at Marian Street to the south east
  - entrance at Cornwallis Street to the south east.

4.4.2 Options considered

In consideration of the characteristics identified in Section 4.4.1, and through the community consultation process, the following options listed in Table 4-1 were developed, including the community group designs.

Table 4-1 Options considered

Option	Description
Option 1 (refer to Figure 3)	• six metre wide long concourse between Marian Street and Little Eveleigh Street and upgrade of Little Eveleigh Street** • new entrance at Little Eveleigh Street • new entrance at Marian Street via stairs and lift • inclusion of a Family Accessible Toilet and toilet cubicles at Little Eveleigh Street • lifts to all platforms at new southern concourse.
Option 2 (refer to Figure 4)	• six metre wide long concourse between Marian Street and Platform 1 • new entrance at Wilson Street including stairs and accessible path to Platform 1 • new entrance at Marian Street via stairs and lift • lifts to all platforms at new southern concourse.
Option 3 (refer to Figure 5)	• modified from Option 2B with a six metre wide long concourse** between Marian Street and Platform 1 with a three metre aerial walkway to Wilson Street which runs parallel to the Railcorp boundary adjoining residential properties • new entrance at Wilson Street via an elevated walkway adjacent to residential properties • new entrance at Marian Street via stairs and lift • lifts to all platforms at new southern concourse.
Option 4 (refer to Figure 6)	• six metre wide long concourse** between Cornwallis Street (South Eveleigh) and Platform 1 with a three metre aerial walkway to Wilson Street • secondary bridge linking Platform 8-9 and Platform 10 • new entrance at Wilson Street via an elevated walkway adjacent to residential properties • new entrance at South Eveleigh via Cornwallis Street stairs • lifts to Platforms 1, 2-3, 4-5, 6-7 at new southern concourse • lifts to Platforms 8-9 & 10 at the secondary pedestrian bridge.
Option 5 (refer to Figure 7)	• community group design • three way concourse that connected North and South Eveleigh via two entrances on the station's south-eastern side each adjoining Marian and Cornwallis Streets • connecting to Wilson Street via a ground level pathway to the north-west.
Option 6 (refer to Figure 8) Also known as 'H design'	• community group design • concourse connecting to Platforms 1 to 10 (similar to Option 1 concourse) • an ungated cross corridor footbridge positioned further south, placing the station entrances in South Eveleigh and connecting directly straight across to Wilson Street • a linking unpaid concourse would then extend off the footbridge along the rail corridor connecting to the gated concourse.
Option 7	• four metre wide short concourse* between Marian Street and Platform 2-3 • one new entrance with a four metre wide stairway at Marian Street • lifts to Platforms 2-3, 4-5 and 6-7 at new southern concourse • lift to Platform 8-9 at existing northern concourse • no lift access to Platforms 1 or 10.
Option 8	• four metre wide short concourse* between Marian Street and Platform 2-3 • one new entrance with a four metre wide stairway at Marian Street • one new entrance adjacent the existing northern concourse at the corner of Lawson and Little Eveleigh Streets • lifts to Platforms 2-3, 4-5, 6-7 and 10 at new southern concourse • lifts to Platforms 1 and 8-9 at existing northern concourse.

Option	Description
Option 9	• four metre wide long concourse** between Marian Street and Platform 1 • new entrance at Wilson Street including stairs and accessible path to Platform 1 • new entrance at Marian Street via stairs and lift • lifts to Platforms 1, 2-3, 4-5, 6-7, and 10 at new southern concourse • lift to Platform 8-9 at existing northern concourse.
Option 10	• six metre wide short concourse between Marian Street and Platforms 2-3 • one new entrance with a four metre wide stairway at Marian Street • customer facilities at the entrance • one new entrance adjacent the existing northern concourse at the corner of Lawson and Little Eveleigh Streets • lifts to Platforms 2-3, 4-5, 6-7, 8-9, and 10 at new southern concourse • lift to Platform 1 at existing northern concourse.
Option 11	• modification to the 2B option with a straightened bridge alignment on the Platform 1 end • six metre wide long concourse between Marian Street and Platform 1 • new entrance at Wilson Street including stairs and accessible path to Platform 1 • new entrance at Marian Street via stairs and lift • lifts to all platforms at new southern concourse.
Option 12	• six metre wide long concourse** between Cornwallis Street (South Eveleigh) and Little Eveleigh Street • secondary pedestrian bridge linking Platform 8-9 and Platform 10 • new entrance at Little Eveleigh Street • new entrance at South Eveleigh via stairs • lifts to Platforms 1, 2-3, 4-5, 6-7 at new southern concourse • lifts to Platforms 8-9 & 10 at the secondary pedestrian bridge.

* provides for station platform access/egress from the eastern side of the rail corridor via Marian Street only.

** provides for full access between the eastern and western sides of the rail corridor.

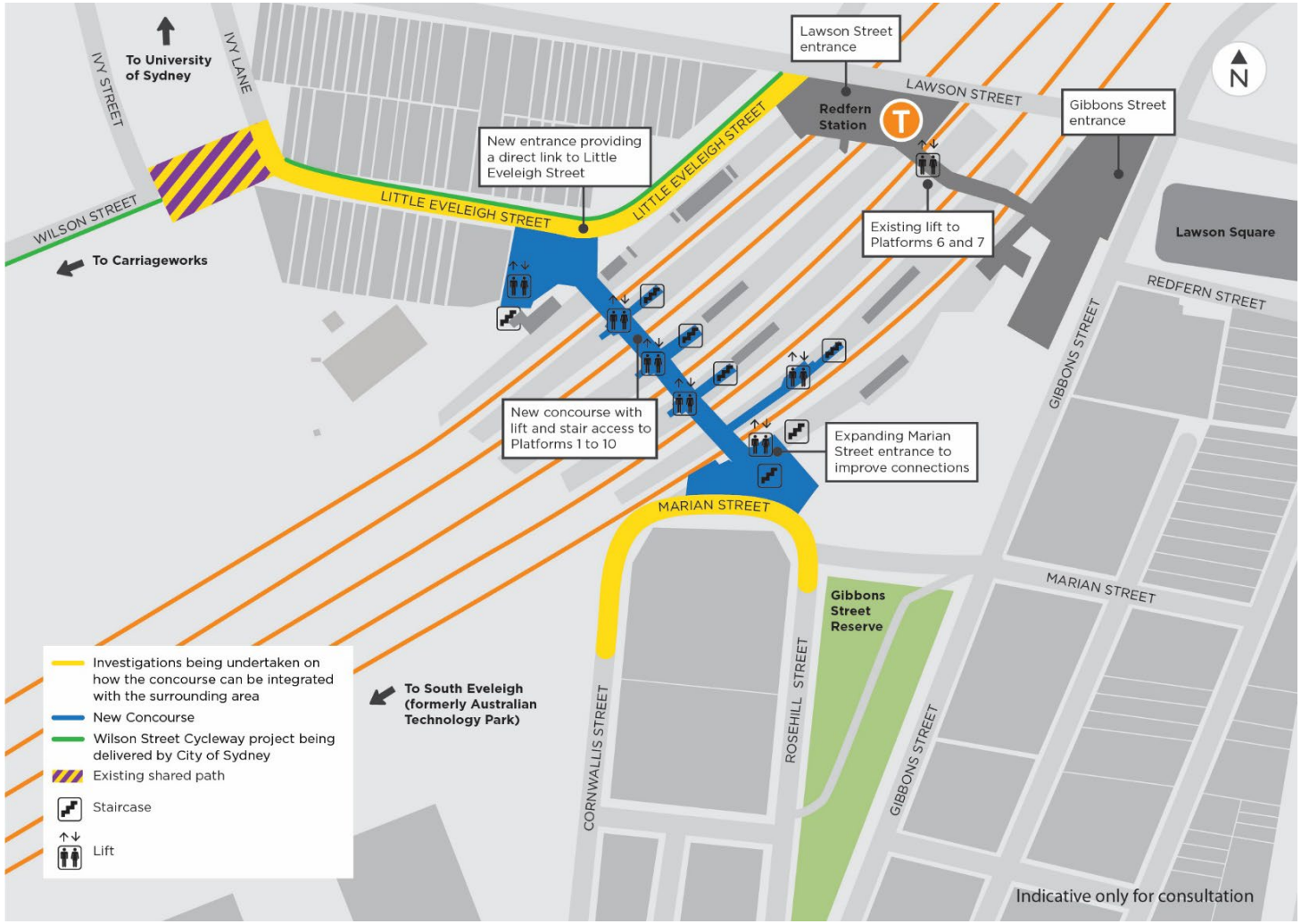

Figure 3 Option 1

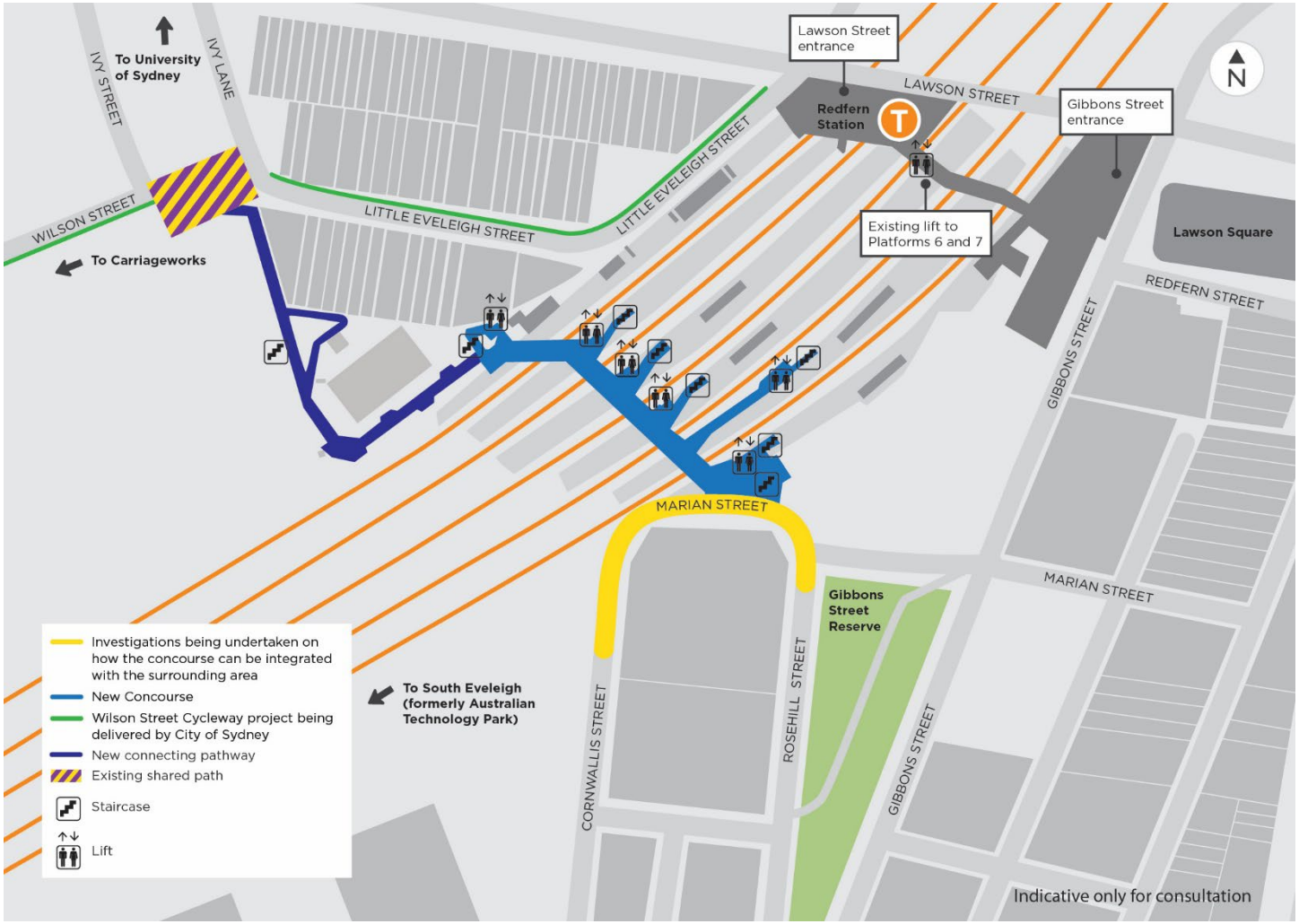

Figure 4 Option 2

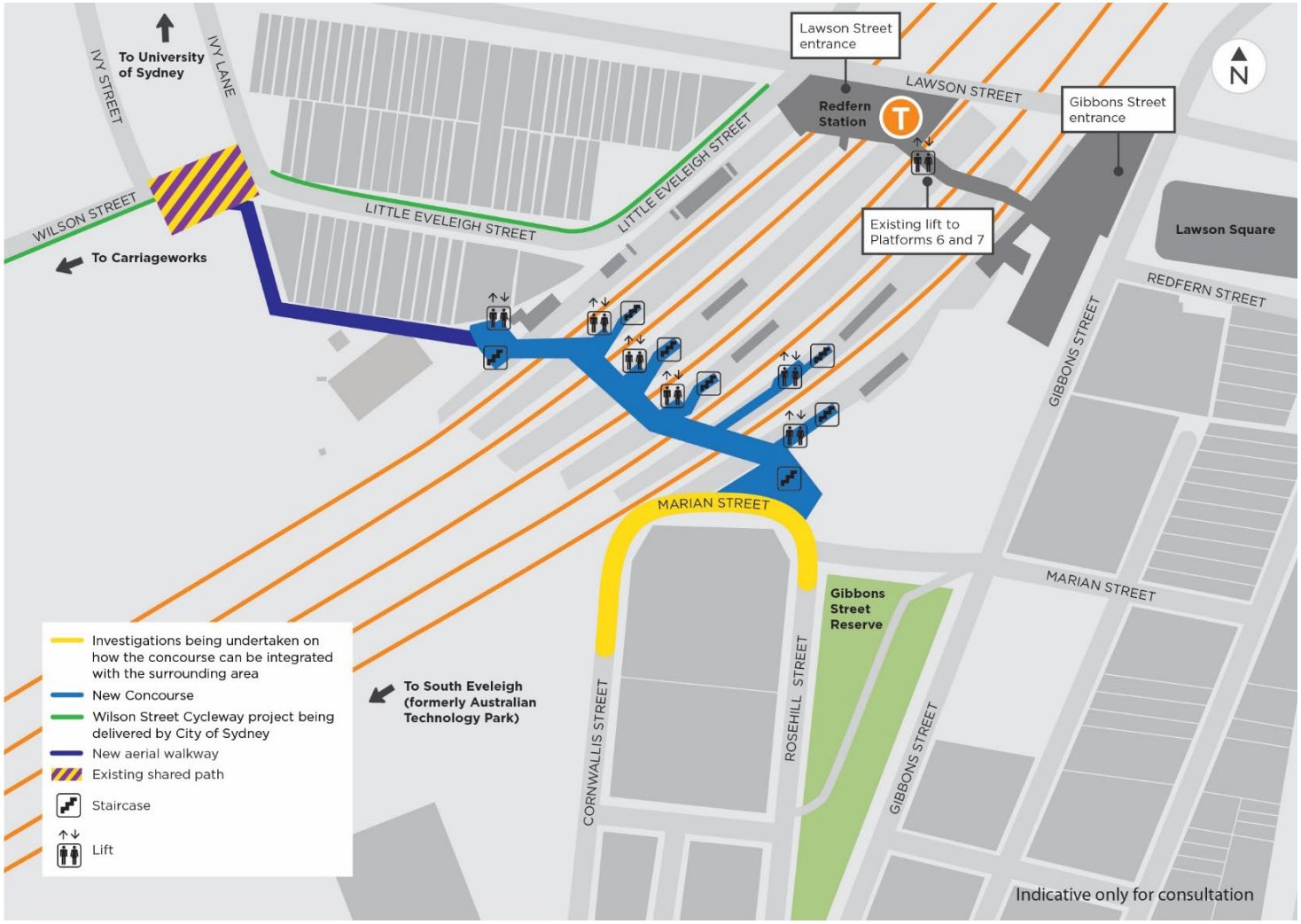

Figure 5 Option 3

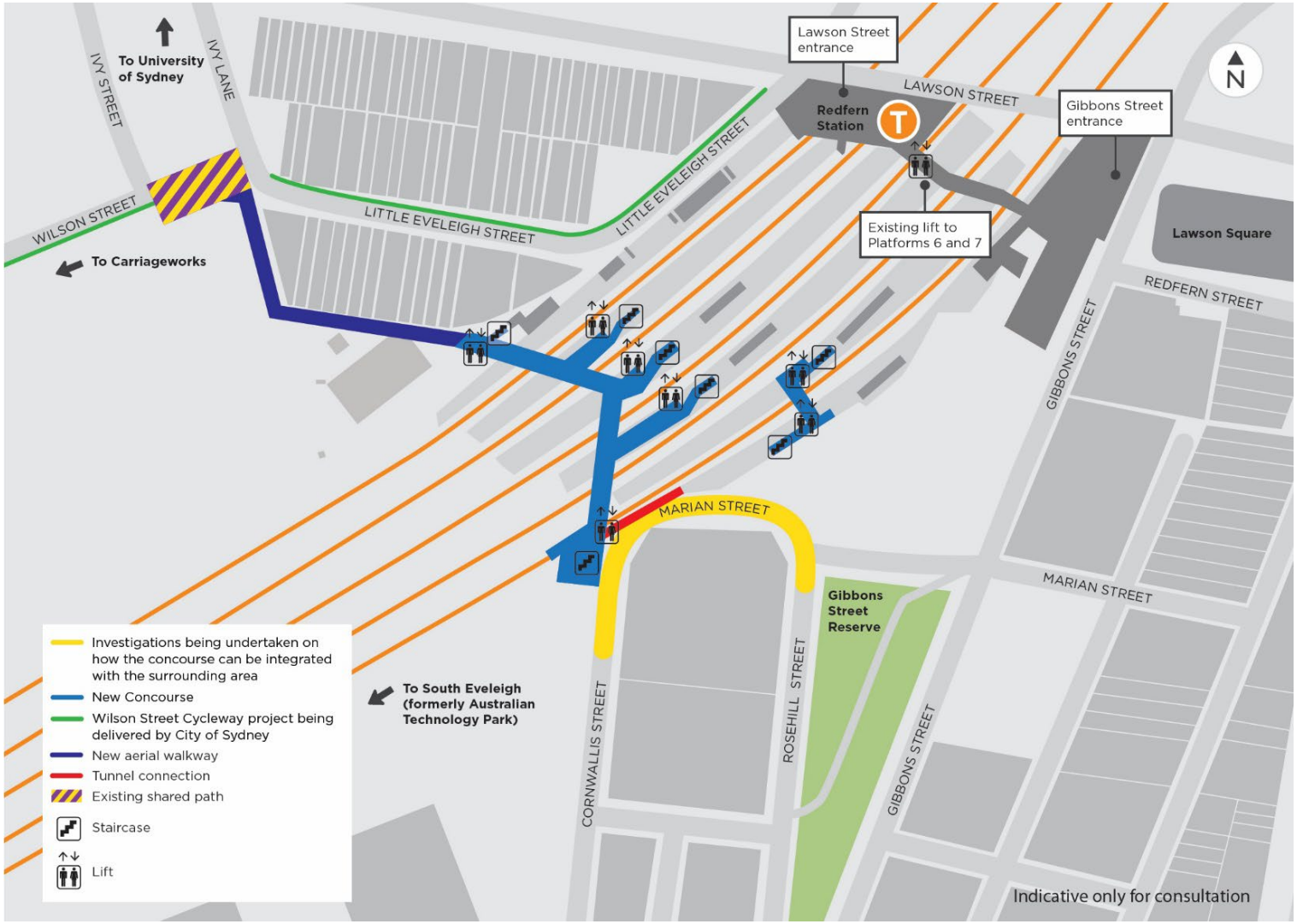

Figure 6 Option 4

Throughout the design development phase, each of the above options were considered. Designs that connected Platforms 1 – 10 to the southern side of the station to Marian Street only were not progressed as it was considered that they would not provide adequate access to locations north and west of the station, including areas where future precinct growth would be likely to occur. Design options with a narrower (four metre) concourse were also not progressed, as it was considered that they would not cater for levels of patronage demand expected by 2036.

Four design options (Options 1 - 4) were presented for community consultation in July and August 2019, all of which were considered to be feasible and which would meet the following criteria:

- improve Redfern Station accessibility (in accordance with DSAPT)
- improve pedestrian flow and reduce congestion to 2036 and beyond 2036
- enhance pedestrian connectivity to key local destinations
- protect and promote heritage and local culture.

4.5 Community group designs

During the July and August 2019 consultation process, two designs were developed and submitted by groups within the community for consideration. These designs were referred to by the community as 'H-design' (Figure 7) and 'Option 5' (Figure 8). Both designs aimed to provide an entrance on Cornwallis Street closer to South Eveleigh and on Wilson Street, as well as a concourse with separated paid and unpaid pathways. Whilst the designs would provide cross-corridor connections, they were not progressed due to the following issues and challenges:

H-design

- significantly increased customer journey distance from street to platforms, which could impact ease of access for customers with limited mobility or other accessibility requirements
- increased construction time and complexity, including the need to realign tracks and relocate elements of the existing rail infrastructure
- challenges to constructability such as limited space available to place the larger cranes that would be required to lift the extended concourse spans
- the bulk of the larger concourse would create a significantly greater visual impact to station heritage
- increased distance to bus connections on Gibbons Street
- increased distance for connection to Platforms 11 and 12.

Option 5

- visual impacts to residents of the Watertower building due to the concourse shape wrapping the corner-line of the building, effectively creating a wall to the rail corridor
- the bulk of the larger concourse and bridge structure would create a comparatively greater visual impact
- challenges to constructability, such as limited space available to place the larger cranes that would be required to lift the extended concourse spans
- a cycleway ramp structure appears to be illustrated in some of the plans provided between the concourse and the pathway connection to Wilson Street. To achieve compliant gradients, a significant ramp structure would be required, and would reach around 90 metres in length and approximately 4.5 metres in height. To complete a cycle route along the concourse, a second ramp would also be required on the concourse's other side. This cycleway configuration would be complex, and the changing gradients and additional ramps would also be unsuitable for those with accessibility needs
- more complex wayfinding with increased number of decision points and areas of pedestrian-cyclist cross-flow on the concourse could lead to congestion or collisions.

Figure 7 'H-design' received as feedback during community consultation for the Project, July-August 2019

Figure 8 'Option 5' received as feedback during community consultation for the Project, July-August 2019

4.6 Justification for preferred project

Option 1 was selected as the preferred option for the Project for the following reasons:

- it was the preferred option by customers during both consultation periods (refer to Chapter 6)
- it has the shortest and most direct journey from station platforms to streets
- the straight walkway design with clear wayfinding makes it easy for customers to navigate and is preferred by customers with accessibility needs
- customers perceived that this option provides comparatively better personal safety
- the design can be future-proofed to integrate with potential developments in the future
- it provides separation of lifts, stairs and ticket gates on the concourse reduces congestion and improves safety.

The preferred Project is described further in Chapter 5.

5. Project description

5.1 Overview and key components

The Project involves the upgrade of Redfern Station through the construction of a new concourse at the southern end of the station platforms and to the south of the existing Lawson Street concourse providing both lift and stair access to Platforms 1-10. The new concourse would extend between Marian and Little Eveleigh Streets and include associated upgrades of Little Eveleigh Street.

The Project forms part of the TAP with the objective of providing a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

All project components described are subject to further design, and changes or clarifications may be made during the ongoing design development and the ongoing consultation process with the community and key stakeholders. The indicative Project area (i.e. the area within which the construction and operation of the Project would be contained) is illustrated on Figure 9.

The key Project components are shown on Figure 10 and would potentially include:

- a six metre wide concourse between Little Eveleigh Street and Marian Street
- new stair and lift access to Platforms 1 to 10
- a new station entrance at Marian Street including station services, customer amenities, lift and stairs
- a new station entrance at Little Eveleigh Street including station services and customer amenities
- upgrade of Little Eveleigh Street to a shared zone:
  - safety improvements for vehicle, cyclist and pedestrian interaction[2]
  - potential streetscape improvements such as lighting, drainage and pavements
  - potential kiss and ride zone
  - potential utility adjustments
  - alterations to street parking arrangements and existing bus and car drop off/pick up areas.
- upgrade of Marian/Cornwallis/Rosehill Street area
  - potential improvements for vehicle, cyclists and pedestrian interaction
  - potential improvement to streetscape such as lighting, landscaping, drainage and pavements
  - potential kiss and ride zone
  - potential changes to street parking arrangements.

Other features which may form part of the Project include:

- relocated on-street residential car spaces within existing road reserve or TfNSW owned land at the end of Little Eveleigh Street
- potential works to Ivy Street and Ivy Lane
- potential repurposing, relocation and minor works to platform buildings
- platform resurfacing and drainage alterations
- installation of operational station infrastructure
- temporary construction compounds

[2] City of Sydney Council have already identified the need for these safety improvements and have documented this need in the Council Master plan

- service relocations and upgrades including:
  - relocation of overhead wiring structures
  - high voltage cable relocation and upgrade
  - installation of a new rail signal structure.

Some alterations to utilities and power would be undertaken during early works and would not form part of the Project. These works would be subject to a separate environmental assessment and approval.

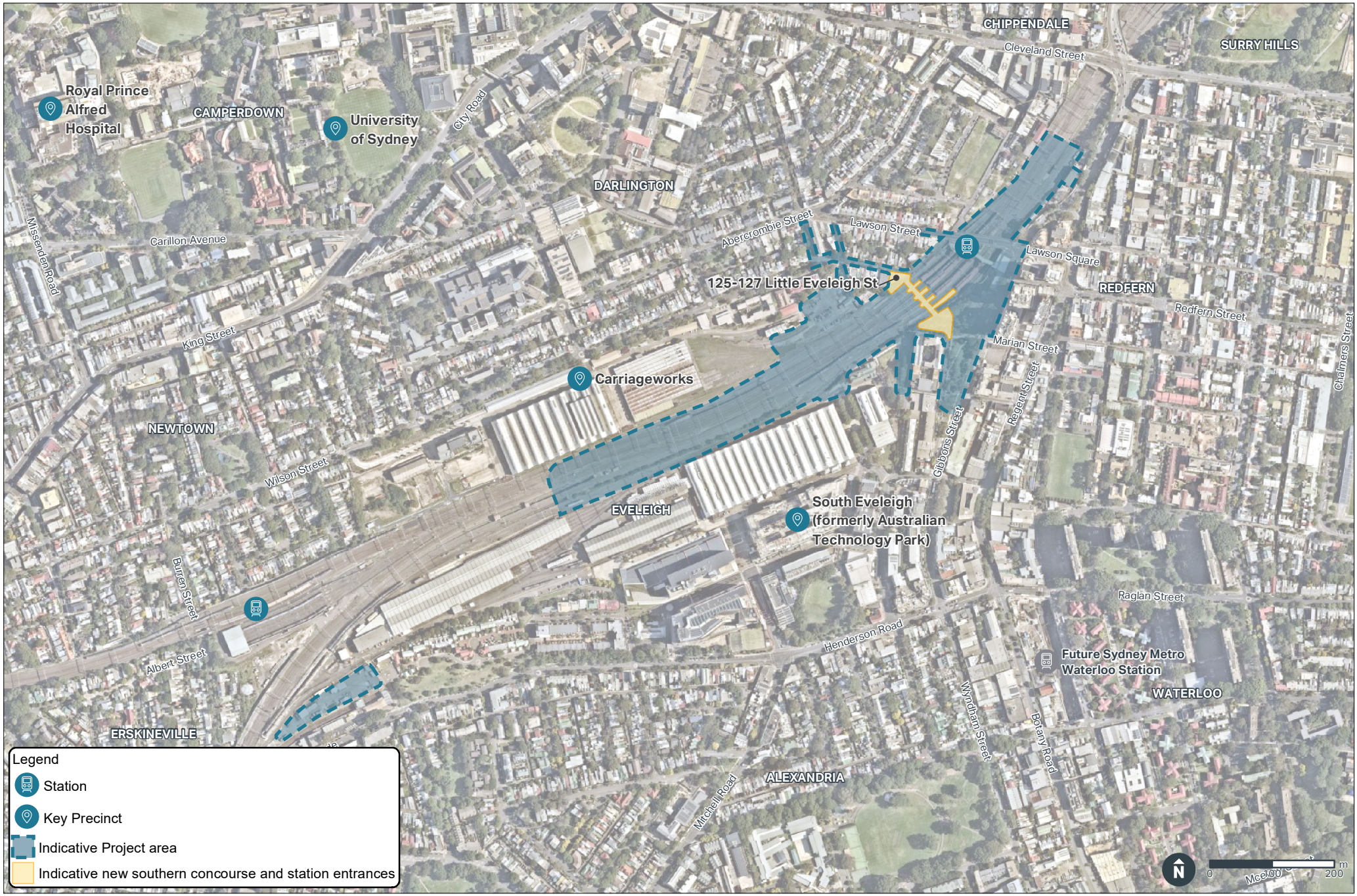

FIGURE 9 - PROJECT AREA OVERVIEW

Source: Imagery © Nearmap, 2019.

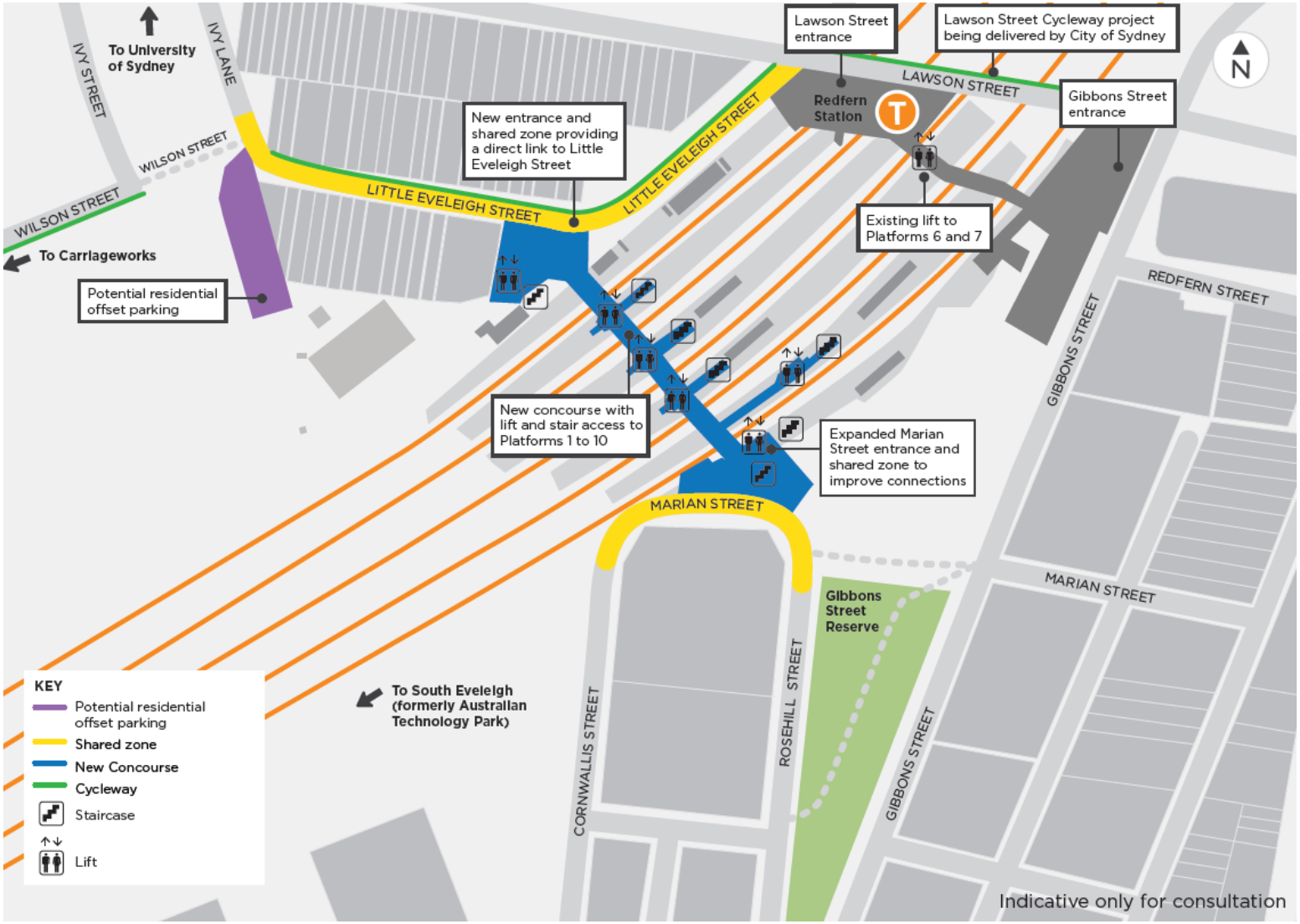

Figure 10 Preferred Project overview

5.2 Construction of the Project

5.2.1 Description of construction activities

An indicative outline of the proposed construction activities is provided in Table 5-1. The construction activities are based on the concept design and the proposed construction program as outlined in Section 5.2.4.

Table 5-1 Indicative construction activities

Stage	Activities
Site establishment and enabling works	• modifications to signals/communications routes • signal relocations on platform • ancillary facility establishment and grading works • establishment of construction compounds • high voltage power upgrade(s).
Building modification works	• modification of 125 -127 Little Eveleigh Street (currently owned by TfNSW).
Overhead wiring works	• overhead wiring adjustment • overhead wiring structure works.
Concourse works	• concrete piling/excavations • foundations and footings • installation of deck slab • fit out of lifts to above ground platforms • construction of stairs to Platforms 1-10 • construction of concourse walls and canopy • architectural finishing works.
Station entrance works	• construction and fit out of the new Little Eveleigh Street station entrance • construction and fit out of Marian Street station entrance • architectural finishing works.
Road works	• works to Marian/Cornwallis/Rosehill Streets and Little Eveleigh Street to facilitate safe access to and from the concourse • potential works to Ivy Street and Ivy Lane.

These works would be generally undertaken during standard construction hours as defined in the *Interim Construction Noise Guideline* (DECC, 2009) and the *TfNSW Construction Noise and Vibration Strategy 2018* as:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 1 pm
- no work on Sundays or public holidays.

Work outside of the above hours may be required in some cases for the safety of workers and to minimise disruptions to customers, pedestrians, motorists and nearby sensitive receivers. Some of the works would also need to be undertaken during scheduled rail possession periods (when trains are not running) to minimise disruption to rail operations and risk to rail worker safety. Examples of works that would be required in possessions include overhead wiring works, concourse and lift installation and some work on platforms. Some of these works may also be required to be undertaken outside standard construction hours.

5.2.2 Construction plant and equipment

Typical plant and equipment required for the Project may include:

- light vehicles
- trucks
- excavators
- hand tools
- cranes
- piling rigs
- scissor lifts
- road rail vehicles
- hydraulic jacks
- telehandlers
- vacuum sucker truck
- site office modules
- generators
- temporary hoarding
- concrete pumps
- elevated work platforms
- mobile construction lighting
- mobile drilling equipment
- power tools
- welding tools.

5.2.3 Construction workforce

A typical construction workforce would consist of approximately 110 workers, including management, design and construction workers.

5.2.4 Construction program

An indicative program of works for the Project is provided in Table 5-2. The construction program is anticipated to occur over an approximate period of 18 months which is currently programmed to commence at the end of 2020 and continue through to mid-2022 (this may be subject to change based on planning approval, design and contractor procurement timing and construction methodology).

Table 5-2 Indicative program of works

Construction activity	Month																	
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18
Site establishment and enabling																		
Building modification works																		
Overhead wiring relocations / adjustments																		
Concourse and station entrance works																		
Roadworks																		

5.3 Construction laydown areas

Three potential construction compound/laydown areas are being considered for the construction of the Project as outlined below. The location of these areas is shown on Figure 11. These locations would be considered further during detailed construction planning and confirmed in the EIS.

Potential ancillary facility 1

Eveleigh Maintenance Centre would be utilised as an overflow and secondary site office for the Project. This would include the construction of several site sheds and car parking facilities.

Potential ancillary facility 2

This area is currently owned by Sydney Trains and would be partly utilised as a construction laydown area. This laydown area would be accessed from either Carriageworks Way or Little Eveleigh Street and would provide construction parking facilities and rail corridor access. It is anticipated that some components of the concourse would be assembled here prior to installation within the rail corridor.

Potential ancillary facility 3

Part of Gibbons Street Reserve would be used as a laydown area for construction equipment and infrastructure and would be accessed from Gibbons Street. Some works are likely to be required to construct a level work area.

Following completion of works at Redfern Station, the Gibbons Street Reserve would be returned to passive recreational use for the community in consultation with City of Sydney Council.

The existing Sydney Trains carpark on Marian Street would be utilised as site offices and an administration centre for the Project. This would include the erection of several site sheds and car parking facilities. The carpark is currently utilised by Sydney Trains. The Project would also utilise a storage area under the existing carpark on Marian Street for the storage of construction equipment and materials.

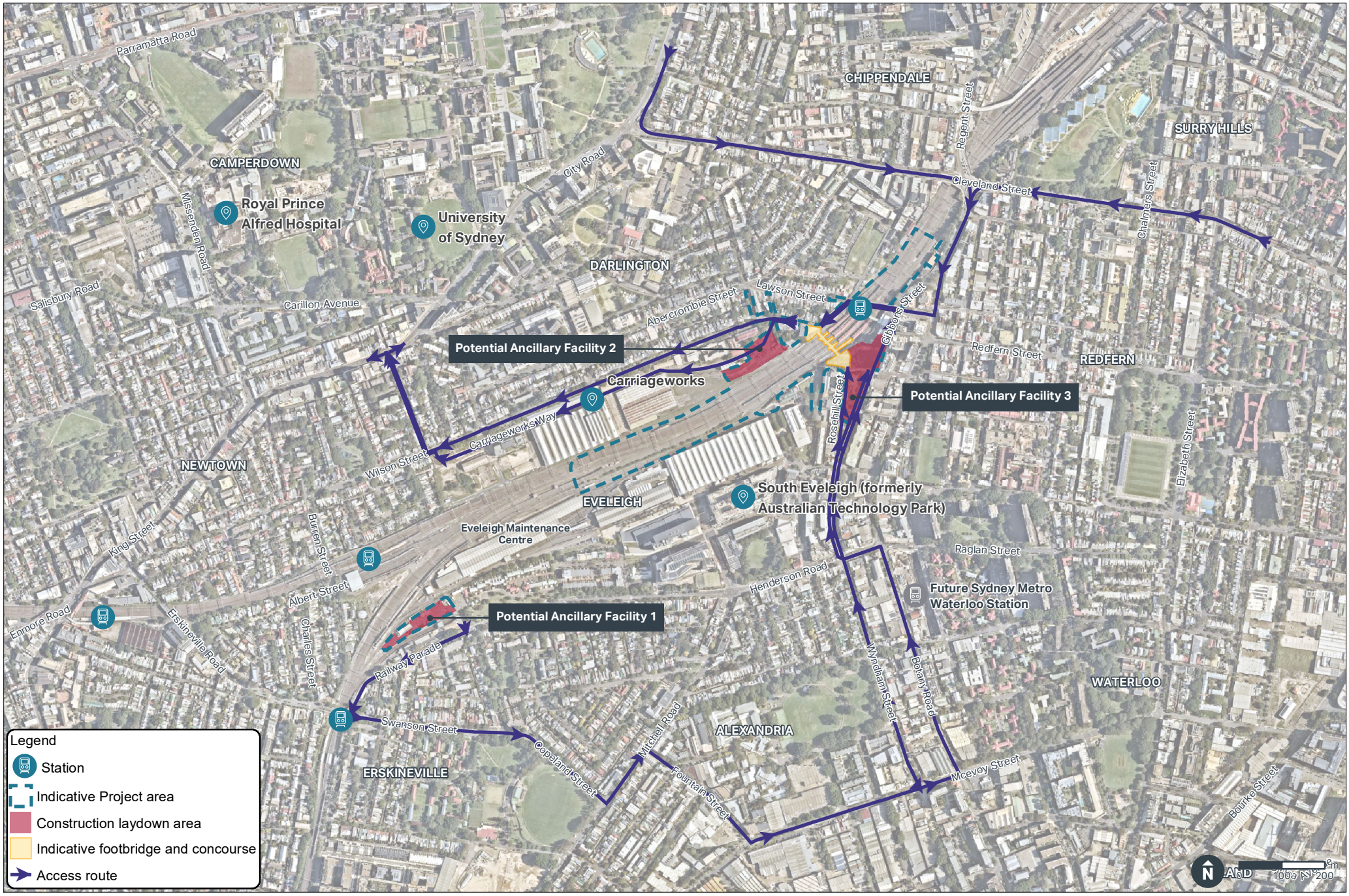

FIGURE 11 - ANCILLARY INFRASTRUCTURE

Source: Imagery © Nearmap, 2019.

5.4 Operation of the Project

Following construction of the Project, Redfern Station would continue to operate as a major transportation hub with trains arriving and departing throughout the day and night. Key operational components of the Project directly related to customer experience include the following elements:

- covered concourse
- six lifts and stairways providing access to Platforms 1-10
- family accessible toilets and public toilets
- concourse indicator screens
- Opal ticket gates and ticket machines
- audio frequency induction hearing loops
- Little Eveleigh Street station entrance
- Marian Street station entrance
- improved safety within the road network surrounding the station entrances.

During operation, it is anticipated that ongoing maintenance would be required for key operational components. This would be undertaken in line with standard maintenance and construction work policies. Estimated pedestrian numbers using the new concourse are likely to be approximately 100,000 per day by 2036 including exit/entry, transfers and cross corridor usage.

6. Engagement with community and other stakeholders

6.1 Engagement objectives

Stakeholder and community consultation undertaken for the Project has been an integral part of informing and scoping the investigations for the EIS.

On 27 February 2019, the NSW Government announced that Redfern Station would have an accessibility upgrade as part of the TAP. This announcement included a new pedestrian concourse at the southern end of the station that would provide easy access to Platforms 1 – 10. This would result in better connectivity to surrounding areas including key destinations such as South Eveleigh, Carriageworks, health and education centres.

Engagement with the community and stakeholders has been ongoing for a number of years regarding potential opportunities to upgrade Redfern Station. The Project was announced in February 2019. In May 2019 consultation began with the local community and stakeholders and will continue during preparation of the EIS.

Key stakeholders for the Project include (but are not necessarily limited to):

- State agencies (e.g. Sydney Trains, Department of Planning, Industry and Environment, Roads and Maritime Services (now part of Transport for NSW), the Office of Environment and Heritage (now the Environment, Energy and Safety Group (EES)), NSW Heritage (part of the Community Engagement Division of the Department of Premier and Cabinet), Environment Protection Authority, Department of Primary Industries Office of Water), NSW Treasury
- City of Sydney Council
- transport customers (existing and potential)
- public utilities, and business and industry groups near the Project
- Sydney Local Health District
- NSW Police
- The University of Sydney
- TAFE Eora
- Carriageworks
- Metropolitan Local Aboriginal Land Council
- Aboriginal and Torres Strait Islander community representatives
- local residents, businesses and property owners
- interested community groups
- the broader community.

The communication and engagement objectives are to:

- communicate the rationale for the Project and the broader network benefits it would deliver, including how it complements the NSW Government's planned Precinct development and plans to increase Sydney's rail capacity and accessibility
- communicate the Project concept and timing
- build community and key stakeholder relationships
- provide information about the Project and the planning approvals process, and encourage community participation
- raise awareness of the various components of the Project and the specialist environmental investigations

- ensure that the directly impacted community is aware of the Project and consulted where appropriate
- provide opportunities for stakeholders and the community to express their views about the Project
- understand and access valuable local knowledge from the community and stakeholders
- listen and record feedback from community engagement activities to understand community values and concerns and consider these in concept development and the EIS preparation
- ensure a comprehensive and transparent approach.

The Community and Stakeholder Engagement Program that was developed to proactively engage with local communities, key stakeholders and government agencies is summarised below.

6.2 Community consultation

Transport for NSW has undertaken a range of consultation activities with the local community across two consultation periods.

Consultation activities undertaken in the May-June 2019 consultation period included:

- door knocking residents of Little Eveleigh Street on Wednesday 15 and Thursday 16 May to provide information about the Project
- letters sent to owners and residents of Little Eveleigh Street with information about the Project and offer of individual meetings
- placement of project consultation signage at each of the station entrances and at the kiss and ride area on Little Eveleigh Street
- distribution of around 15,900 newsletters to businesses and residents within 1km of Redfern Station, south of Cleveland Street
- distribution of around 8,000 newsletters to customers at the station during peak periods periodically throughout May 2019
- webpage[3] with project information including FAQs, newsletter and link to an online survey[4]
- three community drop-in information sessions held at Redfern Station for community members to meet and speak with the Project team. These sessions were held:
  - 4pm to 7pm Tuesday 21 May
  - 8am to 11am Saturday 25 May
  - 4pm to 7pm Wednesday 29 May.
- meetings with residents on Marian Street and Little Eveleigh Street
- Community Infoline number[5] and email address[6].

Consultation activities undertaken in the July-August 2019 consultation period included:

- a stakeholder forum on July 4 to introduce the four options and encourage discussion between stakeholders on the comparative benefits and challenges of each
- door knocking residents of Little Eveleigh Street on 24 July to provide updated information about the Project and the four options, with letter and offer of individual meetings
- placement of project consultation signage at each of the station entrances and at the kiss and ride area on Little Eveleigh Street

[3] https://www.transport.nsw.gov.au/projects/current-projects/redfern-station-upgrade-new-southern-concourse
[4] https://yoursay.transport.nsw.gov.au/RedfernNSC
[5] 1800 684 490
[6] projects@transport.nsw.gov.au

- distribution of around 20,150 newsletters to businesses and residents within 1km of Redfern Station, including East Chippendale
- distribution of around 5,500 newsletters to customers at the station across three weekday evening peak periods
- individual meetings with stakeholder, community and resident groups
- webpage with project information including FAQs, newsletter, stakeholder forum presentation and link to an online survey regarding the options
- community Infoline number and email address.

6.3 Non-government stakeholder consultation

During the preparation of this Scoping Report, meetings were held with key stakeholders including Aboriginal groups, stakeholder organisations, community representative groups, major local business, employer and educational organisations, and key local destination organisations.

Representatives from local Aboriginal organisations were invited to a specific briefing and workshop held on Wednesday 5 June 2019.

Non-government stakeholder groups including those listed above were also invited to a community stakeholder forum held on Thursday 4 July 2019 to introduce the four options and encourage discussion between stakeholders on the comparative benefits and challenges of each.

In addition, the Project team presented the four options to the Accessible Transport Advisory Committee which includes representatives from a number of different disability support organisations, as well as the City of Sydney's Inclusion Advisory Panel on Wednesday 31 July 2019.

6.4 Government stakeholder consultation

TfNSW has undertaken government agency and council consultation to date ensuring that:

- relevant government authorities are involved in the strategic planning process
- relevant agencies are consulted on planning approval requirements and the environmental assessment process.

Meetings have been held with:

- NSW Heritage
- Department of Planning, Industry and Environment
- Sydney Local Health District and RPA
- NSW Member for Newtown
- NSW Police
- City of Sydney Council.

6.5 Key themes

6.5.1 Community

Feedback was invited from the community and stakeholders during the consultation activities which were held from Wednesday 15 May to Sunday 2 June 2019 and from Thursday 4 July to Saturday 31 August 2019.

Submissions received during the May-June consultation period included:

- 119 online survey responses
- 38 feedback forms received during the three community drop-in information sessions
- 51 submissions received via the project email address (projects@transport.nsw.gov.au).

Key issues raised during the May to June consultation period included:

- support for improving accessibility at Redfern Station
- support for a new southern concourse and the proposed improvements
- other options explored and considered, including entrance locations
- lift access to Platforms 11 and 12
- potential for cross-corridor unpaid access
- heritage impacts
- traffic and pedestrian management on Marian/Cornwallis Streets
- traffic and pedestrian management on Little Eveleigh Street
- resident amenity on Little Eveleigh Street
- construction impacts.

During the July to August period, further feedback received included:

- 45 email responses
- 223 survey responses
- some verbal feedback via the Project Infoline and in meetings.

During this period, support was shown for each of the options to varying levels, with overall support widely shown for a new southern concourse, improving accessibility and reducing congestion within the station. In general, out of the four options, Option 1 received the highest levels of stated support, as well as support based on seven different criteria as self-identified by survey respondents.

Other key themes of feedback included:

- traffic, pedestrians, safety and bus connections
- heritage
- concourse width, cycling routes and unpaid access
- urban design, local character and visual amenity
- accessibility upgrades to Platforms 11 and 12
- resident amenity including parking, noise and privacy.

6.5.2 Non-government stakeholders

Key issues raised during consultation with non-state government stakeholders included:

- general support for improving accessibility and relieving congestion at Redfern Station
- interface of station concourses with future precinct development
- request to consider options for bicycle access across concourse and connections with City of Sydney's bicycle routes
- engagement with the Aboriginal and Torres Strait Islander communities, including opportunities for workforce participation
- traffic management and crowding on Little Eveleigh Street
- traffic and pedestrian management on Marian/Cornwallis Streets
- provision of lift access to Platforms 11 and 12
- opportunities for ongoing community feedback into the design process.

6.5.3 Government stakeholders

Key items raised during consultation with government stakeholders included:

- support for improving accessibility at Redfern Station
- provision of lift access to Platforms 11 and 12
- justification for the Project in regard to heritage impacts will need to be demonstrated
- request to consider how heritage items could be retained and protected
- requirements around providing heritage benefits to offset heritage impacts
- request to assess the presence of microbats in existing structures
- traffic and pedestrian management on Marian/Cornwallis Streets
- traffic and pedestrian management on Little Eveleigh Street
- consideration of crime prevention principles
- requests to consider community group options
- request to consider options to allow unpaid access to the new concourse.

6.6 Incorporation of feedback into ongoing development of the Project

A Consultation Report[7] has been prepared with further details and analysis of community and stakeholder feedback. This feedback and the issues raised to date, together with issues put forward during ongoing consultation during preparation of the EIS, will be considered in the ongoing development of the Project. Information on the ongoing consultation and how it has influenced design and development of the Project will be presented in the EIS.

As part of the consultation process, the community and community groups were also asked how they would like to be consulted during the next stages of the Project. The majority of these responses suggested that newsletter and email updates, followed by other online channels are the primary methods that the general community wish to be used for consultation. Community groups requested opportunities for community input into the design process through forums such as workshops.

Community and stakeholder consultation will continue throughout the ongoing process of development of the Project, and there will be further opportunities for the community and stakeholders to provide feedback on the Project as the design evolves.

As detailed above, feedback received from a number of respondents during the consultation undertaken to date has recommended that the scope of the project include the provision of lift access to the existing underground platforms (11 and 12) that service the Eastern Suburbs Railway. It is noted that the preferred option detailed in Section 5.1 does not include the provision of lifts to these platforms as part of the current project scope. Following support regarding providing lift access to Platforms 11 and 12 Transport for NSW has, as a separate exercise, begun preliminary investigations to help identify accessibility improvements to these platforms.

6.7 Public exhibition of Environmental Impact Statement

In accordance with the requirements of Schedule 1 of the EP&A Act, the minimum statutory period for public exhibition of the EIS is 28 days. Advertisements would be placed in newspapers to advise of the public exhibition and where the EIS can be viewed, as well as details on proposed community consultation activities, information sessions and how to make a submission.

Consultation activities during the public exhibition of the EIS would include:

- EIS summary document

[7] https://www.transport.nsw.gov.au/projects/current-projects/redfern-station-upgrade-new-southern-concourse

- media releases
- community information and feedback drop in sessions
- doorknocks
- newsletter letterbox drop
- project website
- newspaper advertising
- local council displays
- stakeholder meetings
- Aboriginal engagement
- local business engagement
- government stakeholder engagement.

A community and stakeholder engagement plan would updated to reflect any additional consultation requirements in the SEARs and communicated to community and stakeholders.

6.8 Consultation during construction

Should the Project be approved, the Project team would continue to consult with the community and key stakeholders during construction. In general, this consultation would involve:

- development and implementation of a community engagement plan
- ongoing consultation with key stakeholders, local councils and other government agencies
- provision of regular updates to the nearby community
- development and implementation of a community complaints and response management system
- project website that will have up to date information available.

7. Preliminary environmental risk analysis

7.1 Purpose

The purpose of this preliminary environmental risk analysis is to identify and categorise the potential environmental and community issues to be considered in this report and in the EIS based on a risk rating for each issue, in accordance with the *Department of Planning and Environment's classifications from the Draft Scoping an Environmental Impact Statement Guideline – June 2017*. This guideline sets out a methodology which provides a consistent framework for identifying environmental, social and economic matters which are likely to be impacted by the Project and the activities which are likely to cause those impacts.

7.2 Methodology

An environmental risk analysis was undertaken in accordance with the principles of the Australian and New Zealand standard *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines*.

This involved ranking the risks by identifying the consequence of the impact and the likelihood of each impact occurring. Risk ratings were considered at the broader issue level only. The EIS would identify project specific mitigation measures and a residual (post mitigation) risk rating.

The definitions of the consequence levels used for the assessment are provided in Table 7-1, and the definitions of likelihood are provided in Table 7-2. The resulting risk matrix is provided in Table 7-3.

This risk analysis was used to categorise issues as 'key' or 'other.'

Table 7-1 Risk analysis consequence definitions

Consequence	Description
Major	• long term detrimental impacts on the environment or population • large impact area • reportable incident to external agency • may result in large fines and prosecution; operational constraints • high level of community concern.
Moderate	• substantial temporary or minor long term detrimental impacts on the environment or population • moderate impact area • reportable incident to external agency • action required by reportable agency • community interested.
Minor	• minor impacts on the environment or population • small impact area • no operational constraints • some local community interest.

Table 7-2 Risk analysis likelihood definitions

Likelihood	Description
Unlikely	Unlikely to happen
Possible	Could happen and has occurred elsewhere
Likely	Could easily happen and would probably occur

Table 7-3 Risk Matrix

		Consequence		
		Major	Moderate	Minor
Likelihood	Unlikely	Medium	Medium	Low
	Possible	High	Medium	Low
	Likely	High	High	Medium

7.3 Environmental risk analysis

Using the framework described above, a preliminary environmental risk analysis for the Project is presented in **Table 7-4**. The risk analysis identifies an initial risk rating for each of the environmental issues without mitigation and provides a description of how the risk ratings were derived. Further information regarding the existing environment and potential impacts associated with each environmental issue are provided in Chapter 8. Appropriate mitigation measures to manage these potential impacts would be identified as part of the EIS.

This risk analysis will be re-examined as part of EIS to consider additional information available at that time, and to consider the effectiveness of mitigation measures.

Table 7-4 **Preliminary environmental risk assessment**

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Traffic, transport and access				
Potential construction impacts include: • reduced performance of the surrounding road network due to increased heavy vehicle traffic • temporary road closures • reduced pedestrian and cyclist access • loss of parking spaces • impact on customer travel during works on platforms • traffic, pedestrian and cyclist safety. Potential operational impacts include: • loss or relocation of parking spaces • changes to local roads and existing access • altered pedestrian and cyclist access arrangements.	Major	Likely	High	Construction of the Project would result in temporary changes to access and connectivity for Redfern Station and may affect travel times during scheduled possessions. The Project would require the use of heavy vehicles to and from the site which may increase traffic on local roads. The Project would also require temporary road closures and diversions during construction. Operation of the Project would improve access and connectivity to Redfern Station. Customers would benefit from improved access to platforms via an additional access stairway and lift to each platform. The Project would also provide an improved pedestrian connection between Marian and Little Eveleigh Streets and improving wider precinct pedestrian permeability by reducing the severance effects of the rail corridor. The Project would result in changes to parking and traffic arrangements on Little Eveleigh and Marian/Cornwallis/Rosehill Streets.

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Noise and vibration				
Potential construction impacts include: • airborne noise impacts to sensitive receivers in surrounding areas from construction works • construction traffic results in a perceptible increase in traffic noise (greater than 2 dB) • vibration from construction works exceeding human comfort or damage levels. Potential operational impacts include: • noise impacts from upgraded station facilities • noise impacts arising from changes to pedestrian and traffic arrangements on Little Eveleigh Street.	Major	Likely	High	Construction of the Project would result in noise impacts which may exceed the relevant noise management levels. Some works would be required outside of standard construction hours. Operational impacts of the Project may include changes to the local noise environment arising from changes to the pedestrian and traffic arrangements on Little Eveleigh Street.
Aboriginal heritage				
Potential impacts include: • direct impacts on known Aboriginal heritage items • direct impacts on unidentified Aboriginal heritage items.	Moderate	Unlikely	Medium	The Project is not anticipated to impact on previously recorded Aboriginal heritage sites. Aboriginal heritage would not be impacted during the operation of the Project as ground disturbance and excavation would be restricted to the construction phase, however, the discovery of unexpected finds would be reportable. The original inhabitants of the area around Redfern Station are the Gadigal people who continue to practice ancient cultural traditions and care for the land. Redfern Station has historically served as an important transport connector between this local community and Aboriginal people from other areas of NSW. Early engagement with the Metropolitan Aboriginal Land Council has been undertaken and will continue, together with engagement of the local Redfern Aboriginal community, during preparation of the EIS.

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Non Aboriginal heritage				
Potential impacts include: • undertaking construction within the curtilage of State listed and section 170 listed heritage items • undertaking partial demolition and construction within a local heritage conservation area • carrying out works that may cause vibration impacts to heritage listed items • conducting work that may have an impact on areas of potential archaeological significance • conducting work or establishing site compounds that may have an impact on adjacent heritage items or conservation areas. • direct impacts on unidentified Non Aboriginal heritage.	Major	Likely	High	Work for the Project would occur directly within the curtilage of State significant heritage items and within the Darlington Heritage Conservation Area. The Project would result in the modification of a building in the Darlington Heritage Conservation Area. These impacts are likely to be significant. Early engagement has been undertaken with NSW Heritage, Sydney Trains Heritage and City of Sydney Council, and will continue during the preparation of the EIS. The Project would enable Redfern Station to continue to be used for its original purpose in the contemporary context and well into the future which is key to preserving its heritage significance as an operating railway station.
Social and business impacts				
Potential impacts include: • temporary impacts on community lifestyle • temporary quality of life and health and wellbeing impacts associated with amenity impacts • potential loss of revenue and training opportunities for local people and businesses if they are not engaged with the Project and provided opportunities to be involved in construction work • temporary reduced access to social infrastructure.	Major	Likely	High	The Project would result in temporary impacts to community infrastructure during construction through changes to amenity and access. Construction of the Project may result in amenity and access impacts to local businesses and residents. Some businesses may benefit from an increase in passing trade during construction due to construction workers. Operation of the Project would result in amenity impacts on residents and businesses on Little Eveleigh Street which the project would seek to minimise through the design process.. While there would be some potential impacts during operation, the

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
• temporary disruptions to servicing, deliveries and customer access for local businesses and residents • temporary loss of local amenity for local businesses and residents particularly due to noise, visual, traffic and air quality impacts • changes to travel patterns for pedestrians, vehicles and public transport users may increase or decrease passing trade for some local businesses.				Project would result in a number of long term benefits and positive social outcomes. These beneficial outcomes would be a result of improved public transport infrastructure and access, along with employment and training opportunities and precinct connectivity resulting from the Project.
Landscape character, visual amenity and urban design				
Potential impacts include: • adverse visual impacts from the presence of construction activities • adverse impacts on landscape character during construction • light-spill on sensitive receivers during night construction works • visual impacts associated with the introduction of new station infrastructure • light spill from concourse affecting sensitive receivers during operation • impacts on landscape character, urban design and placemaking from operation of the Project.	Moderate	Likely	High	Construction of the Project may cause temporary adverse impacts on the landscape and views of the site and surrounding area. These impacts may result from the introduction of construction compounds, construction activities, the removal of vegetation, light spill and changes to traffic movements. Operation of the Project may result in both adverse and beneficial impacts to landscape character, views and placemaking from the introduction of new infrastructure. Disturbed landscaped areas would be re-established. An urban design plan would be developed. These impacts and benefits would be experienced by those who work, study, visit or access business and community facilities near to Redfern Station, local residents, and rail users.

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Land use and property				
Potential impacts include: • temporary use of government owned properties for construction • the potential temporary loss of public open space for construction laydown areas • impacts on other infrastructure during construction including utilities and RailCorp property • permanent change of land use during operation of the Project.	Moderate	Possible	Medium	One NSW Government owned property would be permanently used for the establishment and operation of a new station entrance at Little Eveleigh Street. Temporary leasing and/or use of land may also be required to facilitate construction of the Project.
Biodiversity				
Potential impacts include: • removal of landscaping vegetation and street trees • removal of the urban fauna habitat value presented by the existing landscaping, infrastructure and street trees • direct impacts upon fauna such as being struck by construction vehicles and noise, vibration and lighting disturbances • loss of soils within the Project area resulting from potential erosion and sedimentation, as well as potential smothering of vegetation/habitats where eroded material is deposited.	Minor	Unlikely	Low	The Project is located in a highly modified location within the rail corridor and urban environment. Planted landscaped trees are present within the Project area. The Project would require the removal of planted trees within the Project area and these would be replaced in accordance with the *Transport for New South Wales Vegetation Offsets Guide 2019.* Species currently occurring within the Project area are likely to be accustomed to impacts such as noise and light spill which are already occurring.

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Soils, geology, groundwater and contamination				
Potential impacts include: • increased soil erosion potential through exposure of the natural ground surface and sub-surface • disturbance of contaminated land (including asbestos) during construction • encountering contaminated building structures during demolition works • contamination of land, groundwater or waterways due to leaks and spills • adverse impacts on groundwater flows, quality and levels due to excavation works required for the Project.	Major	Unlikely	Medium	The Project may encounter contamination at a number of locations. Construction and operation also have the potential to result in contamination of soils and/or groundwater due to spills and leaks of fuel, oils and other hazardous materials. Construction of the Project would involve excavation and piling which may intercept groundwater however it is noted that preliminary geotechnical assessments for the Project did not intercept groundwater. The operation of the Project is not expected to have further impacts on geology or groundwater.
Flooding, hydrology and water quality				
Potential impacts include: • alteration of existing stormwater flows • changes to flood risk outside the Project area during construction and operation • water quality impacts due to spills and erosion during construction • increased severity of rainfall events due to climate change resulting in flooding risks and changed drainage patters (refer to Climate change and sustainability below).	Major	Unlikely	Medium	The Project would result in a minor increase in impermeable surfaces at Redfern Station. However, drainage upgrades would be required on Redfern Station platforms and on Little Eveleigh Street which may alter downstream flooding regimes. The protection of the infrastructure from flooding and potential impacts on offsite flood behaviour are anticipated to be manageable through appropriate Project design.

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Air quality				
Potential impacts include: • impacts to local air quality due to operation of construction plant and equipment • impacts to local air quality due to increased vehicle movements from transport of construction materials • impacts to local air quality due to dust generation from exposed surfaces.	Minor	Likely	Medium	During construction, the Project is likely to result in local reductions in air quality due to the generation of dust and other particulates and gaseous emissions. The impacts resulting from the generation of dust and other emissions for the Project are similar to those experienced on other similar projects. These impacts can be readily managed through the implementation of standard mitigation measures.
Hazard and risk				
Potential hazards include: • the onsite storage, use and transport of chemicals, fuels and materials during construction and operation • the rupture of, or interference with, underground services during construction.	Moderate	Unlikely	Medium	Potential hazards and risks during construction and operation would be managed through implementation of appropriate design standards and construction methodologies.
Waste and resources				
Potential hazards include: • increased resource consumption and increased generation of waste • disposal excavated spoil that is unable to be reused • disposal of construction and demolition waste to landfill.	Minor	Likely	Medium	Volumes of waste generated and resources consumed during construction of the Project are anticipated to be minor and would be similar to comparable projects.

Potential unmitigated impact	Consequence	Likelihood	Risk rating	Discussion
Climate change and sustainability				
Potential impacts include: • emissions of greenhouse gases from operational and construction energy use, and embodied energy in materials • climate change risks affecting urban heat, flooding and drainage • waste from both construction and operation including energy, water, construction materials and food wastes not supporting a circular economy use of materials.	Minor	Likely	Medium	Greenhouse gas emissions as a result of the Project would be minor and would be similar to comparable projects. Potential future climate change scenarios would be incorporated into the final design of the Project including mitigation strategies addressing drainage infrastructure and shading. Further details would be provided in the EIS. Sustainability outcomes of the Project would support the reduction of waste and movement of practices towards a circular economy use of materials. This would be further outlined in the EIS.
Cumulative impacts				
Potential impacts include: • cumulative impacts from construction of multiple projects on parking, traffic congestion, noise, vibration, visual amenity, loss of public space and business impacts • cumulative impacts on non-Aboriginal heritage from construction and operation of multiple projects • cumulative flooding impacts during construction and operation.	Major	Possible	High	Construction and operation of the Project would be undertaken concurrently with other major projects in the area including Sydney Metro City & South West, development in the North and South Eveleigh precincts (including the former Australian Technology Park), development of the Pemulwuy Project north of Redfern Station and development in the Waterloo Metro Quarter. This could result in potential cumulative impacts to amenity, congestion, businesses, flooding and drainage and heritage. The Project would seek opportunities to coordinate activities with other major projects in the area to minimise any potential adverse impacts.

7.4 Issue categorisation

Based on the preliminary environmental risk analysis outlined above, key issues for the Project have been identified as those with a risk ranking of high while other issues are those with a risk ranking of medium or low. The exception to this is Aboriginal heritage which is identified as having a medium (rather than high) environmental risk ranking, but has been included as a key issue due to the significance of the Redfern area to the Aboriginal community.

Key issues for the Project include:

- traffic, transport and access
- noise and vibration
- Aboriginal heritage
- non-Aboriginal heritage
- social and business impacts
- landscape character, visual amenity and urban design.

Other issues for the Project include:

- land use and property
- biodiversity
- soils, geology, groundwater and contamination
- flooding, hydrology and water quality
- air quality
- hazard and risk
- waste and resources
- climate change and sustainability.

Chapter 8 provides a preliminary environmental assessment and proposed scope of assessments for key issues for the Project. Chapter 9 provides a preliminary environmental assessment and proposed scope of assessments for other issues.

8. Key environmental issues

8.1 Traffic, transport and access

8.1.1 Existing environment

The existing transport network in the vicinity of the Project includes, rail, cycleway, bus, pedestrian and road services.

The road network surrounding the Project area includes nearby arterial roads Botany Road, City Road and Cleveland Street and the local road network including Gibbons Street, Lawson Street, Little Eveleigh Street, Wilson Street, Marian Street, Ivy Street and Ivy Lane.

There are no commuter carparks near Redfern Station. There are two at-grade carparks adjacent to Redfern Station (North Eveleigh and Marian Street) that service Sydney Trains employees and NSW Police. An existing bus and car drop off/pick up area is located on Little Eveleigh street close to the Lawson Street entrance to the station, and is no parking with an exemption of up to 15 minutes for buses.

Resident parking is available on the southern side of Little Eveleigh Street with parking restrictions applying in this location (currently marked as 1P between 8am and 10pm with residents permit holders excepted). One disabled parking space is located on Little Eveleigh Street outside 129-131 Little Eveleigh Street. Other streets surrounding Redfern Station have similar parking restrictions providing availability for unrestricted resident parking. Street parking in this area is heavily utilised. Resident parking is available on Marian Street with untimed parking spaces on the northern side of the street and parking restrictions applying to the southern side of the street (currently marked as 2P between 8am and 8pm with resident permit holders excepted).

The main existing station access points are located on the Lawson Street overbridge and at the corner of Lawson and Gibbons Streets. A third entry point is located on Marian Street which provides entry to the main concourse via Platform 10 and primarily serves customers accessing South Eveleigh (formerly the Australian Technology Park). Pedestrian access to Redfern Station is shown on Figure 12.

East-west pedestrian connections between land uses on either side of the rail line in this location are limited and include:

- directly north of Redfern Station along Lawson Street
- 330 metres north of Redfern Station at Cleveland Street bridge
- 1.5 kilometres south of Redfern Station at Erskineville Road.

Existing key destinations in the vicinity of Redfern Station include the University of Sydney, RPA, TAFE Eora, Carriageworks and South Eveleigh. The main retail precinct of Redfern is located on Redfern Street between Regent Street and Chalmers Street to the east of Redfern Station. This area, as well as Darlington to the west of Redfern Station and Alexandria to the South, contain a number of restaurants, bars and cafés.

Little Eveleigh Street is part of a heavily utilised cycle route connecting Wilson Street and the suburbs of Macdonaldtown and Newtown with Lawson Street, Wells Street and George Street for cycle routes into the CBD. Bicycle parking for Redfern Station is provided on Little Eveleigh Street and at the recently completed Gibbons Street entrance.

Two bus stops on Gibbons Street (Stand A and Stand B) provide bus connections to Redfern Station. These bus stops service rail replacement buses during track possessions.

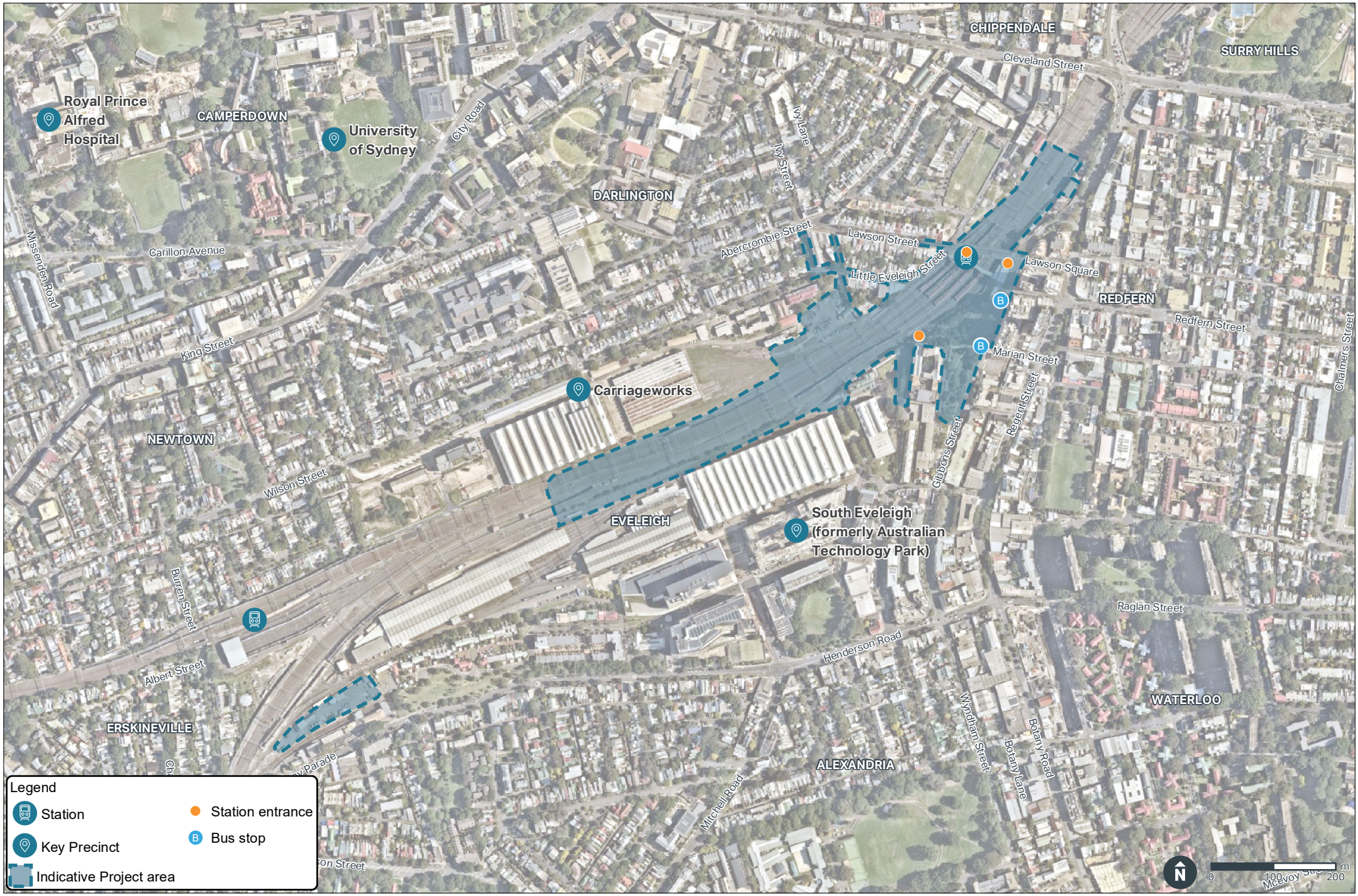

FIGURE 12 - EXISTING ACCESS TO REDFERN STATION

Source: Imagery © Nearmap, 2019.

8.1.2 Issues for consideration

Potential construction impacts

The following traffic, transport and access impacts may result from the construction of the Project:

- impacts on suburban and intercity rail services as a result of station closure during track possession periods required to safely and efficiently complete certain construction activities
- temporary road closures and traffic diversions that may be required outside of the rail corridor, particularly along, Gibbons Street, Little Eveleigh Street and Marian Street
- reduction of traffic performance on the surrounding road network due to the movement of construction vehicles, deliveries and waste removal, particularly to and from the proposed compound site off Railway Parade
- temporary impacts to pedestrian access due to footpath closures
- temporary impacts on access to private properties on Little Eveleigh Street and Marian Street
- temporary impacts on availability of public and resident parking
- impacts on customer movements during works on platforms
- impacts on the safety of motorists, pedestrians and cyclists due to potential conflicts with construction vehicles.

These would be managed through appropriate mitigation measures that would be developed as part of the EIS. Arterial roads would be used whenever possible to provide access to and egress from construction sites within the rail corridor. Notwithstanding this, there is likely to be a need to use the local road network for short distances. This will be identified in the EIS.

Potential operational impacts:

The design of the Project would aim to avoid or reduce impacts associated with operational traffic, transport and access. Potential impacts during operation are likely to include:

- changes to local roads and existing access
- provision of bicycle facilities
- changes to parking arrangements on Little Eveleigh Street and Marian/Cornwallis/Rosehill Streets
- changes to pedestrian and cyclist arrangements in and around the Station.

The Project would also deliver major traffic, transport and access benefits including:

- improved accessibility at Redfern Station
- improved cross corridor connectivity
- improved connectivity to surrounding destinations including education centres, Carriageworks and South Eveleigh.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

8.1.3 Method of assessment

A traffic, transport and access impact assessment will be undertaken as part of the EIS to assess the impacts of the construction and operation of the Project on traffic, transport and access. This assessment will consider impacts on the road network in the vicinity of the Project and impacts to public transport during the construction and operational phase.

The proposed methodology for the traffic, transport and access impact assessment includes:

- collate and review relevant background material including publicly available traffic reports relevant to the Project area and surrounds
- identification of haulage routes, site access and egress points during construction

- consideration of site-specific requirements during construction works, including the method of managing pedestrian, cyclists and construction traffic movements (including required road closures and the arrangements to preserve residential and business accesses)
- consideration the qualitative impact on the road network and parking in the vicinity of the Project area during construction and operation
- qualitative assessment of impacts to travel times on public transport and impacts to traffic on arterial roads and local streets during construction and operation
- changes to pedestrian access and movements during operation
- identification and consideration of potential cumulative impacts caused due to multiple construction sites and/or additional vehicles generated during construction
- measures to minimise or mitigate identified impacts. Available measures will be considered in accordance with relevant best practice guidelines.

The following documents and government guidelines will be considered during the preparation of the traffic and transport impact assessment:

- *Guide to Traffic Management – Part 3 Traffic Studies and Analysis* (Austroads, 2013)
- *Cycling Aspects of Austroads Guides (*Austroads, 2014*)*
- *Guide to Traffic Generating Developments Version 2.2* (Roads and Traffic Authority, 2002).

8.2 Noise and vibration

8.2.1 Existing environment

Land uses within the vicinity of Redfern Station include transport corridors, commercial and mixed uses, and residential. The existing noise environment at Redfern Station is influenced by the following dominant noise sources:

- road traffic noise
- rail line operations and associated station activities
- aircraft noise
- commercial activities to the east of Redfern Station
- pedestrians.

Nearby noise and vibration sensitive receivers include residential receivers along Little Eveleigh Street, Gibbons Street, Lawson Street, Marian/Cornwallis/Rosehill Streets and along Railway Parade.

A noise study was conducted at Redfern Station in 2014 (GHD, 2014) and found high background noise levels typical of an inner urban environment, influenced by noise associated with the rail line. The background noise levels during the evening period (6pm – 10pm) were identified as being 3 decibels (dB) lower than those measured during the daytime period (7am – 6pm Monday to Sunday and 8am – 6pm Sundays & Public Holidays). For the night-time period (10pm – 7am Monday to Saturday and 10pm – 8am Sundays & Public Holidays), there was a reduction in noise levels of around 8dB.

8.2.2 Issues for consideration

Potential construction impacts

Construction of the Project may result in noise and vibration impacts on the surrounding area including nearby sensitive receivers. These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS. Construction activities with the greatest potential to result in noise and vibration impacts include:

- works within the rail corridor including, communications, signalling, relocation of subterranean services, and overhead wiring works

- building modification and construction works including construction of new structures (including the proposed concourse and station entrances)
- foundation piling activities
- construction road traffic movements associated with the delivery of plant, equipment and materials, as well as spoil removal
- temporary changes in traffic volumes along some routes during possession periods required by the Project and associated potential noise and vibration impacts from rail replacement buses
- upgrade works to the roads surrounding the station entrances
- operation of ancillary construction infrastructure.

The degree of construction noise and vibration impact on individual sensitive receivers would depend on the separation distance of construction activities from those receivers, the nature of the works, and the time of day or night that the works take place.

The Project would require works to be undertaken during weekends and at night for the safety of workers and minimising disruption to the operating rail network. Works conducted outside of standard construction hours (i.e. out of hours works) normally increase the potential for noise and vibration impacts on surrounding sensitive receivers due to lower background noise levels and the potential for sleep disturbance.

Construction noise and vibration impacts are anticipated to exceed the noise management levels derived from the *Interim Construction Noise Guideline* (Department of Environment and Climate Change and Water, 2009) at some locations. There is also the potential for construction vibration impacts at sensitive receiver buildings and heritage structures within the Project area.

With respect to vibration impacts, the Redfern Station buildings are the nearest sensitive receivers potentially susceptible to cosmetic damage from vibration. Residential receivers in Lawson Street, Gibbons Street, Little Eveleigh Street and Marian/Cornwallis/Rosehill Streets are identified as the nearest receivers susceptible to vibration impacts during construction.

Potential operational impacts:

The Project has the potential to increase operational noise levels at surrounding sensitive receivers due to the influence of the following:

- operational noise from upgraded station facilities (such as lifts and public address systems)
- noise impacts arising from changes to traffic, transport and access arrangements on Little Eveleigh Street and Marian/Cornwallis/Rosehill Streets (including increased pedestrian movements).

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

8.2.3 Method of assessment

A construction and operational noise and vibration impact assessment will be undertaken as part of the EIS to assess the noise and vibration impacts on surrounding sensitive receivers and land uses. A proposed construction methodology would be input into the noise and vibration assessment including timing and equipment.

The noise and vibration impact assessment will:

- identify the existing ambient noise environment in the vicinity of the sensitive receivers most likely to be affected by the Project by undertaking noise monitoring
- identify nearby land uses and provide a map presenting land uses, receivers and monitoring locations
- review the requirements of the guidelines listed below and establish appropriate environmental noise and vibration criteria for the operational and construction stages of the Project
- calculate the likely operational and construction noise and vibration levels

- review the potential impacts of operational and construction noise and vibration in relation to identified sensitive receivers and sites (particularly heritage structures and key utilities/infrastructure)
- recommend feasible and reasonable mitigation and management measures to address identified construction and operational noise impacts.

The following guidelines will be considered during the preparation of the noise and vibration assessment:

- *Construction Noise and Vibration Strategy Version* 4 (Transport for NSW, 2019)
- *Interim Construction Noise Guideline* (Department of Environment Climate Change and Water, 2009a)
- *Noise Policy for Industry* (NSW Environment Protection Authority, 2017).

8.3 Aboriginal heritage

8.3.1 Existing environment

Redfern Station and surrounds are located within the traditional lands of the Gadigal (also 'Cadigal') Aboriginal people, a member of the Eora language group (Horton, 1994). From the late 1920's, the Redfern area attracted a community of Aboriginal people back to the area, drawn by affordable living costs and readily-available employment opportunities (Irish, P, 2017). By the 1930s, a distinct Aboriginal community was well-established in the Redfern area. The Eveleigh rail yards are known to have employed Aboriginal people as workers during the late nineteenth and early twentieth centuries, with many likely to have worked both at Redfern Railway Station and at Central Railway Station, particular during the period of the latter's construction in 1901 (Rappoport Pty Ltd, 2013). Sydney's inner suburbs have historically been important for Aboriginal people seeking work opportunities, shelter and ties to family and the community.

An extensive search of the NSW Office of Environment and Heritage's Aboriginal Heritage Information System (AHIMS) database was carried out in March 2019. The AHIMS database maps notified aboriginal objects and declared aboriginal places in NSW under the NPW Act. Aboriginal objects are physical evidence of the use of an area by Aboriginal people. They can also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. The NPW Act can also protect areas of land that have no Aboriginal objects, that is, they may have no physical evidence of Aboriginal occupation or use. These areas can be declared 'Aboriginal places'. The Minister for the Environment can declare an area to be an 'Aboriginal place' if the Minister believes that the place is or was of special significance to Aboriginal culture. An area can have spiritual, natural resource usage, historical, social, educational or other type of significance (NSW Office of Environment and Heritage, 2018).

Key Aboriginal sites, including post contact sites, can also be protected by inclusion in the State Heritage Register under the Heritage Act 1977 (NSW). Sites are nominated by the Heritage Council of NSW for consideration by the Minister for Heritage (NSW Office of Environment and Heritage, 2018).

The AHIMS database search identified a single (1) existing Aboriginal site within 200 metres of Redfern Station (AHIMS #45-6-2597), which is located approximately 200 metres south east of the current Project area. No existing Aboriginal sites were reported within 50 metres of the current Project area.

An assessment of Aboriginal archaeological potential undertaken by Archaeological and Heritage Management Solutions Pty Ltd (AHMS Pty Ltd) in 2008 (AHMS, 2008) identified two areas of Aboriginal archaeological potential immediately adjacent to the current Project area, just to the south of Wilson Street. AHMS, 2008 concluded that the area had not been subject to previous disturbance from rail construction activities and therefore represented a potentially-intact area that may contain Aboriginal objects. Visual inspection and background review undertaken by AECOM September, 2019) concluded that the existing driveway and carpark area is not an intact ground surface and is unlikely to contain Aboriginal objects.

Historically, Redfern Station had an important role in the transport connection between the local community and Aboriginal people from other areas of NSW. The Aboriginal Social Justice Movement

developed in Redfern and resulted in a national system of Aboriginal community-controlled health organisations and Aboriginal health services. Redfern continues to retain a strong Aboriginal culture and cultural traditions. Transport for NSW is committed to working closely with local Aboriginal stakeholders and community during the development of the Project's design and construction.

8.3.2 Issues for consideration

Potential construction impacts

Construction of the Project is not anticipated to impact on previously recorded Aboriginal heritage items or sites. Although the original landform contexts within the Project area are likely to have been largely modified, there is potential for Aboriginal sites to be located where intact natural contexts remain within the Project area. There may also be potential for buried areas of archaeological sensitivity beneath the rail easement and local roads. Although unlikely, construction could potentially result in inadvertent impact on unrecorded Aboriginal sites and/or areas of archaeological sensitivity. Even though the discovery of unexpected finds is unlikely, any such finds would be reportable and these potential impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

Aboriginal heritage would not be impacted during the operation of the Project as ground disturbance/excavation would be restricted to the construction phase.

8.3.3 Method of assessment

An Aboriginal heritage due diligence assessment will be undertaken as part of the EIS in accordance with Environment, Energy and Science group (EES's) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. The assessment will include:

- search of the NSW EES Aboriginal Heritage Information Management System (AHIMS)
- search of other relevant lists and registers, including State, National and World Heritage lists and any relevant Local Environmental Plans
- desktop review of existing environment of the Project area with particular reference to its implications for Aboriginal heritage
- desktop review of relevant available Aboriginal archaeological reports for the Project area
- preparation of an Aboriginal heritage due diligence assessment in accordance with EES's *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. The assessment will comprise a report with management advice for any identified/potential Aboriginal heritage constraints.

Engagement will be undertaken with the local Redfern Aboriginal community, as described in Chapter 6.

8.4 Non-Aboriginal heritage

8.4.1 Existing environment

The Project area is located within the State Heritage listed Redfern Railway Station Group. The Station Group listing includes all buildings, platforms, and infrastructure associated with Redfern Station, and all fabric associated with the Lawson Street overbridge. Redfern Railway Station Group is of significance as a major suburban station which played an important role in the development of the surrounding residential and industrial suburbs.

The Project area is within the Darlington Heritage Conservation Area – General, listed under the Sydney LEP. This Heritage Conservation Area is representative of mid-nineteenth century residential subdivision and working class housing.

The Project area is in the vicinity of the Eveleigh Railway Workshops - historic railway engineering workshops which contain one of the most complete late 19th century and early 20th century forge installations, and a collection of cranes, power systems, and hydraulic system.

The following registers were searched for other listed heritage items in the vicinity of Redfern Station:

- World Heritage Register
- National Heritage List
- NSW State Heritage Register (SHR)
- RailCorp section 170 Heritage and Conservation Register
- Sydney Local Environmental Plan 2012 (Sydney LEP)
- State Environmental Planning Policy (State Significant Precincts) 2005.

A number of State and locally listed heritage items are located at Redfern Station and within the immediate surrounds as noted in Table 8-1 and shown on Figure 13.

Table 8-1 Non-Aboriginal heritage items

Item Name	Listing Type	Location
Redfern Railway Station Group	State (SHR 01234, s170 4801095)	Located around Redfern Station including the Project area. North: Up-side of Lawson Street overbridge South: 5 metres beyond end of platforms East: Property boundary fence line with Gibbons and Marian Streets West: property boundary with Little Eveleigh Street and rear of existing warehouse building.
Eveleigh Railway Workshops	State (SHR 01140 and 01141, s170 4801102)	Located immediately west of Redfern Station platforms. The listing boundary is formed by Wilson Street to the north west, Redfern Station to the north east, Cornwallis and Garden Streets to the south east and the property boundary of the new development fronting Henderson Road to the south.
Eveleigh Chief Mechanical Engineers office and movable relics	State (SHR 01139, s170 4801126) SEPP (State Significant Precincts) 2005 (10)	Located about 85 metres south west of Redfern Station. The listing fronts Wilson Street near the intersection of Ivy Street and Wilson Street. The listing boundary is the property boundary fronting Wilson Street and 20 metres from the rear and sides of the building.
AAH 19 - Old Commissioners Car AAH 7 - Commissioners Train - Attendants Carriage AAH 8 - Commissioners Train - Officers Inspection Carriage AAH 9 - Commissioners Car (new) PAM 11 - Premier's Car Eveleigh Railway Workshops machinery	State (SHR 01650) All items are classified as 'Movable / Collection'	Located about 165 metres south west of Redfern Station, within the Large Erecting Shed on Locomotive Street, Eveleigh.
Darlington Heritage Conservation Area – General	Local (C19) Sydney LEP 2012	Located immediately to the north west of Redfern Station and within the Project area.

Item Name	Listing Type	Location
Golden Grove Heritage Conservation Area – General	Local (C19) Sydney LEP 2012	Located west of Regents Square, around 130 metres west of Redfern Station.
Terrace house 'Waratah'	Local (I1322) Sydney LEP 2012	Located on Eveleigh Street west of Redfern Station.
Redfern Station Booking Office	State (11) SEPP (State Significant Precincts) 2005	Located within the Redfern Station Lawson Street concourse.
Telecommunications Equipment Centre	State (10) SEPP (State Significant Precincts) 2005	Located within the rail corridor immediately west of the Redfern Railway Station Group State heritage listing curtilage.
Former McMurtrie, Kellermann & Co Factory	Local (I2245) Sydney LEP 2012	Located adjacent to Regent Square, between Ivy Street, Ivy Lane and Wilson Streets.

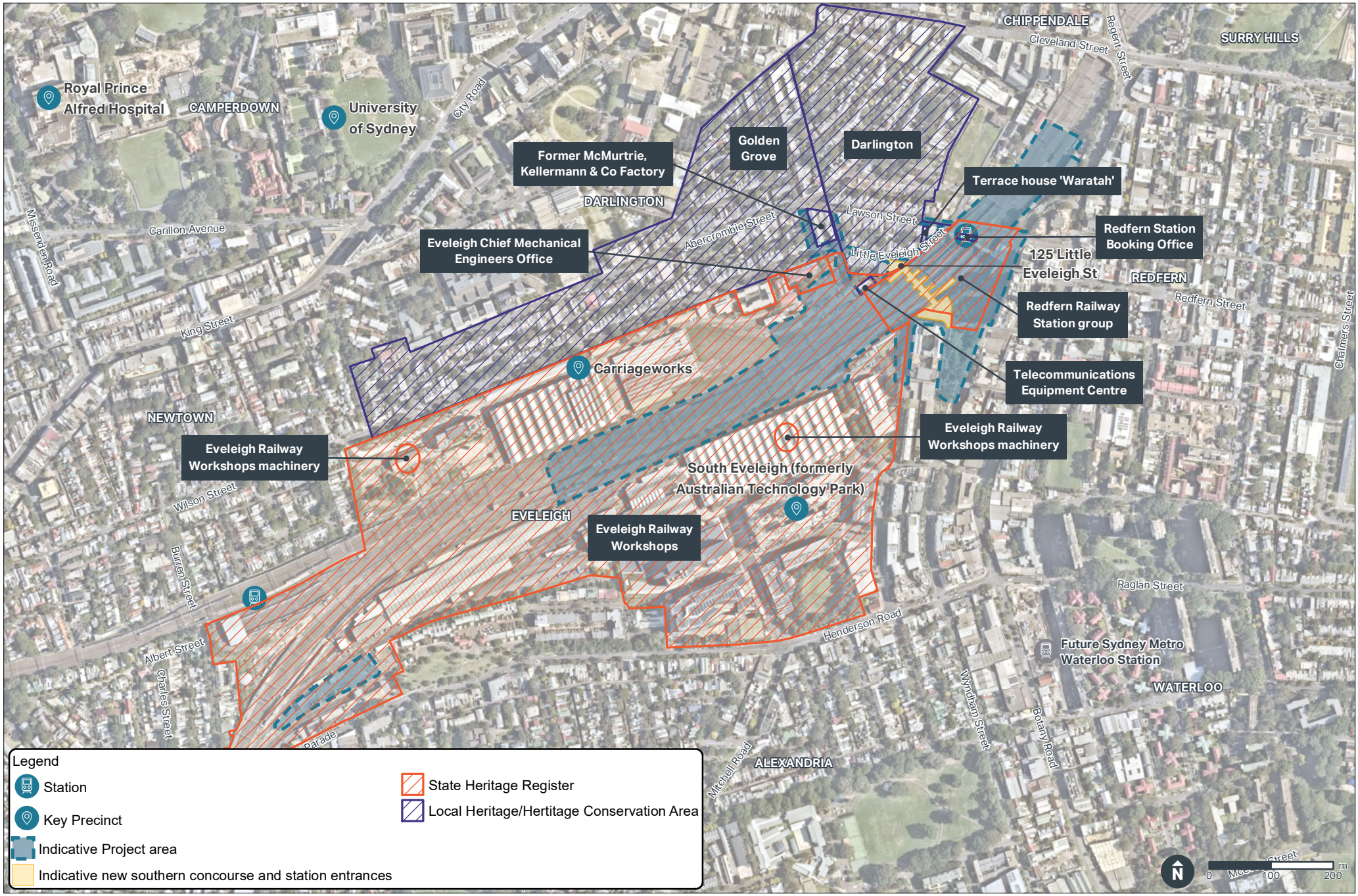

FIGURE 13 - NON-ABORIGINAL HERITAGE LISTINGS IN THE LOCAL AREA

Source: Imagery © Nearmap, 2019.

8.4.2 Issues for consideration

Potential construction impacts

Construction of the Project has the potential to impact non-Aboriginal heritage as a result of:

- undertaking construction within the curtilage of State listed and section 170 listed heritage items including relocation/modification to the Platform 1 office building
- modifications to 125-127 Little Eveleigh Street and construction within the Darlington Heritage Conservation Area
- carrying out works that may cause vibration impacts to heritage listed items
- conducting work that may have an impact on areas of potential archaeological significance and that may encounter unexpected archaeological finds
- conducting work or establishing site compounds that may have an impact on adjacent heritage items or conservation areas.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

The Project would result in permanent impacts to Redfern Station that would likely alter the level of significance currently embodied by the structures. The impacts would be mitigated through the position of the new concourse to the southern end of the heritage precinct and the architecture of new elements detailed to be sympathetic to the heritage context.

Direct impacts are also expected to 125-127 Little Eveleigh Street as well as to the streetscape of Little Eveleigh Street, both of which fall within the Darlington Heritage Conservation Area. 125-127 Little Eveleigh Street has been identified as a contributory item in the conservation area. The Project would have the potential to impact on the heritage streetscape that has a mixture of Victorian terraces and warehouses. Direct impacts to 125-127 Little Eveleigh Street would be mitigated through retaining the majority of the external facades of the building and adaptive re-use of the interior. Direct impacts to the character of the streetscape would be mitigated by proposing minor changes to soft and hard landscaping as well as to road surfaces. Proposed new elements would be designed in a sympathetic manner to the heritage streetscape of Little Eveleigh Street.

No direct impacts to the Eveleigh Railway workshops are expected, however the altered sight lines to Redfern Station may be considered a visual impact. As the surrounding area is developed, the context within which Redfern Station is set would be changed. However, a level of change is necessary at Redfern Station in order to cater for the growing patronage, maintain current functionality, provide appropriate levels of access and provide a safe environment. The Project would allow Redfern Station to continue to be used for its historic purpose as an operational station in the contemporary context and well into the future which is key to preserving its heritage significance as a functioning railway station.

There is potential for significant adverse impacts resulting from the addition of modern elements to the otherwise historic station. However, these impacts are anticipated to be mitigated by sensitive design responses. There is also the opportunity for encompassing modern technology and cultural/community values within the revitalised area as well as incorporating heritage interpretation to communicate the heritage and community values of the station and its surrounds. Therefore, the Project design development provides the opportunity for sensitive integration of new elements, significant improvements to the efficient operation of the station and its users as well as providing a place for information and education to enhance the cultural values of the station.

8.4.3 Method of assessment

A non-Aboriginal heritage assessment will be undertaken as part of the EIS. The assessment will be prepared to the standards of the NSW Heritage Council, and with consideration given to relevant guidelines.

The non-Aboriginal assessment will:

- identify heritage items that would be directly and indirectly impacted by the Project. This will include direct impacts to the Redfern Railway Station Group and Darlington Heritage Conservation Area, and indirect impacts to the Eveleigh Railway Workshop. For each identified heritage item that will be directly impacted, the assessment will detail the item's history, heritage values, settings, significance and integrity. Those items that will be indirectly impacted, the heritage items significance and identified heritage views and vistas will be outlined and mapped.
- identify potential archaeological deposits that may be present within the Project area, and prepare an assessment of significance.
- outline the direct and indirect impacts the Project would have to all known heritage and archaeological sites. The assessment will include impacts the heritage items as a whole, and to individual elements within each heritage listing. This will include separate impact assessments for the building at 125 Little Eveleigh Street within the Darlington Heritage Conservation Area, and separate heritage streetscape impact assessment for Little Eveleigh Street.
- outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) in accordance with relevant best practice guidelines.

The noise and vibration assessment will consider impacts from vibration on sensitive heritage structures during construction and operation (refer to Section 8.2.3).

The assessment will be undertaken in accordance with:

- relevant legislation including the NSW *Heritage Act 1977*
- relevant Conservation Management Plans (including Draft Conservation Management Plans) and Heritage Interpretation Strategies
- other relevant Sydney Trains Heritage guidelines and policies
- *Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013* (the Burra Charter)
- *Assessing Significance for Historical Archaeological Sites and Relics* (NSW Heritage Branch 2009)
- *NSW Heritage Manual and the Archaeological Assessment Guidelines* (NSW Heritage Office, 1996)
- *NSW Skeletal Remains: Guidelines for Management of Human Remains* (Heritage Office, 1998)
- *Criteria for the Assessment of Excavation Directors* (NSW Heritage Council, 2011)
- *Unexpected Heritage Finds Guideline* (TfNSW, 2019).

8.5 Social and business impacts

8.5.1 Existing environment

Redfern Station is the sixth busiest station in NSW, facilitating up to around 70,000 trips per day (Opal, 2019). The station plays an essential role in the function of the Redfern-Eveleigh precinct, and in the wider Sydney CBD rail network.

Redfern Station is located between largely residential development to the west, with a variety of commercial and mixed-use developments immediately to the east.

The station is pivotal to the success and connectivity of key residential, commercial and educational sites. It serves a broad patronage including local residents, commuters attending or transiting to their place of employment, students and staff attending University of Sydney and visitors to the nearby South Eveleigh and Carriageworks (Figure 14).

East-west (cross corridor) connections between communities on either side of the rail line in this location are limited.

A mixture of government and private housing is located to the south east of Redfern Station. The Waterloo Estate precinct in this area is planned for redevelopment as part of Infrastructure NSW's(formerly Urban Growth) Redfern Waterloo Growth Centre. Offices and mixed-use development within the old Railway site in the South Eveleigh precinct is currently nearing completion.

The main retail commercial centre of Redfern is located on Redfern Street (between Regent Street and Chalmers Street) to the east of Redfern Station. This area, as well as Darlington to the west of Redfern Station and Alexandria to the South, contain a number of restaurants, bars and cafés.

In addition to Redfern Street, a variety of retail and other commercial properties are located along Regent Street from Lawson Street to Raglan Street and Botany Road. To the south of Henderson Road, Botany Road transitions into mainly light industrial properties. The Carriageworks Arts Hub is located 600 metres west of Redfern Station on Wilson Street.

Social infrastructure within the vicinity of Redfern Station includes Redfern, Alexandria and Erskineville Ovals as well as Redfern Park and Prince Alfred Park. Educational facilities include University of Sydney, Alexandria Park Community School, Darlington Public School, TAFE Eora and the National Centre of Indigenous Excellence. Religious facilities include the Uniting Church Tonga Parish, St Vincent de Paul's Catholic Church, Alpha and Omega Church, and St Maroun's Maronite Church (Figure 14).

The Gadigal people of the Eora Nation are the Traditional Owners of the area around Sydney which includes Redfern. Sydney's inner suburbs have long been a destination for Aboriginal people seeking work opportunities and connections with community and family. As the town of Sydney developed into a city, the Gadigal were joined by other Aboriginal people from elsewhere in NSW, to live, work and forge relationships within the urban Aboriginal community (Department of Planning, Industry and Environment, 2017). Redfern has been a centre for the Aboriginal community in Sydney since at least the early 20th century when large numbers of Aboriginal people and migrants moved to the area for jobs at the Eveleigh railyards. Since this time the suburb has maintained a well-known Aboriginal identity and has been the crucible for a range of Aboriginal social movements and institutions such as the Aboriginal Legal Service and Aboriginal Children's Service. The Aboriginal Housing Company was set up in Redfern in 1973, becoming Australia's first community housing organisation.

The 2016 Census shows a diverse population with 50.3% of the population born overseas, with key local ethnicities being north-east Asia (17.1%) and north-west Europe (7.6%) (ABS 2018). The census data also shows an unemployment rate of 7.6% (slightly higher than the Greater Sydney rate of 6%), a median age of 31 (lower than the Greater Sydney median of 36) and a large tertiary student population (22.4% compared with 8% in the Greater Sydney Region).

FIGURE 14 - SOCIAL INFRASTRUCTURE IN THE LOCAL AREA

Source: Imagery © Nearmap, 2019.

8.5.2 Issues for consideration

Potential construction impacts

Potential social impacts that could occur during construction include:

- temporary impacts on lifestyle for residents, workers and visitors due to temporary changes to travel patterns and interruptions to transport services. Groups who may be particularly vulnerable to these impacts include people with limited English language skills, older people who may be more sensitive to changes in amenity and less able to adapt to access changes, children (including school children), and people with a disability
- temporary quality of life and health and wellbeing impacts associated with amenity impacts on adjacent residents, businesses and social infrastructure. These impacts may arise from noise, vibration, air quality, access and visual changes resulting from construction activities and may result in decreased quality of life, increased stress and anxiety, loss of sleep and associated health and wellbeing impacts. Some sections of the community or particular community facilities may be more sensitive (e.g. child care centres, ageing citizens)
- temporary or intermittent community severance and/or reduced access to social infrastructure and health services may arise due to temporary access changes during construction. This may affect people's access to community, health and sporting facilities, as well as public transport travel movements from Redfern Station
- cumulative social issues resulting from the potential for overlap with construction associated with the large-scale commercial development at South Eveleigh (formerly the Australian Technology Park), the proposed redevelopment of the Waterloo Estate and urban renewal around Redfern Station.

Potential impacts to local businesses that could occur during construction include:

- disruptions to servicing, deliveries and customer access from temporary street, cycleway and footpath closures, and congestion arising from construction activities, as well as the temporary or permanent relocation/removal of car parking
- loss of local amenity particularly due to noise, visual, traffic and air quality impacts which may result in a reduction in patronage for certain business types such as cafes
- an increase in passing trade (depending on the proximity of the business to the construction works) may benefit some businesses (such as restaurants/cafes/take away food shops, service stations and hotels).

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

Potential social impacts that could occur during operation would relate to amenity impacts on adjacent residents, businesses and social infrastructure. These impacts may include long-term changes to noise levels, and visual aspects, with some residents and community facilities potentially more sensitive to these impacts. In particular, residents at Little Eveleigh Street would be exposed to amenity impacts including noise from increased foot traffic and potential changes in the location of street parking arising from changes to traffic and transport arrangements.

The contribution of the Project to an overall improvement in the accessibility and amenity of Redfern Station may result in a range of positive outcomes, including:

- increased accessibility across the rail corridor encouraging active transport and social connections within the local area
- improved accessibility around and within Redfern Station, particularly for people with reduced mobility such as people with a disability, less mobile people, people with luggage and parents with prams
- improved connectivity between Redfern Station and surrounding destinations, as well as to other destinations within the public transport network more broadly.

The operation of the Project also has the potential to affect local businesses. These impacts may include:

- changes to travel patterns for pedestrians, vehicles and public transport users may increase or decrease passing trade for some local businesses
- changes to local traffic conditions, including parking, may improve or reduce access for servicing, delivery or despatch of goods, resulting in positive or negative impacts upon business revenue.

These would be managed through appropriate mitigation measures that would be developed as part of the EIS.

8.5.3 Method of assessment

An assessment of social and business impacts of the Project will be undertaken as part of the EIS. This will be undertaken in accordance with the *RMS Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment (EIA-N05)* (Roads and Maritime Services, 2013) as applicable to the Project. The assessment will be undertaken as a 'basic' level assessment in accordance with the practice note and will include:

- identification of the social area of influence (social study area)
- identification of key stakeholders and consultation with relevant groups
- an outline of the existing social context of the Project area, including demographics, education, economy, income health and social infrastructure
- identification of social impacts arising from the Project with reference to the above factors
- identification of potential impacts to businesses within the local area
- identification of procurement opportunities for social benefit
- identification of measures to avoid or mitigate social and business impacts.

8.6 Landscape character, visual amenity and urban design

8.6.1 Existing environment

The Project is located in a highly visible area and adjacent to main pedestrian and vehicle thoroughfares to Redfern Station. The character of Redfern Station is defined by the Colonial and Victorian architecture of the station, nearby former railway sheds, surrounding suburbs, the station's rich railway heritage, and the long history of Aboriginal identity and association. The Traditional Owners of the area around Redfern Station are the Gadigal people who continue to practice cultural traditions and care for the land.

The station and railway corridor has a major severance effect on the urban structure of the area, limiting east west movement and impacting on pedestrian permeability. The built form within the station, like that in the nearby Darlington Conservation Area, is small in scale and fine grained, reflective of the era during which it was built.

The visual environment surrounding the Project area is typical of an inner urban area and comprises a major transport corridor to the north and south, mixed and commercial land uses to the east and south and primarily low density residential to the north west. The area includes some multi-level residential and commercial buildings proximate to the station, with density increasing towards Lawson Square and the town centre to the east. Immediately adjacent to Redfern Station in Gibbons Street there are a number of cafes and shops, with Redfern Street further east being the main town centre. South Eveleigh is currently being developed as a major commercial hub and will accommodate over 15,000 workers.

The predominant vegetation in the area comprises planted street trees. The landform of the local area generally slopes away from Redfern Station in all directions.

8.6.2 Issues for consideration

Potential construction impacts

The construction of the Project may cause temporary impacts on the landscape and views of the Project area and surrounding public domain areas. These impacts would be experienced by those who work, study, visit or access business and community facilities near the station, residents surrounding the Project area, and rail users.

These impacts may result from:

- the establishment of construction compounds, worksites, stockpiles
- light spill from construction sites during out-of-hours construction works and for security purposes
- temporary traffic disruptions including lane closures
- construction vehicle movements within construction worksites and along haulage routes, and parking, footpath diversions and relocations
- works to construct the new concourse and station entrances
- use of cranes during concourse installation
- services relocation and upgrade works
- shared zone upgrade works at Little Eveleigh Street.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

The operation of the Project may result in both adverse and beneficial impacts on the landscapes and views to and from the Project area and surrounding area. These impacts would be experienced by those who work, study, visit or access business and community facilities near to the station, residents of the Project area, and rail users.

These impacts may result from:

- the proposed new concourse and station entrances, including light spill
- the obstruction or opening up of views to heritage character station elements and heritage landscapes
- shared zone upgrade works at Little Eveleigh Street
- alteration of wayfinding and improved visual prominence of Redfern Station
- improvements to urban design and placemaking through the pedestrian connectivity that the concourse will provide.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

8.6.3 Method of assessment

A Landscape and Visual Impact Assessment will be undertaken as part of the EIS which will assess the impact of the Project on views and vistas; streetscapes, key sites and buildings, heritage items and the local community.

The Landscape and Visual Impact assessment will:

- review of topographic maps and aerial photography to identify features such as landform, elevation, land cover and distribution of residential properties and visual receptor locations
- review available information on likely landscape sensitivities including zoning or other designations relevant to landscape and visual amenity
- determine the potential extent and visibility of the Project

- assess the landscape character impact and visual impact of the Project. The method to measure impact will be based on the combination of the sensitivity of the existing area or view to change and the magnitude (scale, contrast, quality, distance) of the Project on that area or view. The combination of sensitivity and magnitude will provide a rating to evaluate the impact on landscape character and visual impact for individual viewpoints
- identify mitigation measures to be integrated into the design development process to address the residual adverse impacts identified in the assessment.

An Urban Design Plan would be developed as part of the EIS to assist in determining how the Project functions and impacts or interacts with the surrounding area. The Urban Design Plan will-

- demonstrate a robust understanding of the site through a comprehensive site analysis
- identify opportunities and challenges within the Project area
- establish site specific principles to guide and test design options
- demonstrate how the preferred design applies to the 8 principles as established in TfNSW's urban design guideline '*Around the Tracks'-urban design for heavy and light rail*, Interim 2016.

The Project design and Urban Design Plan will be presented to the TfNSW Design and Sustainability Review Panel for peer review.

The EIS will include artist impressions and photomontages of the Project to illustrate how the Project has responded to the potential visual impact through urban design and landscaping.

9. Other environmental issues

9.1 Land use and property

9.1.1 Existing environment

Land uses in the vicinity of the Project area include residential to the west and north, and commercial/mixed land use to the west, east, and south. Existing land uses within and adjacent to the Project area are described in Table 9-1 and the land use zoning in the area is shown on Figure 15.

Redfern Station serves a broad patronage including local residents, commuters attending or transiting to their place of employment, students and staff attending University of Sydney and workers and visitors to the nearby South Eveleigh precinct (formerly known as the Australian Technology Park) and Carriageworks (refer to Section 8.5 for further details of the demographic characteristics of Redfern).

As described in Section 8.4.1, the Project area is located within and adjacent to many local and State heritage areas.

Table 9-1 Existing land uses

Land use	Key features
Low-density residential	In the north western portion of the Project area on Little Eveleigh Street and to the north of the Project area, there are a number of low density residential properties which are characterised by semi-detached terrace housing.
Mixed use/ commercial	Immediately east of Redfern Station is Gibbons Street which includes a number of cafes and shops, with Redfern Street further east being the main town centre. The area also includes some multi-level residential buildings, such as the Watertower to the south of the Project area. South Eveleigh is also located to the south of the Project area and is currently being developed as a major commercial hub which will accommodate over 15,000 workers.
Education	To the west of the Project Area, on the other side of the low-density residential area, is the University of Sydney.
Health	Royal Prince Alfred Hospital.

9.1.2 Issues for consideration

Potential construction impacts

Potential property and land use impacts anticipated to occur during construction include:

- the temporary use of NSW Government owned property to enable the establishment of construction compounds and/or the construction work
- the potential temporary loss of public open space for construction sites
- disruption to services, utilities and other transport assets/infrastructure to enable the construction of the Project. This may include utility relocations and disruptions to normal operations to enable the construction of the concourse and station entrances.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

Potential property and land use impacts anticipated to occur during operation of the Project include:

- the use of a NSW Government owned property for the establishment and operation of a new station entrance at Little Eveleigh Street
- potential land use changes and indirect positive impacts associated with the Project.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

9.1.3 Method of assessment

The EIS will identify potential impacts on property and land use including:

- existing property and land use ownership within the Project area
- likely future land use based on existing zonings and consultation with Infrastructure NSW (formerly Urban Growth NSW), City of Sydney Council and the Department of Planning, Industry and Environment
- direct impacts on property and land use as a result of the construction and operation of the Project
- indirect positive and negative impacts on property and land use, including potential opportunities and benefits associated with the Project at and around Redfern Station.

Mitigation measures to avoid or mitigate the potential impacts will also be identified.

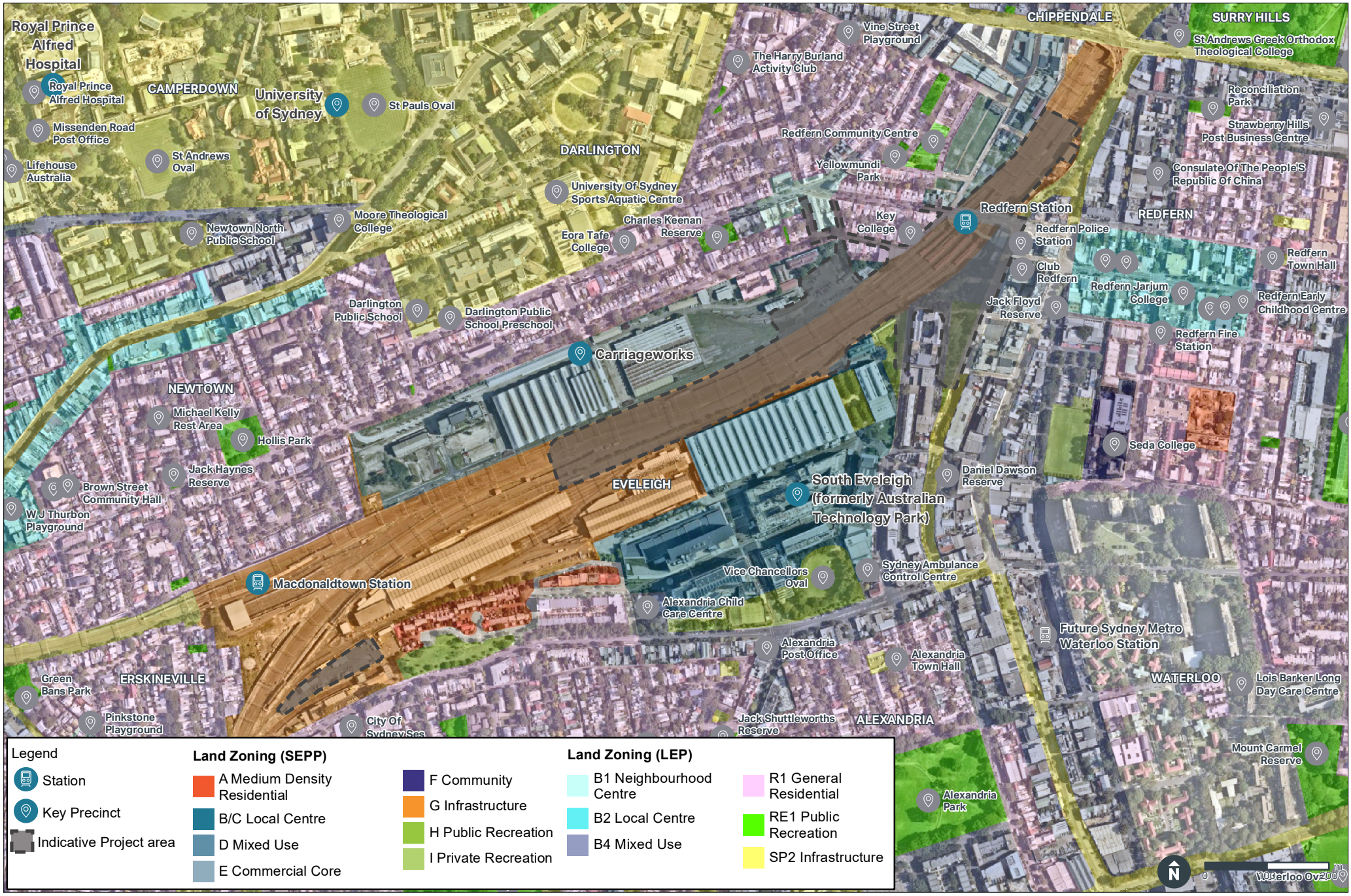

FIGURE 15 - LAND ZONING AND KEY LAND USES

Source: Imagery © Nearmap, 2019.

9.2 Biodiversity

9.2.1 Existing environment

The Project is located within a highly modified urban environment, with the majority of the Project area being within the existing rail corridor. The Project area has been historically cleared and no remnant vegetation is present. The site does however include a range of native and exotic landscaping species, as well as other native and exotic vegetation that has naturally regenerated.

Within the rail corridor vegetation is limited to station landscaping, including a number of trees, ornamental shrubs and groundcovers. Outside of the rail corridor, to the east of Redfern Station, is a small landscaped garden area with a number of semi-mature eucalyptus and exotic trees. This area has a moderately dense shrub layer and little to no ground layer vegetation.

To the west of Redfern Station there is little vegetation present with the exception of two semi-mature street trees in front of 125-127 Little Eveleigh Street, several street trees and a scattering of weeds between the rail corridor fence and this building. These weeds are mainly comprised of Crofton weed (*Ageratina adenophora*).

Habitat within the vicinity of the Project area is limited. None of the mature trees present contain hollows greater than five centimetres diameter, nor are there substantial quantities of other habitat features such as coarse woody debris, fallen trees, bush rock or waterways. The underside of bridges, including the existing Lawson Street concourse and overbridge may provide some limited habitat for small mammals including microbats.

9.2.2 Issues for consideration

Potential construction impacts

Potential impacts to biodiversity that could occur during construction of the Project include:

- removal of landscaping vegetation and street trees
- removal of the urban fauna habitat value presented by the existing structures, landscaping and street trees
- direct impacts upon fauna such as construction vehicle strike and noise, vibration and lighting disturbances
- a reduction in photosynthesis and plant growth from the accumulation of construction generated wind-blown dust on vegetation
- loss of soils within the Project area resulting from potential erosion and sedimentation, as well as potential smothering of vegetation/habitats where eroded material is deposited.

These would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

The Project would facilitate enhanced pedestrian activity around the existing south eastern station entry at Marian Street. There is some potential this may result in increased direct disturbance to native fauna utilising nearby habitat, particularly street trees. This potential impact would be managed through appropriate mitigation measures that would be developed as part of the EIS.

9.2.3 Method of assessment

A biodiversity assessment will be prepared as a chapter of the EIS. This will be supported by a site inspection to confirm the presence or absence of sensitive flora or fauna. This inspection will not include detailed biometric vegetation plots, though it will identify vegetation to genus level at a minimum and assess the habitat potential present.

The biodiversity assessment will include:

- desktop searches of relevant databases such as Bionet and the Commonwealth Protected Matters Search Tool. Vegetation mapping will also be reviewed

- site inspection and ground truthing to identify and describe flora and fauna, habitat, populations and ecological communities
- assessment of the direct and indirect impacts of the Project on flora and fauna species, habitat, populations and ecological communities
- assessment of the significance of the impacts of the Project on species, ecological communities and groundwater dependent ecosystems listed under the EPBC Act and the NSW Biodiversity Conservation Act 2016 (BC Act) that occur or are considered likely to occur
- identification of measures to avoid or mitigate identified potential impacts, and offsets required according to the Transport for New South Wales Vegetation Offset Guide 2019 if residual impacts occur.

Section 7.9 of the BC Act requires that an application for SSI must be accompanied by a biodiversity assessment report (BDAR) unless it is determined by the Coordinator-General of EES and the Secretary of the DPIE (or their delegates) that the proposed development is not likely to have any significant impact on biodiversity values. That determination is referred to as a BDAR waiver.

As outlined above, the Project is located within a highly modified brownfield urban environment. The majority of the Project area is within the existing highly disturbed rail corridor and its immediate surrounds. The Project area has been historically cleared and no remnant native vegetation is present. Vegetation currently present within the area is restricted to native and exotic landscaping species, as well as other exotic vegetation (weeds) that have self-propagated.

On that basis, an initial assessment of issues required by EES and DPIE to inform a determination has been carried out that indicates the development would not take place in an area of significant biodiversity value, nor would it have a significant direct or indirect effect on biodiversity values such as threatened species or ecological communities, or other values prescribed in the Biodiversity Conservation Regulation 2017.

As such the Project area is considered unlikely to hold any significant biodiversity value and hence the Project is unlikely to have any significant impact on biodiversity values.

On this basis, an application for a BDAR waiver has been submitted for the Project which addresses the issues required by EES and DPIE to inform a determination (refer to Appendix A). Should this determination occur, the method of assessment for biodiversity nominated in the SEARs would reflect the BDAR waiver.

9.3 Soils, geology, groundwater and contamination

9.3.1 Existing environment

Soils and geology

A combined land survey, geotechnical contamination study was undertaken in 2018 to inform future development plans for Redfern Station and the surrounding precinct. This study has informed the basis for the information in this section.

The ground surface at Redfern Station is generally at about an elevation of 20 to 30 metres AHD (Australian Height Datum). Local topography is shown to slope away from Redfern Station which is located in a cutting below surrounding surface levels.

Soils and geology information within the Project area has been taken from 1:100 000 soil landscape and geological maps. The expected soil and geological units within the Project area are summarised in Table 9-2.

Table 9-2 Soil landscape and geological units

Unit	Description
Soil	
(bt) Blacktown	The landscape is characterised by gently undulating rises (slopes <5%) on Wianamatta Group shales and Hawkesbury Sandstone with local reliefs of up 30 m. This area is further denoted as 'developed terrain'. The expected residual soils are either: • red and brown residual podzolic soils, shallow to moderately deep (up to 100 cm) located on crests, upper slopes and well drained areas • yellow podzolic soils and soloths, deep (between 150 to 300 cm) located on lower slopes and in areas of poor drainage. Limitations of this soil landscape include: • moderately reactive highly plastic subsoil • low soil fertility • poor soil drainage.
Geology	
Rwa (Ashfield Shale)	The Project area is expected to be underlain by the Ashfield Shale unit which is a sequence of the Wianamatta Group. The Ashfield shale sequence in the area typically comprises interbedded black to dark grey shales, laminites and fine to medium grained sandstones. These materials typically weather to form a residual profile of 1 to 3 metres of medium to high plasticity clays.

The Office of Environment and Heritage Acid Sulfate Soil mapping of the area suggests that no known occurrence of acid sulfate soils has been noted within the Redfern area.

Groundwater

Groundwater was not encountered in the boreholes within the Project area during the 2018 investigations. The 2018 investigations noted that earlier investigations in 2014, reported that groundwater was observed in a borehole drilled at the northern end of Redfern Station at around 18 metres AHD within a shale deposit.

Contamination

The results of the contamination investigation carried out as part of the 2018 investigation (to the limit of the investigation) did not identify significant contamination which would constrain a development consistent with the current use of the site (i.e. railway setting – commercial/industrial land use).

Based on field observations and the results of the laboratory analysis, excavated material (to the limit of the investigation) would be classified as General Solid Waste (non-putrescible) in accordance with the NSW EPA *Waste Classification Guidelines* (2014).

Typical railway corridor contamination risks include the following that would need to be considered and addressed as part of the design and construction works for the Project.

- fouled ballast with heavy end oils and heavy metals
- spilled or leaked liquids such as oil, diesel, cleaning solvents
- asbestos and asbestos fibres from former brake dust generation and industrial environments adjacent to the rail corridor
- railway ground infrastructure, usually treated with chemicals such as creosote
- coal ash and cinder containing lead and arsenic
- herbicide spraying

- Polycyclic Aromatic Hydrocarbons (PAHs) from combustion of fossil fuels
- roofing shingles (asbestos)
- transformers and capacitors (PCBs)
- fill soils imported for construction of platforms and for grading the rail corridor that may contain contaminants such as heavy metals, PAHs and asbestos.

9.3.2 Issues for consideration

Potential construction impacts

Potential soil, groundwater and contamination impacts that could occur during construction include:

- increased soil erosion potential through exposure of the natural ground surface and sub-surface through the removal of overlying structures (such as buildings and footpaths), and excavation for the installation of footings. The exposure of soil to water runoff and wind could increase soil erosion potential
- transport of exposed soils and other unconsolidated materials into surrounding waterways via stormwater runoff
- impacts to groundwater flows and groundwater drawdown during excavation
- impacts to groundwater quality from spills or the disturbance of existing contaminated land
- impacts to surface watercourses with groundwater connectivity
- exposure of contaminated material during excavation and other ground disturbing activities. This would increase the potential for contaminant mobilisation and may create additional exposure pathways to sensitive receptors including workers, the general public and ecosystems
- contamination of soils due to spills and leaks of fuel, oils and other hazardous material
- excess excavated spoil required for appropriate disposal off site where it cannot be reused.

Management of these impacts would occur through appropriate mitigation measures, such as those outlined in *Managing Urban Stormwater – Soils and Construction* (Landcom, 2004) (referred to as the Blue Book).

Potential operational impacts

Operation of the Project has the potential to result in contamination of soils due to spills and leaks of fuel, oil and other hazardous materials from trains, maintenance and other project infrastructure. These would be managed through appropriate mitigation measures that would be developed as part of the EIS.

9.3.3 Method of assessment

A desktop contamination, soils and groundwater assessment will be prepared as part of the EIS and will include:

- a review of previous assessments or assessments undertaken as part of the design development
- a review of historical aerial photography of the Project area (to identify potential contamination sources in the area)
- a review of publicly available data (web-based information sources)
- identification of potential receiving groundwater aquifers
- qualitative assessment of potential soil and groundwater impacts during construction and operation
- appropriate mitigation measures for managing soils, groundwater and contamination.

The following guidelines will be considered during the preparation of the assessment:

- *Acid Sulfate Soils Assessment Guidelines* (Acid Sulfate Soil Management Advisory Committee, 1998)
- *Managing Urban Stormwater – Soils and Construction* (Landcom, 2004) (referred to as the Blue Book).

9.4 Flooding, hydrology and water quality

9.4.1 Existing environment

Drainage catchments and infrastructure

The Project area lies within the Botany Bay drainage catchment. The nearest water body to the Project area is Sheas Creek, around 1.5 kilometres to the south of Redfern Station, which drains into Alexandra Canal which then drains into Botany Bay.

The drainage catchment is highly urbanised with large impervious surfaces created by roads, footpaths and buildings. These impermeable surfaces are interspersed with permeable surfaces such as landscaped areas. Surface runoff within the vicinity of the Project is managed by the City of Sydney Council's stormwater drainage system that comprises mainly of at-grade stormwater pits, connected to an underground pipe network.

Existing flood behaviour

A desktop assessment of the potential flood risk within the Project area has been undertaken as part of design development. The assessment identified the regional and local flood risk for a 1% AEP (Annual Exceedance Probability), otherwise referred to as a 1 in 100 year design flood event, to occur. The AEP is defined as the probability of a flood event being equalled or exceeded within a year.

Several sources of flood information were utilised for the assessment including:

- Alexandra Canal Floodplain Risk Management Study and Plan undertaken in 2014 for City of Sydney
- Blackwattle Bay Catchment Floodplain Risk Management Plan undertaken in 2015 for City of Sydney
- Accessible topographic information (LiDAR data) sourced from Land and Property Information (2013).

Redfern Station is located below surrounding surface levels which could potentially result in localised ponding during flood events greater than the track drainage capacity. This flood behaviour is exhibited in the regional flood assessment showing ponded flood water between Redfern Station platforms.

The topography surrounding Redfern Station slopes away from Redfern Station. This indicates that local overland flooding would unlikely impact on existing pedestrian access points or on vulnerable infrastructure.

Water quality

The drainage catchment surrounding the Project area is highly urbanised and water quality is largely influenced by 'point source' water pollution such as stormwater drainage outlets and diffuse water pollution such as urban runoff that does not enter the stormwater drainage system. Water quality is anticipated to be generally poor, typical of a heavily urbanised environment.

9.4.2 Issues for consideration

Potential construction impacts

Drainage catchments and infrastructure

Construction has the potential to alter existing stormwater flows and the existing stormwater drainage infrastructure due to the establishment of erosion and sediment controls, such as redirecting stormwater runoff around excavations.

Flooding

As outlined above, parts of the Project area are at risk of flooding as Redfern Station is located below surrounding surface levels. Flooding could result in stockpiles of construction materials (such as aggregate and fuels) and spoil being washed into nearby waterways.

Water quality

Construction has the potential to impact water quality in nearby watercourses and the receiving catchment through the pollution of stormwater with sediments, fuel, and other hazardous materials from the construction site.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

Drainage catchments and infrastructure

The Project has the potential to alter existing stormwater catchment flows and the operation of existing stormwater draining networks should re-routing of drainage infrastructure and / or new stormwater infrastructure be required to manage the stormwater flows.

Flooding

The Project would not significantly increase the impermeable surface at Redfern Station and should not therefore result in changes to flooding within the locality. Rainwater on the proposed concourse would be captured and discharged directly into existing stormwater infrastructure, potentially reducing rainfall entering track drainage infrastructure. Changes to drainage infrastructure have the potential to alter downstream flooding regimes.

Water quality

It is unlikely that the operation of the Project would result in a significant impact to the water quality in nearby watercourses and the receiving catchment given the Project would not result in a change in land use and there is no significant increase in impervious catchment areas.

These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

9.4.3 Method of assessment

The EIS will include an assessment of potential impacts to hydrology, flooding and water quality during construction and operation of the Project.

The assessment of potential flooding, hydrology and water quality impacts will include:

- desktop searches and background data review
- development of a detailed description of the existing hydrological environment including identification of potential receiving waters and flow paths
- an assessment of the potential impact of the Project on flood behaviour, local hydrologic systems and water quality during construction and operation
- identification of appropriate mitigation and management measures.

The following guidelines will be considered as relevant during the preparation of the hydrology, flooding and water quality assessment:

- *Managing Urban Stormwater: Soils and construction – Volumes 1* (Landcom, 2004), 2A, 2B, 2C, 2D and 2E (the 'Blue Book') (Department of Environment and Climate Change, 2008)
- *Floodplain Development Manual* (NSW Government, 2005).

9.5 Air quality

9.5.1 Existing environment

Based on a review of the existing land uses surrounding the Project, the existing air quality is considered to be characteristic of an inner urban environment, with particular industrial influences.

A search of the Commonwealth Department of the Environment's 2017/2018 National Pollutant Inventory database data within City of Sydney LGA identified that there are five facilities within the area, with the closest industrial facility located around 3.4 kilometres south of the Project area.

Potential sources of emissions affecting air quality include the diesel trains that operate along the line and general urban sources such as vehicles. Other potential sources of emissions may include commercial business such as service stations and other construction projects.

9.5.2 Issues for consideration

Potential construction impacts

During construction, air quality impacts would be associated with the generation of dust, emissions from stationary and moving on-site machinery, and project associated vehicular traffic. Anticipated sources of dust and dust generating activities include:

- dust generated from the loading and transfer of material from trucks
- general construction works, including excavation required for the Project.

The Project may result in potential localised air quality degradation, however impacts arising from this would be short term over the length of the construction and would be minor. These impacts would be managed through appropriate mitigation measures that would be developed as part of the EIS.

Potential operational impacts

Overall impacts on air quality during the operation of the Project are considered minimal as the Project would not result in a significant change in land use. The Project aims to improve amenity and access at Redfern Station as well as access to nearby facilities. The Project, therefore, would have the potential to reduce vehicle emissions in the long term, by diverting people form car use which would lead to a beneficial effect on local and regional air quality.

9.5.3 Method of assessment

The EIS will include an air quality assessment which will assess the impacts of the Project on air quality. The assessment will:

- identify and describe the background air quality environment based on a desktop review
- identify potential sensitive receivers likely to be impacted by sources of air emissions
- identify potential sources of air emissions during construction and operation of the Project and qualitatively asses them
- identify appropriate mitigation and management measures.

9.6 Hazard and risk

9.6.1 Existing environment

Existing hazards and risks across the Project area include:

- below and above ground utilities present within Redfern Station and the adjacent areas including roads, private and public properties. These include but are not limited to electricity, water, gas and telecommunications
- railway hazards associated with the railway corridor
- traffic hazards associated with the movement of vehicles along existing roads
- storage of hazardous materials and dangerous goods.

9.6.2 Issues for consideration

Potential construction impacts

The following hazards have the potential to occur during construction:

- the onsite storage, use and transport of chemicals, fuels and materials. To manage this risk, all hazardous substances that may be required for construction would be stored and managed in accordance with the *Work Health and Safety Act 2011* and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005)
- the rupture of, or interference with, underground services. To manage this risk, utility service checks such as Dial Before You Dig (DBYD) and consultation with relevant service infrastructure providers would be undertaken prior to the commencement of ground disturbance works. Service and utility identification works (for example non-destructive excavation methods) may be used to expose buried services.

Potential operational impacts

The main hazard likely to be encountered during operation of the Project is the storage, use and transport of chemicals, fuels and materials. To manage this risk, hazardous substances that may be required for maintenance works would be stored and managed in accordance with the *Work Health and Safety Act 2011* and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005).

9.6.3 Method of assessment

A high level, desktop hazard and risk assessment will be undertaken for the Project and appropriate management measures will be proposed. The following government guidelines will be considered as relevant during the preparation of the hazard and risk assessment:

- *International Standard (ISO/IEC 31010) – Risk Assessment Technique*
- *Australian Code for the Transport of Dangerous Goods by Road & Rail (Edition 7.5)* (National Transport Commission, 2017)
- *Code of Practice for the Safe Removal of Asbestos 2nd Edition* (National Occupational Health and Safety Commission, 2005)
- *Storage and Handling of Dangerous Goods Code of Practice* (WorkCover NSW, 2005).

9.7 Waste and resources

9.7.1 Issues for consideration

Potential construction impacts

Waste

A variety of solid and liquid wastes would be generated during construction. The main construction activities anticipated to generate waste are outlined in Table 9-3.

Table 9-3 Indicative waste generation during construction

Waste-generating activity	Waste material produced
Excavations, cuttings and general earthworks	Spoil comprising virgin excavated natural material (VENM) and fill material containing potential contamination.
Pre-cast concrete manufacture	Concrete slurry, concrete waste, timber formwork.
Demolition of buildings (i.e. partial demolition of the existing 125-127 Little Eveleigh Street building), roads, pavements and other structures (i.e. at Little Eveleigh Street and Marian Street)	Concrete, bricks, tiles, timber, carpets, electrical and plumbing fittings, furnishings, hazardous waste (including asbestos), asphalt, bitumen, road base and sub-base.

Waste-generating activity	Waste material produced
Piling	Slurry and spoil comprising virgin excavated natural material (VENM) and fill material containing potential contamination.
Dust suppression, wash down of plant and equipment and staff amenities at the construction ancillary facility	Sediment-laden and/or potentially contaminated wastewater, sewage and grey water, including groundwater inflows to excavations at Redfern Station.
Maintenance of construction plant, vehicles and equipment	Adhesives, lubricants, waste fuels and oils, engine coolant, batteries, hoses and tyres.
Office activities	Domestic waste (i.e. food scraps, plastic or paper items).

All wastes would be managed using the waste hierarchy approach of waste avoidance then waste re-use, before consideration of waste disposal. All waste would be managed in accordance with the waste provisions in the *Protection of the Environment Operations Act 1997*, and where reused or disposed off-site, would comply with relevant NSW EPA resource recovery exemptions.

Resource use

Resources used during construction would include electricity, water, fuel, paving materials, lubricating oil, concrete, steel, glass, timber.

Potential operational impacts

Waste

The main activities anticipated to generate waste during operation of the Project are outlined in Table 9-4.

Table 9-4 Indicative waste generation during operation

Waste-generating activity	Waste material produced
Disposal of general litter in station bins and cleaning activities associated with trains and stations	General non-recyclable and putrescible waste (e.g. food waste from rubbish bins), recyclable wastes such as plastics and paper.
Infrastructure maintenance	Cable and conduit off-cuts from maintenance of track electrical infrastructure, solvents, paints, adhesives, cleaning fluids, grease, acids and alkali materials, spent spill kit materials used to clean up accidental spills, waste water from cleaning facilities.
Stormwater ingress into Redfern Station and sections of the track	Sediment-laden and/or potentially contaminated wastewater.
Use of station customer facilities (such as toilets)	Sewage and greywater.

Resource use

Resource use during operation would primarily consist of water and electricity required for the ongoing running of Redfern Station, including lighting, electronic signage and toilets. Resources required during operation are not expected to place a significant strain on water or electricity resources available in the wider Sydney region.

9.7.2 Method of assessment

A desktop waste and resource assessment will be undertaken as part of the EIS and will include:

- a review of the likely waste streams and approximate volumes during construction and operation of the Project
- a review of the likely resources required during construction and operation of the Project
- development of management strategies to adequately address waste and resource use during construction and operation.

The following legislation and guidelines will be considered as relevant during the preparation of the waste and resource assessment:

- *Waste Avoidance and Recovery Act 2001*, specifically focusing on the management of construction waste through the waste hierarchy established under this Act
- *Waste Classification Guidelines* (NSW Environment Protection Authority, 2014).

9.8 Climate change and sustainability

The design of the Project will be based on the principle of sustainability, including aiming for an excellent rating as a program under the Infrastructure Sustainability Council of Australia's (ISCA) Infrastructure Sustainability (IS) Rating Tool Version 1.2 and aligning with the *Transport Environment & Sustainability Policy Framework* (Transport for NSW, 2015) and *TfNSW Environment and Sustainability Policy* (Transport for NSW, 2013).

The IS rating scheme provides and independent and consistent methodology for the application and evaluation of sustainability outcomes in infrastructure projects. The sustainability outcomes address environmental, social, economic and governance aspects.

The IS Rating Scheme is grouped into six key themes:

- management and governance
- using resources
- emissions, pollution and waste
- ecology
- people and place
- innovation.

These sustainability themes are divided into 15 performance categories, against which the Project would be independently assessed and assigned a rating level. The Project would need to achieve at least 50 points to be certified as 'Excellent'.

The process for integration of environment and sustainability in design is discussed in Section 4.2.3.

9.8.1 Issues for consideration

Potential construction impacts

Construction would result in the generation of greenhouse gas emissions. The volume of greenhouse gas emissions generated would depend on the type and quantity of construction materials used, construction methodologies and equipment used, and the overall design of the Project. Activities that are anticipated to result in the largest quantities of greenhouse gas emissions include:

- combustion of fuel in construction plant, equipment and vehicles
- disposal of construction waste (indirect emissions would be generated by the decomposition of the waste material at waste handling facilities)
- use of construction materials with a high embodied energy - for example, construction materials (such as steel and concrete) require a considerable amount of energy to manufacture and transport

- it would not be possible to completely avoid the generation of greenhouse gas emissions during construction. However, opportunities to reduce the volume of greenhouse gas emissions will be identified in the EIS.

Other climate change and sustainability considerations include:

- the effect of climate change impacts (urban heat, flooding) resulting in adverse human health outcomes
- waste from both construction and operation including energy, water, construction materials and food wastes not supporting a circular economy use of materials.

Potential operational impacts

The improved accessibility of Redfern Station would potentially encourage a mode shift from road to rail for some customers. This has the potential to reduce greenhouse gas emissions associated with road transport compared to the emissions that would otherwise occur if the Project were not delivered.

Opportunities to reduce the Project's demand on electricity (and, therefore, greenhouse gas emissions) and to offset greenhouse gas emissions associated with operational electricity use would be identified in the Project's sustainability strategy.

9.8.2 Method of assessment

A sustainability assessment will be included in the EIS which would address the following.

- an assessment of the Project against the current guidelines including targets and strategies that address sustainability themes e.g. water, energy and transport
- an assessment of potential impacts of climate change on the Project, taking into account the climate change scenarios already considered within the design
- a high level assessment of sustainability risks and opportunities for improved sustainability outcomes during design, construction and operation
- consideration of how the Project would demonstrate a best practice level of performance using ISCA IS Rating Tool Version 1.2 during design, construction and operation.

The following guidelines will be considered during preparation of the sustainability assessment:

- ISCA IS Rating Tool Version 1.2
- *NSW Sustainable Design Guidelines Version 4.0* (Transport for NSW, 2017)
- *Carbon Estimate and Reporting Tool* (Transport for NSW, 2017)
- *Climate Risk Assessment Guidelines v2.0* (TfNSW, 2018).

10. Cumulative impacts

Cumulative impacts are impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own. Cumulative impacts can result from the successive, incremental, and/or combined effects of an activity or project when added to other development activities.

The extent to which another development or activity could interact with the construction and/or operation of the Project would depend on its scale, location and/or timing of construction. Generally, the largest cumulative impacts would be expected to occur in situations where multiple long-duration construction activities are undertaken close to, and over a similar timescale of, construction activities for the Project.

10.1.1 Issues for consideration

Publicly announced projects that have the potential to result in cumulative impacts with the Project include:

- Sydney Metro City & South West – Chatswood to Sydenham and the future Sydney Metro Waterloo Station construction and operation
- development in the South Eveleigh precinct (including the former Australian Technology Park)
- development in the North Eveleigh precinct
- development of the Pemulwuy project north of Redfern Station
- development in the Waterloo Metro Quarter
- social housing development at 11 Gibbons Street, Redfern.

Potential construction impacts

Potential cumulative impacts that could arise in situations where the construction of the Project occurs concurrently with other committed developments include:

- construction traffic – cumulative impacts may occur where multiple construction projects use the same construction traffic routes at the same time. Cumulative impacts could include traffic congestion and amenity impacts
- loss of on-street parking and/or other kerbside uses (such as loading zones) – construction of the Project has the potential to affect the supply of on-street parking and other kerbside uses (such as loading zones). Parking availability could be further affected by other projects, where these could affect the location and/or number of parking spaces
- disruptions to the reliability of public transport – station closures and changes to access arrangements for Redfern Station could result in longer travel times
- construction noise and vibration– there is potential for impacts from the Project to be exacerbated by other nearby construction sites operating either simultaneously with the Project or very shortly before or after the Project. Cumulative impacts could include construction fatigue due to longer periods of construction noise on a daily and overall basis, increased overall noise levels, and longer duration or increased frequency of night works
- visual amenity impacts - increased extent and/or duration of visual amenity impacts as a result of nearby projects being constructed at the same time or consecutively with the Project
- loss of public open space – the availability of public open space could be temporarily reduced due to the establishment of multiple construction compounds and/or work sites. The community's enjoyment of nearby public open spaces (that are not directly affected by construction) could be affected by increased construction noise and visual amenity impacts
- business impacts – businesses could be affected by cumulative impacts such as the loss of on-street parking for customers, disruptions to loading zones and deliveries and positive impacts such as increase in passing trade.

Potential operational impacts

Potential cumulative impacts that could occur due to the concurrent operation of the Project and other known developments include:

- Non-Aboriginal heritage impacts – project infrastructure in the vicinity of other surrounding developments could impact on the setting or heritage significance of heritage listed items and/or heritage conservation areas. This impact could particularly occur where a large number of State and locally listed heritage items are situated close to the Project and other known developments.

10.1.2 Method of assessment

The cumulative impact assessment in the EIS will consider the interaction of the Project's impacts with other known or planned development within or in the vicinity of the Project. The identification of relevant developments will focus on developments of a similar scale or with similar impacts to the Project including other SSD or SSI projects.

Potential project developments for inclusion in the cumulative impact assessment will be identified from the following sources:

- a review of the NSW DPIE Major Projects website
- a review of relevant local council development application registers
- consultation with government agencies, relevant councils and other key stakeholders
- a review of strategic planning documents.

Potential cumulative impacts arising from the interaction of identified developments with the Project will be assessed in a qualitative or quantitative manner, as relevant. Appropriate management and mitigation measures will be identified where required.

11. Conclusion

Transport for NSW is seeking approval to construct and operate an upgrade of Redfern Station (Redfern Station Upgrade – New Southern Concourse) ('the Project') as a component of the Transport Access Program. The Transport Access Program is a NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

The Project involves the upgrade of Redfern Station through the construction of a new pedestrian concourse to the south of the existing Lawson Street concourse providing both lift and stair access to Platforms 1-10. The Project would connect Marian and Little Eveleigh Streets and include associated shared zone upgrades of Little Eveleigh Street.

Redfern Station is an important destination and the sixth busiest on the Sydney rail network, servicing the community, education centres and businesses. The current layout of the station constrains pedestrian movements in and out of the station creating functionality and safety issues. Patronage at Redfern Station is set to increase with a pipeline of local development projects planned.

Upgrading Redfern Station is the first step in renewing the Redfern and North Eveleigh precinct. The Project would provide safe and equitable access to all platforms at Redfern Station (Platforms 1 – 10) and the surrounding pedestrian network, and improve customer facilities, amenity and safety. By connecting platforms to Little Eveleigh Street and expanding the existing Marian Street entrance, customers and the community would also have improved access to their homes and workplaces, as well as the many local shops and community facilities. Regarding providing lift access to Platforms 11 and 12 Transport for NSW has, as a separate exercise, begun preliminary investigations to help identify accessibility improvements to these platforms.

The Project has sought to be declared SSI under sections 5.12 and 5.13 of the EP&A Act. Therefore, the Project would be subject to assessment and approval by the Minister for Planning under Division 5.2 of the EP&A Act.

This Scoping Report supports an application to the Minister for Planning seeking the Secretary's environmental assessment requirements for the EIS.

A preliminary environmental risk analysis for the Project has identified the following 'key' environmental issues:

- traffic and transport
- noise and vibration
- Aboriginal heritage
- non-Aboriginal heritage
- social and business impacts
- landscape character, visual amenity and urban design.

Aboriginal heritage has been included as a key issue despite it being assessed as a medium (rather than high) environmental risk ranking, due to the significance of the Redfern area to the Aboriginal community. Detailed assessment of these key issues, as well as other potential environmental issues, would be undertaken as part of the Environmental Impact Statement.

The preliminary environmental risk analysis has been prepared based on the interim project definition. It is noted that the project components, location and design would be subject to further refinement and changes as part of the ongoing design development and community consultation, and clarifications may be made during the environmental impact assessment process.

Detailed assessment of these issues, and the other environmental issues identified, would be undertaken as part of the EIS. As part of this assessment process, environmental mitigation measures would be developed to minimise the potential impacts of the Project during construction and operation.

Following the receipt of the Secretary's environmental assessments requirements, Transport for NSW will prepare the EIS for public exhibition by DPIE. The EIS will include:

- a description of the Project, including its components and construction activities
- the strategic context and justification for the Project
- an analysis of the strategic alternatives and options considered for the Project
- a description of the existing environment and an assessment of potential direct and indirect impacts on the key and other potential environmental issues during construction and operation of the Project, including cumulative impacts
- identification of measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor potential impacts of the Project
- identification and consideration of issues raised by stakeholders and the community.

12. References

Acid Sulfate Soils Management Advisory Committee (1998) *Acid Sulfate Soils Manual*

Acid Sulfate Soil Management Advisory Committee (1998) *Acid Sulfate Soils Assessment Guidelines*

AHMS (2008). *North Eveleigh Railway Workshops NSW: Archaeological Development Impact Assessment, Zoning Plan and Impact Mitigation Strategy*

ANZECC/ ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*

Australian and New Zealand Environment Council (1990) *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*

Australian Department of the Environment and Energy (2006) *Climate Change Impact and Risk Management – A Guide for Business and Government*

Austroads (2013) *Guide to Traffic Management – Part 3 Traffic Studies and Analysis*

Austroads (2014) *Cycling Aspects of Austroads Guides*

Bureau of Health Information (2019), *Healthcare Observer: Hospital Data*

Cardno (2014) *Alexandra Canal Floodplain Risk Management Study and Plan*

Cardno (2016) *University of Sydney and Royal Prince Alfred Hospital Precinct Draft Transport Achievement and Action Report*

Health (2001) *Environmental Health Impact Assessment Guidelines, Commonwealth Department of Health and Aged Care*

Health (2012) *Environmental Health Risk Assessment, Guidelines for assessing human health risks from environmental hazards, Commonwealth of Australia*

Horton, D. R. (1994). *The Encyclopaedia of Aboriginal Australia: Aboriginal and Torres Strait Islander History Society and Culture.* (D. R. Horton, Ed.). Canberra: Aboriginal Studies Press: Australian Institute of Aboriginal and Torres Strait Islander Studies

Irish, P., (2017) *Hidden in Plain View: The Aboriginal People of Coastal Sydney,* University of New South Wales Publishing: Sydney, NSW

GHD (2014) *Redfern Station Accessibility Upgrade Noise and Vibration Impact Assessment*

Greater Sydney Commission (2018) *The Greater Sydney Region Plan*

International Council on Monuments and Sites (2013) *Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013* (the Burra Charter)

Landcom (2004) *Managing Urban Stormwater: Soils and Construction Volume 1*

Marcus Lincoln Smith (2003) *Aquatic Ecology in Environmental Impact Assessment – EIA Guideline*

Murray, R. and White, K. 1988. Dharug and Dungaree: The History of Penrith and St Marys to 1860. Hargreen Publishing Company in conjunction with the Council of the City of Penrith.

NSW Department of Environment and Climate Change (2007) *Practical Consideration of Climate Change - Flood risk management guideline*

NSW Department of Environment and Climate Change (2008) *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW*

NSW Department of Environment and Climate Change (2008) *Managing Urban Stormwater: Soils and Construction Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries)*

NSW Department of Environment and Climate Change (2009) *Interim Construction Noise Guideline*

NSW Department of Environment and Climate Change and Water (2010) *Aboriginal Cultural Heritage Consultation requirements for proponents*

NSW Department of Environment and Climate Change and Water (2010) *Code of practice for archaeological investigation of Aboriginal objects in NSW*

NSW Department of Environment and Climate Change and Water (2011) *NSW Road Noise Policy*

NSW Department of Environment and Conservation (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*

NSW Department of Environment and Conservation (2005) *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*

NSW Department of Environment and Conservation (2006) *Assessing Vibration: a technical guideline*

NSW Department of Environment and Conservation (2006) *Guidelines for the NSW Site Auditor Scheme*

NSW Department of Environment and Conservation (2006) *Technical Framework - Assessment and Management of Odour from Stationary Sources in NSW*

NSW Department of Environment and Conservation (2006) *Using the ANZECC Guidelines and Water Quality Objectives in NSW*

NSW Department of Fisheries (2003) *Requirements for Waterway Crossings*

NSW Department of Infrastructure, Planning and Natural Resources (2004) *Planning Guidelines for Walking and Cycling*

NSW Department of Land and Water Conservation (2000) *Soil and Landscape Issues in Environmental Impact Assessment*

NSW Department of Natural Resources (2005) *NSW Government's Floodplain Development Manual*

NSW Department of Planning Industry and Environment (2017) Sydney Basin - *regional history: Aboriginal occupation,* accessed at: https://www.environment.nsw.gov.au/bioregions/SydneyBasin-RegionalHistory.htm

NSW Department of Planning (2008) *Development Near Rail Corridors and Busy Roads – Interim guideline*

NSW Department of Primary Industries (2012) *NSW Aquifer Interference Policy*

NSW Department of Primary Industries (2013) *Policy and Guidelines for Fish Habitat Conservation and Management – Update 2013*

NSW Department of Urban Affairs and Planning (2001) *Crime prevention and the assessment of development applications*

NSW Department of Urban Affairs and Planning and Environment Protection Authority (1998) *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land*

NSW Environment Protection Authority (2000) *NSW Industrial Noise Policy*

NSW Environment Protection Authority (2013) *Methodology for Valuing the Health Impacts of Changes in Particle Emissions*

NSW Environment Protection Authority (2014) *Waste Classification Guidelines*

NSW Environment Protection Authority (2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*

NSW Fisheries (2003) W*hy do Fish Need to Cross the Road? Fish Passage*

NSW Government (2018) *Building Momentum: State Infrastructure Strategy 2018-2038*

NSW Government (2018) *Future Transport Strategy 2056*

NSW Health (2007) *Health Impact Assessment: A practical guide*

NSW Health (2009) *Healthy Urban Development Checklist*

NSW Heritage Council (2011) *Criteria for the Assessment of Excavation Directors*

NSW Heritage Branch (2009) *Assessing Significance for Historical Archaeological Sites and Relics*

NSW Heritage Office (1996) *NSW Heritage Manual and the Archaeological Assessment Guidelines*

NSW Heritage Office (1998) *NSW Skeletal Remains: Guidelines for Management of Human Remains*

NSW Heritage Office (2001) *Assessing Heritage Significance*

NSW Office of Environment and Heritage (2011) *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW*

NSW Office of Environment and Heritage (2011) *Guidelines for Consultants Reporting on Contaminated Sites*

NSW Office of Environment and Heritage (2014) *NSW Biodiversity Offsets Policy for Major Projects*

NSW Office of Environment and Heritage (2014) Framework for Biodiversity Assessment

NSW Office of Environment and Heritage (2015) *Technical guideline for Urban Green Cover in NSW*

NSW Office of Environment and Heritage (2018) *Protection and regulation of Aboriginal cultural heritage,* accessed at: https://www.environment.nsw.gov.au/licences/achregulation.htm

NSW Office of Water (2012) *NSW Aquifer Interference Policy*

NSW Office of Water (2012) *Risk assessment Guidelines for Groundwater Dependent Ecosystems*

Queensland Government (2007) *Crime Prevention through Environmental Design*

Rappoport Pty Ltd. (2013). *Central Station Conservation Management Plan*

Roads and Maritime Services (2012) *Bridge Aesthetics: Design guidelines to improve the appearance of bridges in NSW*

Roads and Maritime Services (2013) *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment*

(Roads and Maritime Services (2014) Beyond the Pavement: urban design policy, procedures and design principles

Roads and Maritime Services (2015) *Noise Mitigation Guideline*

Roads and Maritime Services (2015) *Noise Criteria Guideline*

Roads and Maritime Services (in draft) *Technical Guide for Climate Change Adaptation for the State Road Network*

Roads and Traffic Authority (2002) *Guide to Traffic Generating Developments Version 2.2*

Roads and Traffic Authority (2003) *NSW Bicycle Guidelines*

Roads and Traffic Authority (2001) *Environmental Noise Management Manual*

Standards Association of Australia (1997) *AS4282-1997 Control of the obtrusive effects of outdoor lighting*

State of NSW and Office of Environment and Heritage (2014) *Framework for Biodiversity Assessment*

Transport for NSW (N.D) *RailCorp section 170 Heritage and Conservation Register*

Transport for NSW (2019) *Construction Noise and Vibration Strategy* Version 4.0

Transport for NSW (2013) *NSW Sustainable Design Guidelines Version 3.0*

Transport for NSW (2017) *NSW Sustainable Design Guidelines Version 4.0*

Transport for NSW (2017) *Carbon Estimate and Reporting Tool*

Transport for NSW (2018) *Climate Risk Assessment Guidelines (9TP-SD-081/3.0)*

Transport for NSW (2019) *Vegetation Offsets Policy Guide*

UrbanGrowth (2016) *Central to Eveleigh (C2E) Urban Transformation Strategy*

WMAwater (2015) *Blackwattle Bay Catchment Floodplain Risk Management Plan*

WorkCover NSW (2005) *Storage and Handling of Dangerous Goods Code of Practice*

Appendix A BDAR Waiver Request

Redfern Station Upgrade - New Southern Concourse

BDAR Waiver Request

Revision – 05-Nov-2019
Prepared for – Transport for NSW – ABN: 18 804 239 602

Redfern Station Upgrade - New Southern Concourse

BDAR Waiver Request

Client: Transport for NSW

ABN: 18 804 239 602

Prepared by

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AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Redfern Station Upgrade - New Southern Concourse
Ref	60597833
Date	05-Nov-2019
Proponent name	Transport for NSW
Postal address	Level 5, Tower A, Zenith Centre 821 Pacific Highway Chatswood NSW 2067
ABN	18 804 239 602
Nominated contact	Tanya Coates, Senior Manager Planning, Planning Environment and Sustainability, Infrastructure and Place, Transport for NSW
Prepared by	Jamie McMahon (B Env Sc, CEnvP IA specialist)
Reviewed by	Michael England (BA Urban and Regional Planning)

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BDAR Waiver request

Table 1 BDAR Waiver request information requirements

	BDAR Waiver request information requirements
Proponent name	Transport for New South Wales
Project ID	PDA-830
Name and Ecological qualifications of person completing	Jamie McMahon (18 years' experience in ecological impact assessment and site ecologist services) Bachelor of Environmental Science (Hons) Biological Sciences Certified Environmental Practitioner – Impact Assessment Specialist
Site street address, Lot and DP, local government area	Redfern Station, Lawson Street Eveleigh, 2015, Lot 5 DP 1175706, City of Sydney
Description of existing development site	Redfern Station
Location map showing the development site in the context of surrounding areas and landscape features	Refer to Figure 1
Site Map	Refer to Figure 2
Project Description	Transport for NSW is seeking approval to construct and operate an upgrade of Redfern Station (Redfern Station Upgrade – New Southern Concourse) ('the Project') as a component of the Transport Access Program. The Project involves the upgrade of Redfern Station through the construction of a new pedestrian concourse to the south of the existing concourse providing both lift and stair access to Platforms 1-10. The Project would connect Marian and Little Eveleigh Streets, and includes associated upgrades of Little Eveleigh Street and Marian Street. Where the concourse connects into Little Eveleigh Street, it is proposed to repurpose the existing building at 125-127 Little Eveleigh street into a station entrance.
Proposed Site Plan.	Refer to Figure 3

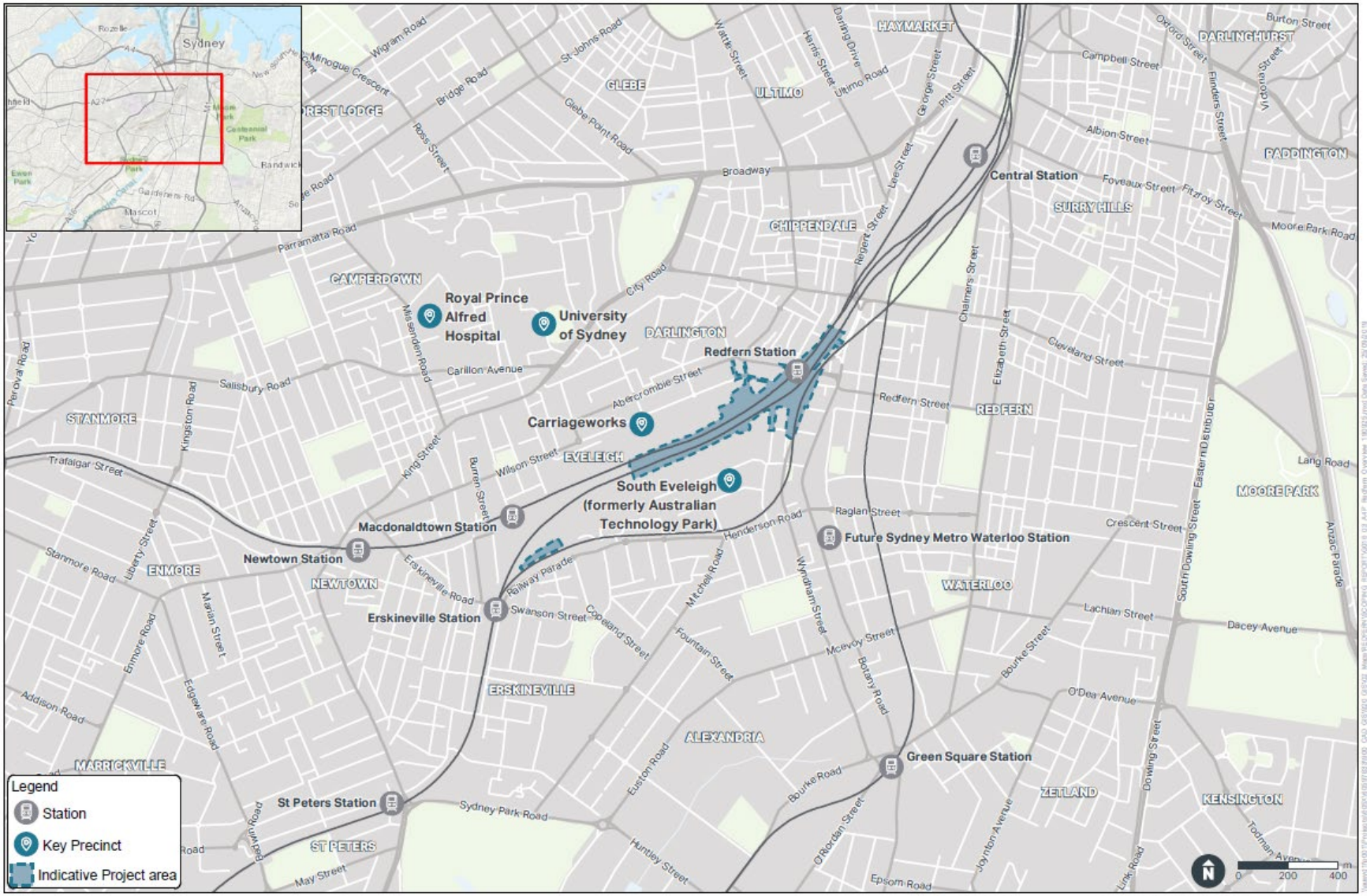

Figure 1 Project location

Figure 2 Site map

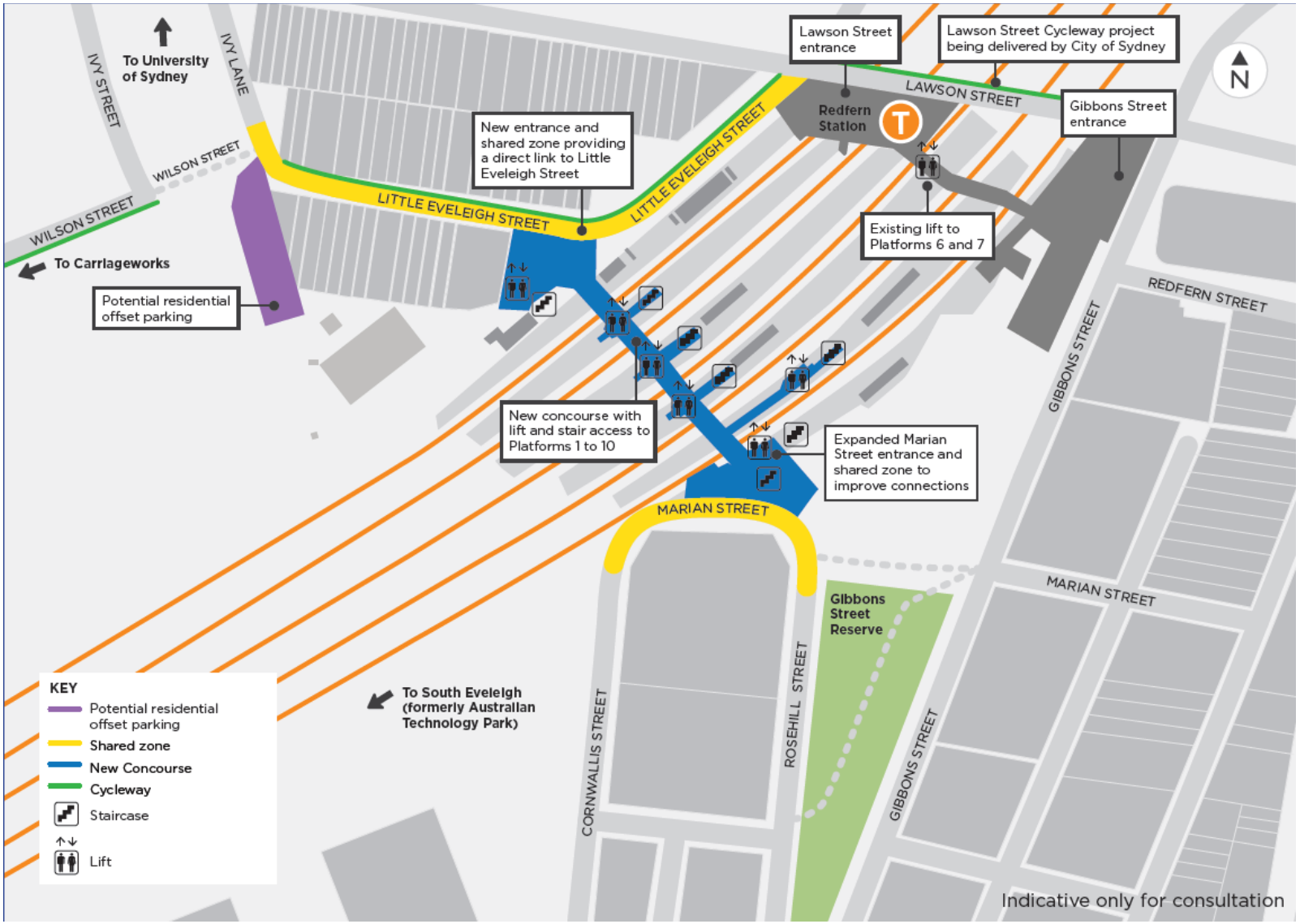

Figure 3 Site plan

Table 2 Impacts of the proposed development on biodiversity values

Biodiversity value	Meaning	Relevant (yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Vegetation abundance 1.4(b) BC Regulation	Occurrence and abundance of vegetation at a particular site	Yes	The Project would be undertaken in a highly urbanised area with no remnant native vegetation present. Vegetation likely to be affected by the Project is restricted to cultivated landscaping vegetation and naturally propagated weeds. Landscaping vegetation within the Project area includes a range of native and exotic vegetation as mapped in Figure 2, including Acacias, Eucalypts and date palms.
Vegetation integrity 1.5(2)(a) *Biodiversity Conservation Act 2016* (BC Act)	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	Yes	The vegetation within and surrounding the Project area is mapped as urban exotic/ native (refer to Figure 2), and has been extensively modified by urban development over the past 200+ years. This includes significant earthworks associated with the railway line, roads, buildings and other urban infrastructure. The composition and structure of the vegetation present retains no similarity with the vegetation that would have originally occupied the Project area or region. The Project would remove a small area of landscaping species including semi mature eucalypts and a range of other native and exotic cultivated species. While the value of this vegetation within the urban context is recognised, the structure of this vegetation is poor and its loss would not likely lead to any significant biodiversity impacts.
Habitat suitability 1.5(2)(b) BC Act	Degree to which the habitat needs of threatened species are present at a particular site	Yes	The Project would only remove some of the vegetation within the Project area. The extent of the vegetation for removal would be minimised through detailed design. The Project would also introduce additional lighting sources and human activity both during construction and operation. At present the Project area provides no known threatened flora habitat. The degree of threatened fauna habitat would be extremely limited and would be limited to urban adapted species such as grey-headed flying fox. Use of the area by this species is likely to be highly intermittent and casual, if at all.

Biodiversity value	Meaning	Relevant (yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Threatened species abundance 1.4(a) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	Yes	The Project area contains no records of any flora listed as threatened in NSW or at the Commonwealth level. However, two individuals of *Eucalyptus scoparia* have been identified which are likely to be within the Project footprint, adjacent to the platform 10 station entry. This species is listed as endangered under the BC Act and vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and has a natural range in NSW between Glen Innes and the Queensland border. The two identified individuals have clearly been planted as part of a landscaping effort, and are not part of a naturally occurring population. Assessments of significance under the BC Act and EPBC Act have been undertaken for these individuals (Appendix B). These assessments indicate that the Project would not result in a significant impact upon this species at either the NSW or Commonwealth levels. Several records of grey-headed flying fox are present around the Project area, with none of these being within the Project area itself. This species typically makes use of fruit-bearing trees in urban environments, particularly figs. As no such fruit-bearing vegetation would be removed, any impact upon this species is expected to be negligible. The Environment, Energy and Science Group of the Department of Planning, Industry and Environment notes the potential for the presence of threatened microbats within the building at 125-127 Little Eveleigh Street. As such AECOM has surveyed the internal and external façade of this building to assess the potential for the building to comprise habitat for threatened microbats (Appendix A). This assessment did not record any evidence of such habitation and as such the building is not considered to comprise threatened microbat habitat. The Project would not increase the likelihood of other biodiversity impacts such as vehicle strikes or sedimentation impacts .

Biodiversity value	Meaning	Relevant (yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Habitat connectivity 1.4(c) BC Regulation	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	N/A	The Project area is part of a broader area of landscaping in and around Redfern Station and the surrounding precinct. This vegetation is devoid of any functional vegetation structure and is comprised of an array of native and exotic species not naturally occurring in this location. The Project area is also adjacent to a wide area of active rail corridor which presents a substantial barrier to north-south movement. On this basis the vegetation proposed to be removed is not considered critical to the movement of any threatened species.
Threatened species movement 1.4(d) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	N/A	As outlined above the Project area is not critical to the connectivity (genetic or otherwise) of populations of threatened species and its development would not place any threatened flora or fauna populations at risk.
Flight path integrity 1.4(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference	N/A	The Project would be developed primarily at existing ground level and would not result in any obstruction to overflight patterns of threatened or other protected species.
Water sustainability 1.4(f) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	N/A	The Project would not alter any naturally occurring waterbodies. Construction impacts would be managed in such a way as to minimise sediment escape and hence reduce the potential for impacts upon any nearby waterbodies, natural or otherwise. The Project would not alter hydrological regimes in the area such that any habitat for threatened species or ecological communities would be placed at risk.

* Attach additional supporting documentation where appropriate

Appendix A: Threatened microbat search summary

Introduction

A search of the building at 125-127 Little Eveleigh Street was undertaken to assess the potential for it to provide habitat for threatened microbats. This search was intended to support the request for a BDAR exemption.

This summary report outlines the methodology and results of this survey.

Method

A survey of the above building was undertaken on 14 September 2019. The search was undertaken according to '*Species credit' threatened bats and their habitats - NSW survey guide for the Biodiversity Assessment Method* (OEH 2018). The relevant section of this guideline states:

> ***Roost search(microbats):*** *a search of a microbat roost is undertaken by looking for bats or signs of bats (urine stains, droppings, remains, and bat fly casings) in suitable roost habitat during the daytime. All roost searches should use a torch to shine in holes, cracks and crevices, and carry a handheld bat detector to locate (and identify) bats that may call. If bats are located observers must confirm the identity of the species and determine if the roost is a maternity roost.*

The survey was undertaken by Jamie McMahon, a qualified and experience ecologist with AECOM Australia.

The habitat survey was undertaken during the daytime, commencing at 9:00am and lasting for approximately two hours. As per the guidelines a handheld bat detector (Anabat II) was carried throughout the survey. The internal and external façade of the building was searched for signs of habitat by bats including urine stains, droppings, remains, and bat fly casings. The external façade was examined from ground level only, with binoculars used to examine the upper floors and eaves. All accessible cracks, crevices and holes were examined with a torch for signs of microbats.

Results

Whilst the building had a small number of cracks and crevices in the external façade, no signs of habitation by any threatened microbat, megabat or other native mammal was detected during the survey. Most holes, cracks and crevices were either too shallow or too narrow to comprise suitable habitat for microbats. None showed any signs of any urine stains or guano within or around the opening, with the majority being covered with cobwebs. This was true of all crevices at all levels on the building façade.

The handheld Anabat device carried throughout the survey did not detect any ultrasonic noise that could be attributable to microbats.

Photographs of holes, cracks and crevices and the building façade generally are provided below.

Conclusion

On the basis of the above results it is concluded that the building does not currently accommodate microbats, threatened or otherwise.

Photographs of the external façade of 125-127 Little Eveleigh Street

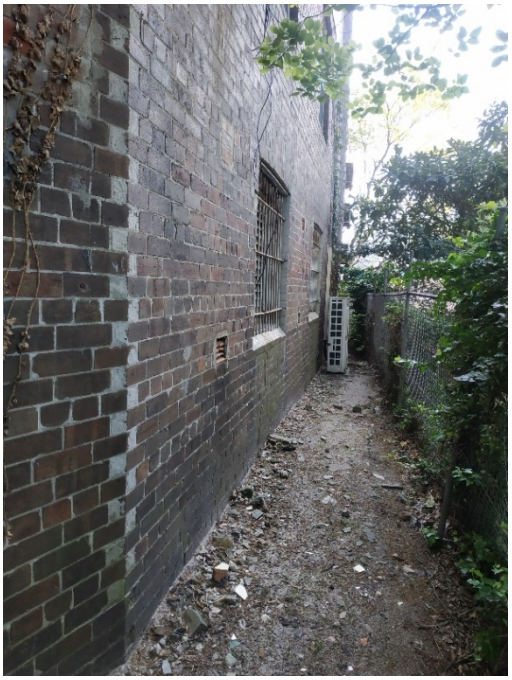

Figure 4 View along basement level of southern side of 125-127 Little Eveleigh Street, looking northeast

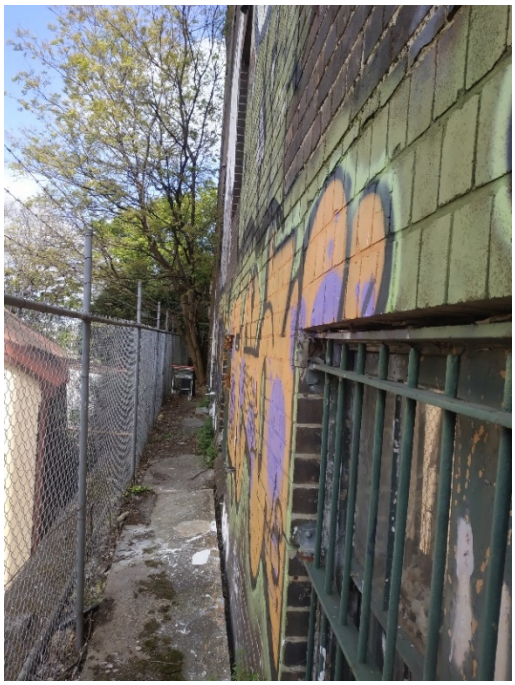

Figure 5 View along basement level of southern side of 125-127 Little Eveleigh Street, looking southwest

Figure 6 Airbrick at basement level of southern side 125-127 Little Eveleigh Street

Figure 7 Ventilation outlet at basement level of southern side of 125-127 Little Eveleigh Street

Figure 8 Window framing at basement level of southern side of 125-127 Little Eveleigh Street

Figure 9 Photo looking up the side of the building from basement level of southern side of 125-127 Little Eveleigh Street

Figure 10 Ventilation outlet at basement level of southern side of 125-127 Little Eveleigh Street

Figure 11 Window framing at basement level of southern side of 125-127 Little Eveleigh Street

Figure 12 Ventilation outlet at basement level of southern side of 125-127 Little Eveleigh Street

Figure 13 Window framing at basement level of southern side of 125-127 Little Eveleigh Street

Photographs of the internal space of 125-127 Little Eveleigh Street

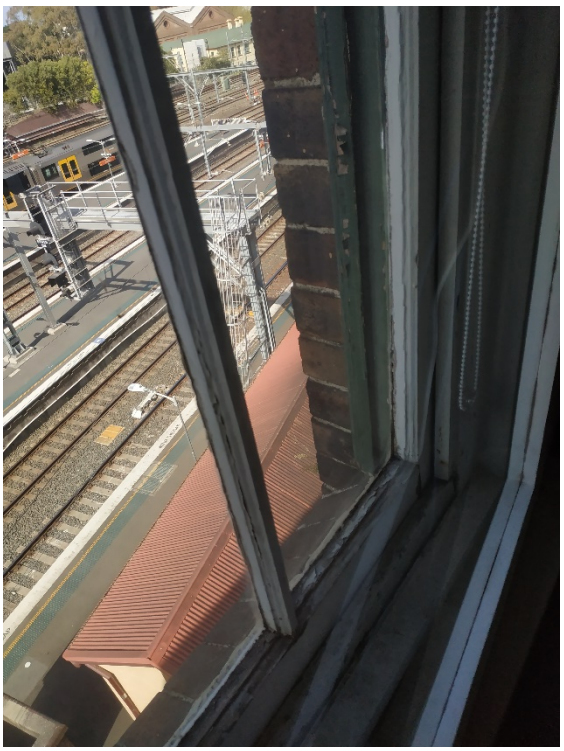

Figure 14 Window framing on southern side of second floor of 125-127 Little Eveleigh Street showing consistent sill and frame without cracks or crevices

Figure 15 Window framing on northern side of second floor of 125-127 Little Eveleigh Street showing consistent sill and frame without cracks or crevices

Figure 16 Roof cavity area at top floor of 125-127 Little Eveleigh Street showing no evidence of crack or crevices

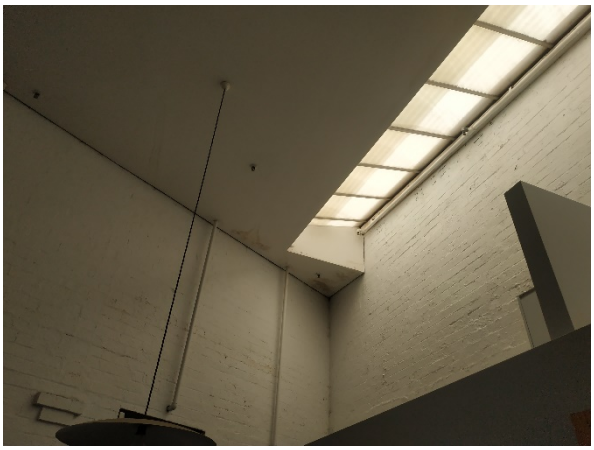

Figure 17 Figure 16 Roof cavity area at top floor of 125-127 Little Eveleigh Street showing no evidence of crack or crevices

Figure 18 Basement level of 125-127 Little Eveleigh Street. No evidence of habitation by microbats

Figure 19 Basement level of 125-127 Little Eveleigh Street. No evidence of habitation by microbats

Appendix B: Assessments of Significance

NSW *Biodiversity Conservation Act 2016*

Endangered flora: *Eucalyptus scoparia* (Wallerawang White Gum)

Criterion	**(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Response	The two individuals present at this location are planted and would not constitute a viable local population.
Conclusion	The Project is not likely to result in an adverse effect on the life cycle of this species such that any viable local populations are likely to be placed at risk of extinction
Criterion	**(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:** **(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction**
Response	Not applicable.
Conclusion	Not applicable.
Criterion	**(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**
Response	Not applicable.
Conclusion	Not applicable.
Criterion	**(c) in relation to the habitat of a threatened species or ecological community:** **(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity**
Response	The Project would fully remove the landscaped garden beds which are the current 'habitat' for these individuals.
Conclusion	Habitat for this species would be fully removed as a result of the Project.
Criterion	**(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity**
Response	The current 'habitat' for these individuals is an isolated landscaped garden bed between Redfern Station and the staff car park. Given that the natural southern limit of this species is some 550 km north of Sydney it is unlikely that the removal of these individuals would fragment or isolate them from any other areas of habitat.
Conclusion	It is unlikely that habitat for this species would become significantly fragmented or isolated as a result of the Project.

Criterion	**(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality**
Response	The current 'habitat' for these individuals is an isolated landscaped garden bed between Redfern Station and the staff car park. Given that the natural southern limit of this species is some 550 km north of Sydney it is unlikely that this area comprises an important habitat for this species.
Conclusion	The subject site itself is not considered an important habitat for these species. It is unlikely that the removal of potential habitat for this species in this location would threaten the long-term survival of the species as a whole.
Criterion	**(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)**
Response	To date, no critical habitat has been declared for this species.
Conclusion	Not applicable.
Criterion	**(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process**
Response	The Project would potentially contribute to the key threatening processes of clearing of native vegetation.
Conclusion	Whilst the Project would potentially contribute to the operation of one key threatening process, the scale and location of the Project means that any such contributions are expected to be negligible.

Overall Conclusion

The two individual *Eucalyptus scoparia* present in the landscaped garden bed between Redfern Station and the staff car park are located some 550 km south of the natural southern extent of this species. This species is a common street tree throughout Sydney. On this basis it is clear that they are planted and hence do not form part of any naturally occurring population or community. In addition to this the genetic provenance of these individuals is unknown.
Based on the above assessment it is clear that the Project would not result in a significant impact upon this species or their habitat such that they would be placed at risk of local extinction or other significant decline.

No further assessment is required.

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Vulnerable flora: *Eucalyptus scoparia* (Wallerawang White Gum)

Criterion	**An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:** **i. lead to a long-term decrease in the size of an important population**
Response	The current 'habitat' for these individuals is an isolated landscaped garden bed between Redfern Station and the staff car park. Given that the natural southern limit of this species is some 550 km north of Sydney it is unlikely that the two specimens in this area comprise an important population for this species..
Conclusion	The Project is not likely to lead to a long-term decrease in the size of an important population.
Criterion	**ii. reduce the area of occupancy of an important population**
Response	The site is not likely to support an important population of this species.
Conclusion	
Criterion	**iii. fragment an existing important population into two or more populations**
Response	The current 'habitat' for these individuals is an isolated landscaped garden bed between Redfern Station and the staff car park. Given that the natural southern limit of this species is some 550 km north of Sydney it is unlikely that the removal of these individuals would fragment or isolate them from any other areas of habitat or other important populations.
Conclusion	The Project is not considered likely to fragment any local population into two or more populations.
Criterion	**iv. adversely affect habitat critical to the survival of a species**
Response	The current 'habitat' for these individuals is an isolated landscaped garden bed between Redfern Station and the staff car park. Given that the natural southern limit of this species is some 550 km north of Sydney it is unlikely that the this area comprises an habitat critical to the survival of this species.
Conclusion	The locality is not expected to constitute habitat critical to the survival of this species.
Criterion	**v. disrupt the breeding cycle of an important population**
Response	As outlined above, the two individuals present are not considered to comprise an important population. Their removal would not affect any nearby important populations, given the natural southern limit of this species is some 550 km north of Sydney.
Conclusion	The Project is unlikely to disrupt the breeding cycle of the species.
Criterion	**vi. modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**
Response	The two individuals present at this location are planted and would not constitute a viable local population. These individuals are significant outliers and their loss would not affect the general fate of this species within its home range.
Conclusion	The Project is deemed unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
Criterion	**vii. result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**
Response	The Project has the potential to aid the spread of weeds due to the movement and/or introduction of soil, vehicles and equipment.

	A Site Erosion and Sediment Control Plan or Soil Water Management Plan is to be implemented for the Project. Weed, stormwater and pest management activities would be implemented as part of environmental management planning for the site. On this basis it is unlikely that the Project would aid the spread of invasive species in this location over and above that already present.
Conclusion	It is unlikely that the Project will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.
Criterion	**viii. introduce disease that may cause the species to decline**
Response	The Project would fully remove these two individuals. As such there would be no vectors remaining for the transmission of disease.
Conclusion	The Project would not introduce disease that may cause the species to decline.
Criterion	**ix. interfere substantially with the recovery of the species**
Response	The impacts associated with the Project are of a scale that they are highly unlikely to significantly affect the recovery of this species locally or generally.
Conclusion	The proposed activity is unlikely to interfere with the recovery of this species.

Overall Conclusion

The two individual *Eucalyptus scoparia* present in the landscaped garden bed between Redfern Station and the staff car park are located some 550 km south of the natural southern extent of these species. This species is a common street tree throughout Sydney. On this basis it is clear that they are planted and hence do not form part of any naturally occurring population or community. In addition to this the genetic provenance of these individuals is unknown.

Based on the above assessment it is clear that the Project would not result in a significant impact upon this species or their habitat such that they would be placed at risk of local extinction or other significant decline.

Referral to the Department of the Environment and Energy is not required.