Executive summary

S.1. Introduction

S.1.1 Background

To improve the reliability and capacity of the rail network, Transport Infrastructure Development Corporation (TIDC) is delivering a series of projects on behalf of the NSW Government. This Environmental Assessment is for the duplication of part of the existing Richmond Branch Line by constructing an additional track between Quakers Hill and Vineyard stations ('the Quakers Hill to Vineyard Duplication' or 'the Project') (Figure S-1 highlights the main features of the Project). The Project includes associated works at Schofields, Riverstone and Vineyard stations, with new stations and bus interchanges at Schofields and Vineyard, with improved provision for pedestrians, cyclists and cars.

The Project would be constructed in two stages. Stage 1 would involve duplication of the existing line between Quakers Hill Station and new Schofields Station. Stage 2 would include the completion of the duplication from the new Schofields Station to Vineyard Station.

TIDC has undertaken the Environmental Assessment for the Project in accordance with the environmental assessment requirements issued for the Project by the Director-General of the Department of Planning. Construction of Stage 1 is proposed to be carried out by the Richmond Line Alliance. The construction of Stage 2 would be determined at a later date. Post-construction, the Project would be managed and operated by RailCorp.

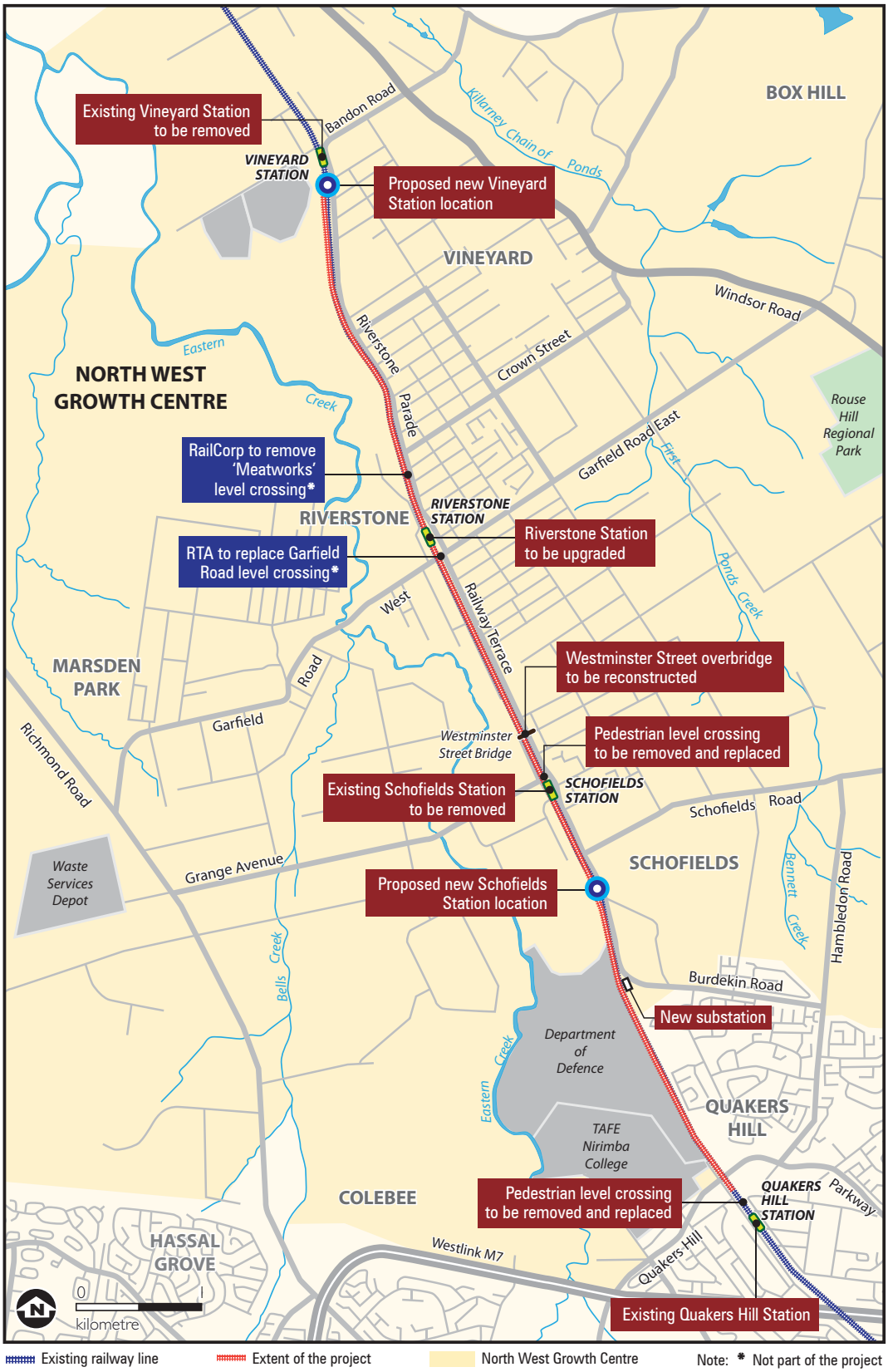

Figure S-1 Project overview

S.1.2 Approval for the project

The Project is being assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In February 2008, TIDC submitted a Project Application and Preliminary Environmental Assessment report (*Quakers Hill to Vineyard Duplication Project, Project Application Report*, PB 2008) seeking the approval of the Minister to carry out the Project under Part 3A. In response the Director-General of the Department of Planning issued environmental assessment requirements for the Project (refer Appendix A). This Environmental Assessment has been prepared in accordance with those requirements.

S1.3 Project overview

The Project would involve the construction and operation of approximately 10.1 kilometres of new track between Quakers Hill and Vineyard in Sydney's north-west. The track is already duplicated at Riverstone Station and both of the existing tracks would remain. The proposed new track work would require the widening of the existing rail corridor at various locations to accommodate the additional track.

As shown in Figure S-1, the Quakers Hill to Vineyard Duplication comprises:

- the construction of approximately 10.1 kilometres of new track (and associated overhead wiring) between Quakers Hill and Vineyard
- refurbishment of the existing maintenance siding north of Riverstone Station
- new crossovers (the connection between two tracks allowing trains to cross tracks) just south of the new Vineyard Station
- a terminating shunting neck (a 'dead-end' section of track) capable of storing a train at the country end of Vineyard Station
- a new turnout south of Bandon Road
- a new station, car park and bus interchange facility at Schofields, located approximately 800 metres to the south-east of the existing Schofields Station
- an upgrade of Riverstone Station, including the regrading of the existing platforms and the provision of a covered footbridge at the southern end of the station
- a new station, car park and bus interchange facility at Vineyard, located approximately 250 metres south-east of the existing Vineyard Station
- removal of existing stations at Schofields and Vineyard
- a new substation at Schofields, near the corner of Burdekin Road and Railway Parade, adjacent to the eastern boundary of the rail corridor
- new traction substations and upgrades to the existing section huts adjacent to the rail corridor
- replacement of the existing pedestrian level crossings at Quakers Hill and Schofields with new footbridges with ramps
- reconstruction of the Westminster Street overbridge comprising a single span approximately 27 metres in length, which would accommodate two traffic lanes and two pedestrian footways
- extension and/or replacement of approximately 14 culverts beneath the existing rail line

- removal, relocation and provision of services and utilities
- operation of the Project.

It is anticipated that when Stage 1 (Quakers Hill to new Schofields Station) is operational, the Richmond Branch Line will have capacity to support up to six trains per hour through Quakers Hill, comprising four trains per hour starting from new Schofields Station, and two trains starting from Richmond. Once Stage 2 is fully operational, the Richmond Branch Line will have capacity to support up to eight trains per hour, comprising six trains starting from the new Vineyard Station and two trains starting from Richmond.

The construction program for Stage 1 is expected to commence in late 2009 pending project approval and would take approximately 24 months to complete. Stage 2 would be undertaken after Stage 1 is completed and will take approximately 24 months to complete, with timing for commencement to be determined.

S.1.4 Stakeholder and community involvement

Communication and involvement with stakeholders has taken place during the following three phases of the Project:

- concept development
- preparing the Project Application and Preliminary Environmental Assessment Report
- preparing this Environmental Assessment.

To date, consultation has included:

- liaising with the relevant government agencies, particularly as part of the planning focus meeting, which was held on 11 March 2008 at the Department of Planning. Additional consultation was undertaken with relevant government agencies on 3 December 2008 to provide these stakeholders with an update of the Project's design development during the preparation of the Environmental Assessment. A meeting with the then Heritage Office (now Department of Planning Heritage Branch) was also held to discuss the potential impacts of the Project on Riverstone Station
- a newsletter, which was distributed in May 2008 to over 11,000 residents and business owners along the rail corridor and to an additional 2,000 community members
- two community information sessions held on 29 and 31 May 2008 at Riverstone Senior Citizens Hall
- a project information telephone line (1800 648 490) and email address (mail@tidc.nsw.gov.au).

Further consultation will also occur during the exhibition of the Environmental Assessment.

S.2. Need for and benefits of the Project

The current Richmond Branch Line essentially comprises a single track between Quakers Hill and Richmond which restricts the ability to run more services as trains in one direction have to wait for trains in the other direction. The Richmond Branch Line is centrally located within the North West Growth Centre, an area of land designated for release to accommodate Sydney's new housing (refer Figure S-2).

Specifically, the Project is needed to:

- increase service frequency for the existing and future populations of the area (increased demand for rail services are expected as a result of predicted growth in patronage, substantial population increases as a result of the development of the North West Growth Centre, and a mode shift from private vehicles to rail transport resulting from increased transport prices)
- address increased demand for rail services and transport facilities as a result of the proposed development of the North West Growth Centre
- improve accessibility at stations through design of easy access provisions
- provide for car parking and kiss-and-ride facilities at new Schofields and Vineyard stations
- improve the ability of operations to recover during disruptions through reducing the extent of single track sections on the Richmond Branch Line
- improved capacity, service reliability and reduced bottlenecks on the Richmond Branch Line
- additional peak hour train services
- reduced station congestion
- reduced service delays on other rail lines on the CityRail network.

The Project design has considered a number of different options regarding station locations, track alignment and platform arrangement with consideration of engineering, environmental, community, safety, operations, construction staging and program, and cost.

The preferred option consists of:

- relocation of Schofields Station approximately 800 metres south-east of the existing Schofields Station
- relocation of Vineyard Station approximately 250 metres southeast of the existing Vineyard Station
- provision of the duplicated track with a new track located on the eastern and western sides of the existing rail track at 6.4 metre track centres.

This preferred option is the subject of this Environmental Assessment.

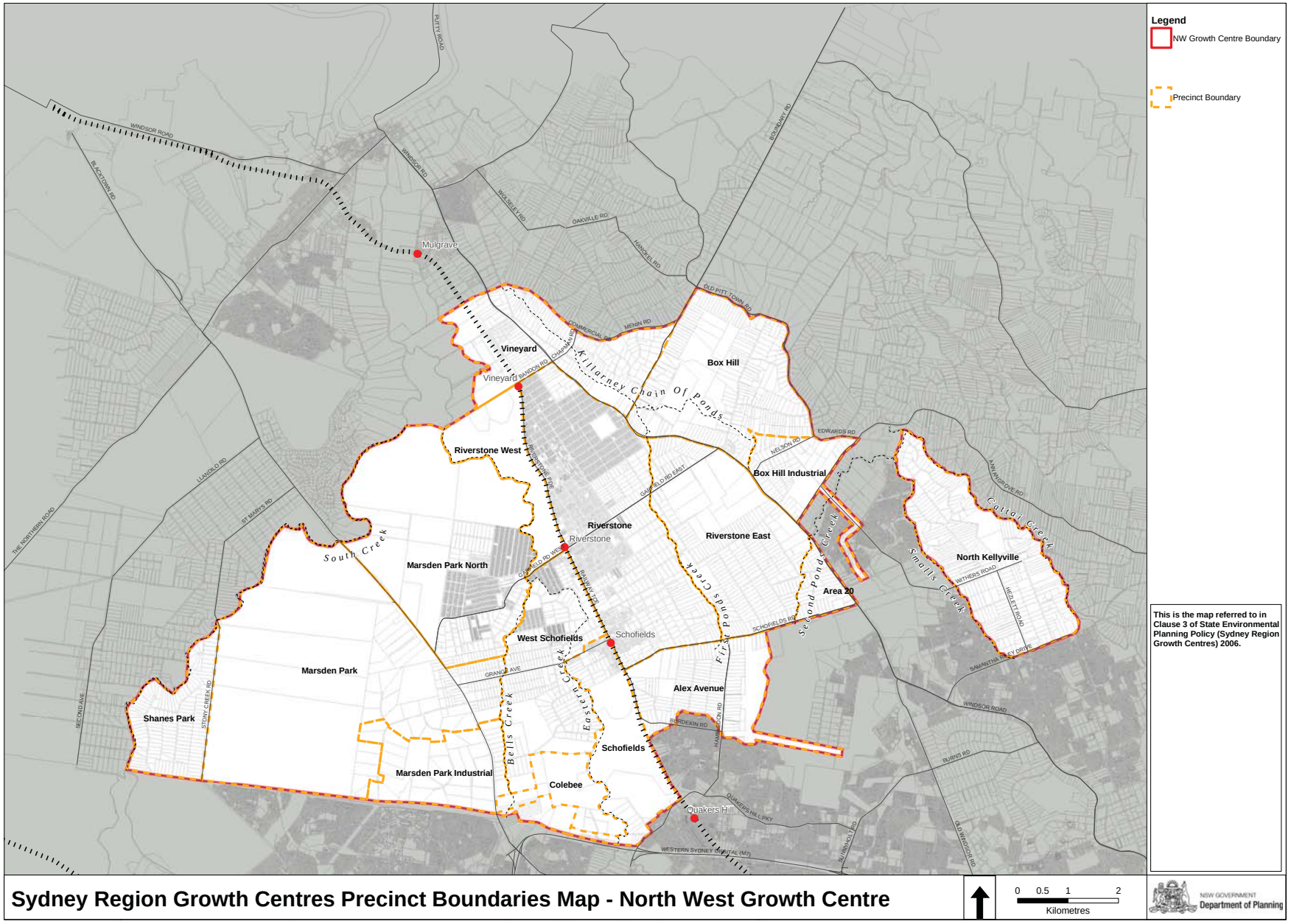

Figure S-2 North West Growth Centre precinct map

Benefits of Stage 1 of the Project

Stage 1 of the Project, for which an early delivery timeframe is confirmed, would provide the following benefits:

- improved capacity and reliability of the rail line between Quakers Hill and new Schofields Station
- delivery of a modern station facility at new Schofields with improved parking, bus, pedestrian, kiss-and-ride and disabled access
- better integration with the future planning of the North West Growth Centre (through the relocation of Schofields station)
- an increased extent of duplicated track on the Richmond Branch Line.

S.3. Environmental Assessment

S.3.1 Existing and future environment

The Project is located almost entirely within the North West Growth Centre. The existing environment is characterised by small town centres, residential suburbs, rural-residential development, industrial development and rural land. With the development of this area in accordance with the proposed plans for the North West Growth Centre, the environment will be subject to widespread change over the next 25 to 30 years. For this reason, this Environmental Assessment has addressed the potential impacts of the Project on both the existing and future environment.

The existing and planned future environment in the vicinity of the Project is described in detail in Chapter 3 of the Environmental Assessment, and is summarised below.

Existing environment

Key features of the existing biophysical, social and cultural environments include:

- Town centres located around train stations at Quakers Hill, Schofields and Riverstone. Vineyard Station has no concentrated residential or commercial development adjacent to the station.
- A regional transport network that includes limited bus services, a rail network that is constrained in sections by a single track configuration that is currently operating at capacity, a relatively good regional road network (including the M7, Richmond Road and Windsor Road) and a local road network that has four crossings (east-west) across the rail corridor. The main level crossing of the rail corridor, the Garfield Road level-crossing, is constrained by rail operations on the Richmond Branch Line.
- A mix of low to medium density residential development, industrial and commercial development, town centres, agriculture, other open space and special use areas adjacent to the existing rail corridor within the Blacktown and Hawkesbury Local Government Areas.
- The noise environment adjacent to the existing Richmond Branch Line is influenced by adjacent land uses (including commercial, industrial, suburban and rural areas) and transport-related noise associated with road and rail operations.
- Non-Indigenous cultural heritage, comprising the Riverstone Railway Station and Yard Group, Quakers Hill Footbridge, and the Quakers Hill to Vineyard rail corridor.

- Remnant vegetation and endangered ecological communities listed under the *Threatened Species Conservation Act 1995* (TSC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- One Threatened species, *Pultenaea parviflora*, identified at Vineyard, is listed as Endangered under the TSC Act and Vulnerable under the EPBC Act.
- One Threatened species, *Grevillea juniperina* subspecies *juniperina*, is listed as Vulnerable under the TSC Act.
- Thirty-nine (39) Indigenous heritage places and/or objects registered on the Aboriginal Heritage Information Management System (AHIMS) database within two kilometres of the Project area, nine of which are located within 50-100 metres of the study area.
- Seven Indigenous archaeological sites located adjacent to the existing rail corridor.
- Ten areas of Indigenous Potential Archaeological Deposits (PADs) at the proposed locations for the new Schofields and Vineyard stations, Vineyard Station car park and adjacent to the existing rail corridor.
- A number of waterways and ephemeral lakes/water storage dams that form part of Eastern Creek and its tributaries. The surrounding waterways generally drain from east to west across the rail corridor via 19 culverts, eventually flowing to Eastern Creek.
- A low, medium and high-risk flooding potential.
- Gently undulating land with an approximate elevation of 30 metres with a geology characterised by Bringelly Shale, siltstone and alluvial deposits, as well as numerous weathered shale and siltstone outcrops between Schofields and Vineyard stations. The soil landscape comprises the Blacktown and South Creek soil groups.
- Varying visual environment influenced by adjacent land uses (including commercial, industrial, suburban and rural areas), landform features (i.e. topography) and tree cover.
- Areas with a moderate to high potential to uncover contaminated materials within the rail corridor.
- Ambient air quality adjacent to the existing Richmond Branch Line is influenced by a variety of sources including transport related pollution from the local and regional road network and regional pollution within the Sydney Basin.
- Numerous RailCorp and public utility services within and adjacent to the existing Quakers Hill to Vineyard rail corridor.
- The North West region has a high private vehicle ownership rates, and one of the highest rates of use of private vehicles in Sydney, with 60% recorded as travelling to work using a motor vehicle as the sole means of transport.
- The population growth rate of Blacktown Local Government Area between 1996 and 2006 was significantly higher than the overall Sydney growth rate over the same period, and the area has a high proportion of young families.
- A significant proportion of Blacktown Local Government Area residents come from a non-English speaking background — the main non-English languages spoken at home are Arabic, Tagalog (Filipino) and Chinese.

Planned future environment

The Project is located at the centre of the North West Growth Centre, adjacent to the planned precincts of Schofields, Schofields West, Alex Avenue, Riverstone, Riverstone West and Vineyard (refer Figure S-2). These areas are planned for major development over the next 25 to 30 years. The precincts of Alex Avenue, Riverstone, and Riverstone West will be the first to be developed within the North West Growth Centre. The development of these areas is likely to significantly change the existing environment; although the extent of change is difficult to predict as planning for the first release precincts is still in progress. Notwithstanding this, it is expected that key changes to the existing environment within the vicinity of the Project will include:

- A mix of major, town and village centres, local neighbourhoods and industrial/ employment land.
- The construction of two new road crossings of the Richmond Branch Line, and the upgrading of the existing Bandon Road, Riverstone West and Westminster Street crossings. A new major road, Riverstone Central, is also being considered, which would form a north-south link between Garfield Road East and Schofields Road (PB 2007).
- Substantial changes to the socio-economic profile of the region as a result of increased population, increased employment opportunities and changes to the current character of the town and village centres (i.e. rural-residential to suburban or urban).
- Increased ambient noise as a result of higher density residential and commercial development within the town centres of Schofields, Riverstone and Vineyard and associated increased transport related noise.
- Substantial changes to the visual environment as a result of the changed land use and development within the North West Growth Centre.
- Reduced ambient air quality as a result of increased traffic on key access roads adjacent to the project area.

The planned and likely future developments in and around the Project will have major implications for the future social, cultural and biophysical environment in the area, which have been discussed in the Environmental Assessment.

S.3.2 Environmental risk analysis

In accordance with the process outlined in Part 3A of the EP&A Act, environmental issues for consideration in this Environmental Assessment were identified in an initial risk assessment developed during the preparation of the Project Application and Preliminary Environmental Assessment Report (PB 2008). The outcome of this initial risk assessment formed the basis of the environmental assessment along with the Director General Requirements which were received from the Minister for Planning on 8 April 2008.

The ‘key issues’ identified in the Project Application and Preliminary Environmental Assessment Report and Director General Requirements include:

- land use and transport
- social and economic impacts
- noise and vibration
- non-Indigenous heritage
- ecology
- hydrology.

Following the development of the Environmental Assessment and the Project design envisaged at the time of the Preliminary Environmental Assessment, additional key issues — visual impact and Indigenous heritage — were also identified for consideration and assessed within the Environmental Assessment.

S.3.3 Overview of potential impacts

Key issues

The key potential environmental, social and economic impacts of the Project are summarised in Table S-1, along with key management commitments proposed to avoid, remedy and mitigate those potential impacts.

Table S-1 Key potential impacts of the Quakers Hill to Vineyard Duplication

Key issue	Identified key potential impacts	Key management commitments
Land use and property (refer Section 8.1 of Main Volume)	Permanent impacts on directly affected properties and land uses acquired (or partially acquired) for permanent infrastructure, such as new stations, car parks and track.	▪ Further consultation with agencies responsible for future precinct planning in the North West Growth Centre. ▪ Acquisition of land in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991.*
Traffic and transport (refer Section 8.2 of Main Volume)	The Project would create an opportunity for public transport to be more attractive to the community by providing more frequent rail services and allowing for the greater integration of other modes of public transport. Construction phase impacts include: ▪ The temporary closure of up to 10 parking spaces in the Riverstone Station commuter car park, increased heavy vehicle movements, particularly on Garfield Road East. ▪ Full and partial closures of the Westminster Street overbridge. All of the stations would remain open to rail operations during construction with the exception being during possessions when buses would replace trains. Operational impacts would be positive and would be associated with improvements to rail services and improved accessibility at the rail stations.	▪ Restriction of heavy vehicles to the construction routes identified. ▪ Decommissioning and demolition of the existing Schofields Station and existing Vineyard Station only to occur following transfer of operations to the new stations. ▪ Completion of footbridges prior to closure of the pedestrian level crossings at Schofields, Quakers Hill and Riverstone. ▪ The development of additional cycle infrastructure alongside the corridor (outside the rail property) has been proposed by GCC as part of a regional cycleway network.

Key issue	Identified key potential impacts	Key management commitments
Socio-economic (refer Section 8.3 of Main Volume)	The potential socio-economic impacts of the Project include: ▪ improved disabled access to the new stations at Schofields, and Vineyard and at Riverstone Station ▪ provision of improved access to public transport allowing better links to employment, education, services and social infrastructure in new and existing areas ▪ increased distance to the new Schofields and Vineyard stations for some existing residents upon relocation of the stations ▪ provision of an affordable alternative to private vehicle use and the opportunity to reduce car reliance as a result of the improved rail system ▪ changes to land use as a result of land acquisition ▪ potential viability impacts to the existing businesses at the existing Schofields Station.	▪ Ongoing community consultation ▪ Ongoing communication, consultation and integration during detailed design with future precinct plans for the North West Growth Centre as these are produced. ▪ Ongoing consultation with Ministry of Transport regarding bus routes for the North West Growth Centre. ▪ Provision of shared path facilities between existing and new Schofields Stations. ▪ Provision of access to western side of new Schofields Station for existing Schofields community.
Noise and vibration (refer Section 8.4 of Main Volume)	Construction of the Project could result in exceedances of the noise goals specified in the *Environmental Noise Control Manual* (Environment Protection Authority 1994). Construction vibration levels at residential receivers are predicted to comply with building damage criteria, but may be perceptible during some works. During operation, noise levels are predicted to exceed the trigger levels at the Quakers Hill Preschool (located on the corner of Pearce and Lalor roads), and a number of residential receivers (Manorhouse Boulevard, Bridge Street and Tain Place).	▪ Construction noise would be managed through mitigation measures documented in Construction Environmental Management Plan and Environmental Control Maps that would be prepared for the Project. This plan would be prepared in accordance with TIDC's (2007) *Construction Noise Strategy (Rail Projects)*. ▪ In accordance with the Department of Environment and Climate Change (2007) *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP), provision of acoustic mitigation at locations where noise levels are predicted to exceed the IGANRIP trigger levels will be considered where reasonable and feasible. ▪ TIDC would undertake ongoing consultation with the Growth Centres Commission (now Department of Planning) and Blacktown City Council to reduce potential noise and vibration impacts on the future environment by appropriate land use zoning of surrounding areas during precinct planning in accordance with the requirements of the SEPP (Infrastructure) 2007 and the Department of Planning's (2008) *Development near rail corridors and busy roads – interim guideline*.

Key issue	Identified key potential impacts	Key management commitments
Heritage – non-Indigenous (refer Section 8.5 of Main Volume)	Impacts to Riverstone Station and Yard Group from the proposed station upgrade and footbridge. Indirect impacts are expected to affect the aesthetic qualities and integrity of the Riverstone Station and Yard Group, but would not significantly impact the heritage qualities of the station. Impacts on the heritage value of the Quakers Hill to Vineyard rail corridor.	▪ Archival recording of the Riverstone Station Complex and the rail line between Quakers Hill and Vineyard, including all structural and landscape components. ▪ If any unidentified heritage items are discovered during construction, works would cease within the location of the find and the NSW Heritage Branch would be consulted. ▪ Erection of interpretive signage at Riverstone Station, including information on the history of the station complex, as well as the heritage significance of the Richmond Branch Line.
Flora and fauna (refer Section 8.6 of Main Volume)	The Project would include the clearing of approximately 4.60 hectares of native vegetation; including clearing of approximately 1.34 hectares of EPBC Act listed Cumberland Plain Woodland and approximately 260m^2 *Pultenaea parviflora* habitat. Neither of these impacts is considered significant. The new Vineyard Station car park would require the removal of approximately 0.97 hectares of Shale Gravel Transition Forest (comprising 0.44 hectares for phase 1 of Vineyard car park and 0.53 hectares for phase 2 of Vineyard car park).	▪ Identifying and excluding access to sensitive areas adjacent to construction sites as 'no go areas'. ▪ Revegetation of disturbed areas. ▪ Weed management of noxious and environmental weeds. ▪ Further assessment in consultation with the Growth Centres Commission for the phase 2 car park at Vineyard.
Water quality and hydrology (refer Section 8.7 of Main Volume)	Water quality may be impacted by the pollution of stormwater run-off with sediments, fuels and other hazardous materials from construction sites, and/or the uncovering of saline and/or contaminated groundwater, and its subsequent disposal. Some existing culverts would be replaced or upgraded as part of the Project. At the local scale, the changes to culvert crossings will have the largest impact to the local surface water system.	▪ Installation of appropriate stormwater treatment measures, identified during the detailed project design. ▪ Further assessment of flooding conditions to confirm initial investigations and the need to replace existing culverts.

Key issue	Identified key potential impacts	Key management commitments
Indigenous heritage (refer Section 8.8 of Main Volume)	Construction of the Project would directly impact seven aboriginal heritage items, comprising six isolated finds, and one artefact scatter. Construction of the Project would also directly impact ten areas of PAD. The Project would impact on the full extent of PAD S2 and PAD V1. All other PADs would be partially impacted by the Project. The Project is likely to encounter undisturbed and/or partially disturbed archaeological deposits within these areas of PAD (refer Technical Paper 4 – Indigenous Heritage in Volume 2). One area of high heritage constraint (identified as PAD QVP in Technical Paper 4) would be partly impacted by the construction of the Project in areas up to 15 metres from the rail corridor.	▪ During detailed design, consideration would be given to further reducing the area of impact to PAD QVP as an area of high heritage constraint. Any Indigenous objects found in the disturbance area would be salvaged and/or conserved. ▪ If any previously unidentified Aboriginal artefacts are discovered, works would cease within the location of the find and DECC would be contacted. ▪ Registered Indigenous stakeholders would be consulted/involved in the salvage, conservation and management of Indigenous cultural heritage on the site. ▪ Continued consultation with Aboriginal stakeholder groups during further archaeological investigations.

Other environmental issues

The Quakers Hill to Vineyard Duplication is predicted to have relatively minor potential impacts on the following environmental issues given the implementation of standard management and mitigation measures:

- Visual amenity (Section 9.1)
- Geology and soils (Section 9.2)
- Contaminated land (Section 9.3)
- Air quality and greenhouse gases (Section 9.4)
- Waste, energy and demand on resources (Section 9.5)
- Hazard and risk (Section 9.6)
- Public safety (Section 9.7)
- Services and utilities (Section 9.8)
- Cumulative impacts (Section 9.9)
- Sustainability in Project design and delivery (Chapter 11).

These issues can be effectively managed through standard management measures, which are proposed to be incorporated into TIDC's Statement of Commitments for the Project.

S.4. Project conclusions

S.4.1 Draft Statement of Commitments

The Environmental Assessment for the Project has identified a range of potential environmental impacts and recommended management measures to avoid or reduce the potential impacts of the Project. A draft Statement of Commitments proposed by TIDC has been developed, which, following project approval, would guide subsequent phases of the project development to minimise potential impacts on the environment (refer Chapter 12).

S.4.2 Conclusions and next steps

The Project is expected to have significant environmental, social and economic benefits for the North West region of Sydney as well as the wider metropolitan area. Notwithstanding this, some adverse impacts, including significant impacts, are unavoidable due to the nature of the Project. Overall, the benefits of the Project are considered to outweigh the adverse impacts, considering the proposed implementation of management commitments, mitigation measures and safeguards during the detailed design, construction and operational stages.

The next steps for the Quakers Hill to Vineyard Duplication project are as follows:

- exhibition of the Environmental Assessment for a minimum of 30 days and invitation for the community and stakeholders to make submissions
- preparation of a Submissions Report and final Statement of Commitments
- Director-General of the Department of Planning provides an Assessment Report on the Environmental Assessment to the Minister for Planning, who then makes a decision on the Project and, if approved, sets Conditions of Approval.