

7. Environmental risk analysis

7.1 Approach

One of the objectives of the Part 3A process under the *Environmental Planning and Assessment Act 1979* (EP&A Act) is to develop a streamlined and targeted approach to the environmental assessment of proposed infrastructure developments. In particular, the Part 3A process, principally the assessment of environmental impacts, is tailored to areas of greatest environmental risk, which are identified on a project-specific basis (i.e. based on the type of development proposed or the environment within which the development would occur). This provides for a more focussed assessment directed more closely to potentially critical environmental issues (key issues) for the Project.

This process also benefits from the considerable efforts focussed on early phase environmental impact assessment typically undertaken during option development and planning, and concept design refinement.

In accordance with the process outlined in Part 3A of the EP&A Act, environmental issues for consideration in this Environmental Assessment were identified during the preparation of the Project Application and Preliminary Environmental Assessment Report (PB 2008).

The Department of Planning (DoP) has issued environmental assessment requirements (DGRs) (refer Appendix A) for the Project based on its understanding of the key issues from the Project Application and Preliminary Environmental Assessment Report (PB 2008). Relevant government agencies have also been involved in the identification of these issues and were active participants in the planning focus meeting, which was held in March 2008.

Through these processes, environmental issues considered by the Transport Infrastructure Development Corporation (TIDC) to be 'key issues' for the Project were identified. Identification of 'other issues', likely to be of lower environmental risks, has also occurred; however, these 'other issues' are considered able to be dealt with adequately using standard controls and management measures. The criteria used for the environmental risk analysis are described in Table 7-1.

Table 7-1 Risk category descriptions

Risk category	Description
A	Project may have a medium to high level impact. Investigations are required to determine the level of potential impact and to identify appropriate measures to manage the effects.
B	Project may have a low to medium level of impact. However, the environmental impacts can be reduced to an acceptable level through the use of standard or identified management measures.
C	Project would have a low level impact manageable through the use of standard measures.

The preliminary environmental analysis in the Project Application and Preliminary Environmental Assessment Report (PB 2008) has been used as the basis for an environmental risk analysis for the Project reflecting the current level of knowledge on the Project, the environmental risks, and stakeholder and community concerns (refer to chapters 8, 9 and 4 respectively). This process drives the environmental assessment to areas of key concern as required under Part 3A.

7.2 Risk analysis

The outcome of the initial risk assessment developed during the preparation of the Project Application and Preliminary Environmental Assessment Report (PB 2008) is provided in Table 7-2, forming the basis of the environmental assessment along with the DGRs that were issued for the Project on 8 April 2008 (refer Appendix A).

The 'key issues' identified in the Project Application and Preliminary Environmental Assessment Report and DGRs include:

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

An additional key issue, visual impact, was identified in the Project Application and Preliminary Environmental Assessment Report (PB 2008), but was not identified in the DGRs. While classified as an 'other issue' within this Environmental Assessment, this issue has also been carefully considered to ensure that impacts are appropriately managed.

During the preparation of the Environmental Assessment, Indigenous heritage was identified as being a key issue (however, not identified in the DGRs), due to the presence of archaeologically sensitive sites (including Potential Archaeological Deposits (PADs) and isolated finds) within the Project area. Due to these heritage constraints, Indigenous heritage was assessed as a key issue within this Environmental Assessment.

The 'key issues' dealt with in Table 7-2 have been discussed in further detail in relevant sections of Chapter 8 (Key environmental issues) and Chapter 9 (Other environmental issues).

Table 7-2 Environmental risk assessment

Issue	Potential impacts	Risk assessment	Section of Environmental Assessment addressing impacts and management
Key issues			
Land use and property and Traffic and transport	The predominant land uses along the rail corridor are planned to change significantly with the development of the North West Growth Centre (NWGC). The implications of the Project for existing land uses as well as for the ongoing planning in the growth centre and the influence of the Project on adjacent future land uses need to be considered.	A	Section 8.1
	Potential land use and transport impacts of the Project include (but are not limited to) some land acquisition, changes to existing land use patterns, temporary and long-term changes to access arrangements during construction and operation of the Project, and increased traffic during construction.		Section 8.2
Social and economic impacts	The Project would result in social benefits with regard to improved reliability and frequency of train services. Social and economic impacts would particularly be related to the relocation of Schofields Station, and the potential for business impacts and community severance. Other impacts could include amenity impacts (e.g. noise and visual).	A	Section 8.3
Noise and vibration	Potential noise and vibration impacts would result from both the construction and operation of the Project. While the rail corridor is existing infrastructure, the duplication would provide for increased train frequencies and train pass-by events, which would increase noise and vibration levels at adjacent land uses.	B	Section 8.4
Non-Indigenous heritage	The Riverstone Railway Station Group is listed on the State Heritage Register. The proposed construction of a footbridge with stairs and lifts to replace the existing pedestrian level crossing at Garfield Road would have the potential to adversely affect the heritage value of the station's buildings and infrastructure.	B	Section 8.5

Issue	Potential impacts	Risk assessment	Section of Environmental Assessment addressing impacts and management
Flora and fauna	<p>While the majority of the Project would require little vegetation removal, due to its construction either within the existing rail corridor or on predominantly cleared rural and Commonwealth (Department of Defence) land, the construction of 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 the car park construction and 0.53 hectares for phase 2).</p> <p>In total, approximately 4.60 hectares of native vegetation would be cleared, comprising 1.47 hectares of River-flat Eucalypt Forest on Coastal Floodplains, 1.34 hectares of Cumberland Plain Woodland, 1.71 hectares of Shale Gravel Transition Forest (including that required for the new Vineyard Station car park and the widening of the existing rail corridor) and 0.08 hectares of Derived Grassland (previously Shale Gravel Transition Forest).</p>	B	Section 8.6
Water quality and hydrology	<p>Much of the existing rail corridor is flood prone. There is potential for the new track and stations to exacerbate flooding in the area.</p> <p>As the Project is located in proximity to Eastern Creek and its tributaries, there is also the potential for water quality impacts during construction and operation of the Project.</p>	B	Section 8.7
Indigenous heritage	<p>A number of PADs and isolated finds have been identified within the Project area. The development of the Project with new stations, the new Vineyard Station car park and the widening of the existing rail corridor has the potential to disturb items of Indigenous heritage significance.</p>	B	Section 8.8
Other environmental issues			
Visual amenity	<p>The main visual impacts would be associated with the construction of the new stations footbridges, which would create dominant visual elements in the rural/bushland landscape and would affect views from residential areas. These impacts are likely to be less significant in the long term as the area is developed in accordance with the plans for the NWGC.</p> <p>There is the potential for additional visual impacts if noise walls are required to mitigate noise impacts.</p>	B	Section 9.1
Geology and soils	<p>Soil erosion and sedimentation of nearby waters could occur during construction. There is also the potential to encounter saline groundwater in deep cuttings.</p>	C	Section 9.2

Issue	Potential impacts	Risk assessment	Section of Environmental Assessment addressing impacts and management
Contaminated land	There is the potential for contaminated land to be uncovered during the construction of the Project.	C	Section 9.3
Air quality and greenhouse gases	Construction of the Project would be associated with a temporary increase in air pollution (including dust) and greenhouse gas emissions. It is anticipated that the operation of the Project would have a positive impact on the emission of greenhouse gases by encouraging a mode shift from private cars to public transport.	C	Section 9.4
Waste, energy and demand on resources	The Project would generate waste, and require resources for construction and operation.	C	Section 9.5
Hazard and risk	Hazards and risk would be associated with construction of the Project, particularly within the operational rail corridor, including the storage and use of hazardous materials and heavy machinery, and the potential interaction with existing services and utilities.	C	Section 9.6
Public safety	The Project would be associated with out-of-hours site security issues during construction and operation.	C	Section 9.7
Services and utilities	<p>There are a number of existing services crossing the rail corridor. Consequently, there is potential for damage to occur to existing services/utilities during construction of the Project, with the potential for disruption to services, inconvenience or potentially hazardous situations through potential occupational health and safety risks.</p> <p>A single 100 mm high pressure gas line (owned by Jemena) has been identified to cross the tracks south of the proposed Quakers Hill footbridge. Test pitting would be undertaken during the detailed design to confirm the exact location of this utility to ensure that the Project is designed around the utility.</p> <p>A high pressure petroleum pipeline (Caltex's Sydney-Newcastle high pressure petroleum pipeline) has been identified to run parallel to the Project at a distance of between 700m-1000m, and is not in the vicinity of the proposed works. As such, the Caltex pipeline is not expected to be impacted by the Project.</p> <p>Test pitting would be undertaken during the detailed design to confirm the location services and utilities within the vicinity of the Project.</p>	C	Section 9.8
Cumulative impacts	There is the potential for cumulative impacts to occur if the construction or operation of the Project coincided with the construction or operation of other local development, such as road upgrades (particularly the Garfield Road level crossing replacement) or residential development, particularly given the likely increase in development in the area associated with the NWGC.	C	Section 9.9

7.3 Conclusions

This risk assessment for the Project, undertaken in accordance with the DGRs, has identified key issues that present a medium to high perceived or actual risk:

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

These key issues have been the focus of the environmental assessment for the Project. The level of assessment undertaken for the identified key issues has determined the likely extent of impacts and recommended appropriate mitigation/management required to ensure that the risk is abated.