PART

C

Environmental Assessment

Chapter 8. Environmental risk analysis

8.1 Previous assessments of environmental issues and risks

Over the past eight years, a number of detailed, engineering, operational and environmental studies have been undertaken to determine the feasibility of the project. These studies were undertaken under the management of a project control group, which included representatives from the Department of Planning, RailCorp, RTA and the Ministry of Transport.

In 2002, the North West Rail Link Overview Report – Connecting Communities (Transport NSW, 2002) was released. This report identified a preferred alignment referred to as the 2002 alignment. Comprehensive community consultation was undertaken as part of the exhibition of the Overview Report.

In response to issues raised by the Overview Report, further studies were undertaken in consultation with key stakeholders including local councils (Hornsby Shire Council, Blacktown City Council and Baulkham Hills Shire Council) and major landholders.

An environmental study, Assessment of Environmental Issues Report (SKM, 2003), was also prepared to investigate specific issues such as flora and fauna, water quality, hydrology and hydraulics, groundwater, indigenous and non-indigenous heritage, noise and vibration, and landscape and visual characteristics associated with the 2002 alignment. Information gathered during these studies was used to produce a series of constraints maps to allow an understanding of environmental constraints and opportunities relevant to the 2002 alignment.

The Assessment of Environmental Issues Report also summarised community issues and social constraints identified from submissions received on the Overview Report. As a result of the findings of these studies, and the environmental and community constraints and issues identified, changes were made to the 2002 alignment. The preferred alignment is described as the project for the purposes of this environmental assessment.

A Preliminary Environmental Assessment (SKM, 2006) was prepared to support the project application submitted by TIDC to the Department of Planning on 24 May 2006. The purpose of this application was to seek authorisation from the Minister for Planning to develop a concept plan and to obtain the Director-General's requirements for the environmental assessment.

8.2 Key issues identified

The Preliminary Environmental Assessment (SKM, 2006) identified that the key environmental issues associated with the project included:

- Noise and vibration;
- Indigenous and non-indigenous heritage;
- Flora and fauna;
- Traffic, transport, parking and access;

» Groundwater / geotechnical;

» Visual impacts and urban design;

» Flooding;

» Construction management (including spoil handling); and

» Social impacts / community involvement.

With the exception of traffic, transport, parking and access, and construction management, specialist studies had been undertaken for these key issues as part of the Assessment of Environmental Issues Report (SKM, 2003). The studies included a detailed assessment of environmental characteristics in the vicinity of the 2002 alignment, and the potential construction and operational impacts on key biophysical and socio-economic parameters.

As noted above, there has been some modifications to the alignment since the Assessment of Environmental Issues Report was prepared.

The Preliminary Environmental Assessment identified that further assessment of the above issues was required as part of the environmental assessment, mainly to update the previous assessments with an assessment of the impacts of the modified alignment. The key issues identified are summarised in Table 8.1.

Table 8.1 Issues identified by the Preliminary Environmental Assessment

Issue	Summary of the issue	Need for further assessment identified	Where addressed in this environmental assessment
Noise and vibration	As the project mainly passes through established residential and commercial areas, there is potential for noise and vibration impacts during both construction and operation.	Update noise and vibration assessment to include the changes to the proposed alignment; an assessment of construction noise from work sites; an assessment of the operational noise from the stabling yards; and traffic noise along haulage routes for spoil removal.	Section 9.3 and Appendix C
Indigenous and non-indigenous heritage	There are several indigenous and non-indigenous heritage sites located in close proximity to the proposed alignment.	The heritage assessments would need to be updated to reflect the changes to the proposed alignment, particularly in the vicinity of Norwest Business Park, the western tunnel portal, stabling yards and the quadruplication of the Northern Line	Sections 9.6 and 9.7 Appendices G and H
Flora and fauna	20% of the corridor consists of remnant or regrowth native vegetation,	The flora and fauna assessment would need to be updated to reflect the changes to the proposed alignment, particularly in the vicinity of Norwest Business Park, the western tunnel portal, stabling yards and the quadruplication of the Northern Line.	Section 9.4 and Appendix D
Traffic, transport, parking and access	Potential impacts include » traffic generated during construction. » construction of road	Assessment of the potential impacts of construction and operational traffic requires further work. A detailed traffic, transport, parking and access assessment, which would identify	Section 9.2 and Appendix B

Issue	Summary of the issue	Need for further assessment identified	Where addressed in this environmental assessment
	crossings and potential for temporary lane closures » reduced traffic congestion during operation. » impacts along the local/ feeder routes to the new stations.	indicative haulage routes, should be undertaken.	
Groundwater/ geotechnical	The main groundwater issue is the potential for inflows to the tunnel to lower regional water tables. Other potential issues include the disposal of turbid, saline or contaminated water collected within the tunnel and potential land subsidence resulting from underdrainage of shallow aquifers.	Targeted geotechnical studies would be undertaken prior to the detailed design phase to assist with the design of the project. Given the location of the rail line, the potential for acid sulphate soils is considered to be minor.	A report summarising the results of previous assessments has been undertaken for the Environmental Assessment and is provided in Appendix F. A summary of the findings of the assessments to date is provided in section 9.8.
Visual impacts and urban design	During construction, there would be noticeable changes to the visual environment resulting from the presence of construction equipment, construction sites and stockpiles, for example. During operation, the visual impacts would primarily be confined to the surface sections of the proposed alignment, and in particular, the viaduct over Caddies Creek. Noise mitigation measures and ancillary tunnel facilities also have the potential to have visual impacts.	An analysis is required of the built form and character of the land in the vicinity of the stations. Urban design issues such as precinct planning (pedestrian and bicycle access and security / safety by design) around the stations, particularly at Franklin Road Station and the Hills Centre Station, also needs further investigation.	Section 9.10 and Appendix I
Flooding	The surface section would traverse the floodplains of Caddies Creek and several of its tributaries including Strangers Creek, Elizabeth Macarthur Creek, unnamed small tributary creeks of Caddies Creek and Second Ponds Creek. In addition to recognising the impact of the peak flood levels and flows, there are other potential impacts associated with flooding	The need for an additional assessment was not identified.	A report summarising the results of previous assessments has been undertaken for the Environmental Assessment and is provided in Appendix E. A summary of the findings of the assessments to date is provided in

Issue	Summary of the issue	Need for further assessment identified	Where addressed in this environmental assessment
	such as flood velocities, scour protection, loss of floodplain storage, on-site stormwater detention, drainage and public safety.		section 9.9.
Construction management (including spoil handling)	Construction activities have the potential to adversely impact on the community and the environment. The main issues would arise from the operations at construction sites and the transportation of spoil.	Transport impacts of spoil removal require further assessment. The potential opportunities for spoil re-use also require further assessment, in terms of potential re-use sites and volumes.	Transport impacts are considered in section 9.2 and Appendix B. Spoil management is considered in section 9.5 and Appendix J. Construction activities are described in section 7.4 and Appendix L.
Social impacts/ community involvement.	The project would be located in close proximity to established residential areas, future urban release areas, Norwest Business Park and numerous community facilities and services. Some property acquisition would also be required, and the surface section of the project could potentially result in severance issues. The operation of the project would also have positive impacts in terms of access to public transport, reductions to car dependency and overcrowding on existing rail lines.	A social impact assessment would be undertaken to consider the potential impacts of the project.	Potential social impacts are considered in section 9.11 and Appendix K.

Key issues have been reviewed based on existing and additional information, input from various government agencies and other stakeholders during the consultation process, and review of the Director-General's requirements for the environmental assessment. This review of key issues allowed for the expansion and clarification of certain issues and the inclusion of some additional key issues.

Chapter 9 also includes the following issues considered to be key assessment requirements by the Director-General's requirements for the environmental assessment:

» Land use (including property and land acquisition) – addressed in section 9.1;

» Surface water management – addressed in section 9.9; and