northern expressway environmental report

A

Part A. Introduction and Background

1 What is the Northern Expressway Project?

1.1 Overview

The proposed Northern Expressway Project consists of two components: the Northern Expressway (between Gawler and Port Wakefield Road) and the Port Wakefield Road Upgrade. The project will provide an improved highway and freight connection through metropolitan Adelaide between the Sturt Highway at Gawler and the Port River Expressway. This project will improve freight access from the northern areas of the State and from the main highways, and link key centres in the north, east and west of Australia with the Port of Adelaide, South Australia's main shipping port. The location plan in Figure 1.1 places this road infrastructure in context.

The Northern Expressway component – 23 km of new four-lane expressway with restricted access and a speed limit of 110 km/h – will link to Port Wakefield Road with a new intersection to the north of Taylors Road, approximately 3 km north of the Waterloo Corner intersection. Port Wakefield Road will be upgraded at key locations between the new intersection and the existing intersection with the Salisbury Highway; some local roads will be diverted to service road access for improved safety. The Expressway will replace the section of Main North Road between Gawler and Gepps Cross as the designated AusLink National Network road link.

The proposed Northern Expressway and Port Wakefield Road Upgrade is South Australia's largest and highest priority project under the current AusLink Investment Program and, as such, has the commitment of the South Australian Government.

1.2 Context

Main North Road (the main northern arterial road link for Adelaide) currently provides access for heavy vehicles travelling to Adelaide and the Port of Adelaide from some of the State's key export areas including the wine producing regions in the Clare Valley and Barossa Valley and the citrus and wine producing areas in the Riverland. It also provides access for vehicles travelling to and from New South Wales and northern Victoria, and is the main route for local traffic travelling from the outer northern Adelaide suburbs, Gawler and the Barossa.

Near capacity traffic volumes between Elizabeth and Montague Road, a high crash rate and 22 signalised junctions contribute to considerable delays and interruptions to traffic flow as Main North Road, between Gawler and Gepps Cross, struggles to meet the demands of a National Network road link. As a result, long-distance heavy vehicles have sought an alternative and more efficient route. In particular, many heavy vehicles travelling to the Port of Adelaide have been avoiding Main North Road by diverting to Angle Vale Road and Heaslip Road to connect with Port Wakefield Road (the Adelaide to Perth/Darwin National Network road link). Although the Angle Vale Road/Heaslip Road route is a relatively low standard two-lane road, it provides more direct and less interrupted travel than Main North Road.

With future growth expected in Adelaide's northern suburbs, traffic volumes, delay times, crash rates and adverse environmental and social effects are predicted to increase along Main North Road, Angle Vale Road and Heaslip Road. Access into Adelaide and the Port of Adelaide from the Sturt Highway will become more difficult and take longer. Community concern about safety both within the township of Angle Vale and along these roads has increased as more heavy vehicles divert onto Angle Vale Road and Heaslip Road.

The Northern Expressway Project has evolved from previous studies that responded to increasing concern about the suitability of the existing National Network route into Adelaide via Main North Road. The road proposal is a key element of the joint Australian and South Australian Government strategy to improve transport links and ensure economic growth.

The Northern Expressway Project will provide a safer and more efficient alternative to the current Main North Road component of the National Network. It will be designated as part of the National Network road link from New South Wales and northern Victoria. It will connect with Salisbury Highway and the new Port River Expressway and will significantly reduce travel times from the eastern states, the Riverland, the Clare and Barossa valleys and the Gawler region to the Port of Adelaide and Adelaide.

1.3 History of the Northern Expressway Project

Main North Road is the key entry into Adelaide for traffic from New South Wales, northern Victoria, the Riverland and the Mid North areas of South Australia and provides the traffic spine for urban development extending northward from the established suburbs of Adelaide and the central business district.

By the mid-1990s, the northern sector of Adelaide was becoming increasingly important for economic and employment growth, new development at the fringes, water and drainage management, and horticultural production. As the population and activity expanded, so have traffic pressures on Main North Road. Between 1997 and 1999, options were considered for a future National Network system in the area.

A strategic planning study by Sinclair Knight Merz Pty Ltd (SKM) in 1998 concluded that there was a need to provide additional capacity for traffic movement from the outer northern suburbs.

The SKM study area extended between Two Wells Road in the north, Main North Road in the east, Grand Junction Road/Gepps Cross in the south and Port Wakefield Road in the west. Various routes were identified and broadly investigated. A route following the Angle Vale Road–Heaslip Road corridor, with a bypass of the Angle Vale township, was identified as being a preferred route for the new National Network road link, because it provided a sound alternative route and greater travel choice in the network, and had the lowest overall cost and lowest environmental and social effects. The study recommended an upgrade of Port Wakefield Road between Waterloo Corner and Salisbury Highway from four to six lanes to accommodate the additional traffic generated as a result of a new route.

In 2001, a strategic review by Transport SA (now the Department for Transport, Energy and Infrastructure [DTEI]) of upgrading options for a proposed new National Highway link in the northern Adelaide area confirmed the findings of the previous study – that the preferred long-term route for the link was broadly along the Angle Vale Road–Heaslip Road corridor.

Preliminary consultation began in 2001, with issues and constraints related to the region identified and possible route options discussed. Those consulted included Australian and South Australian Government Members of Parliament and departments, and local councils.

In 2003, in the absence of a defined road corridor for an expressway, investigations began into determining a range of possible routes in the vicinity of the Angle Vale Road–Heaslip Road corridor. This study aimed to develop and broadly assess route corridor options and their effects on the adjacent road network, and identify evaluation criteria that would influence the further development of more refined route concepts. Five broad route concepts, and a number of alternatives, were identified, each sufficiently developed to enable an overview assessment of its potential effects.

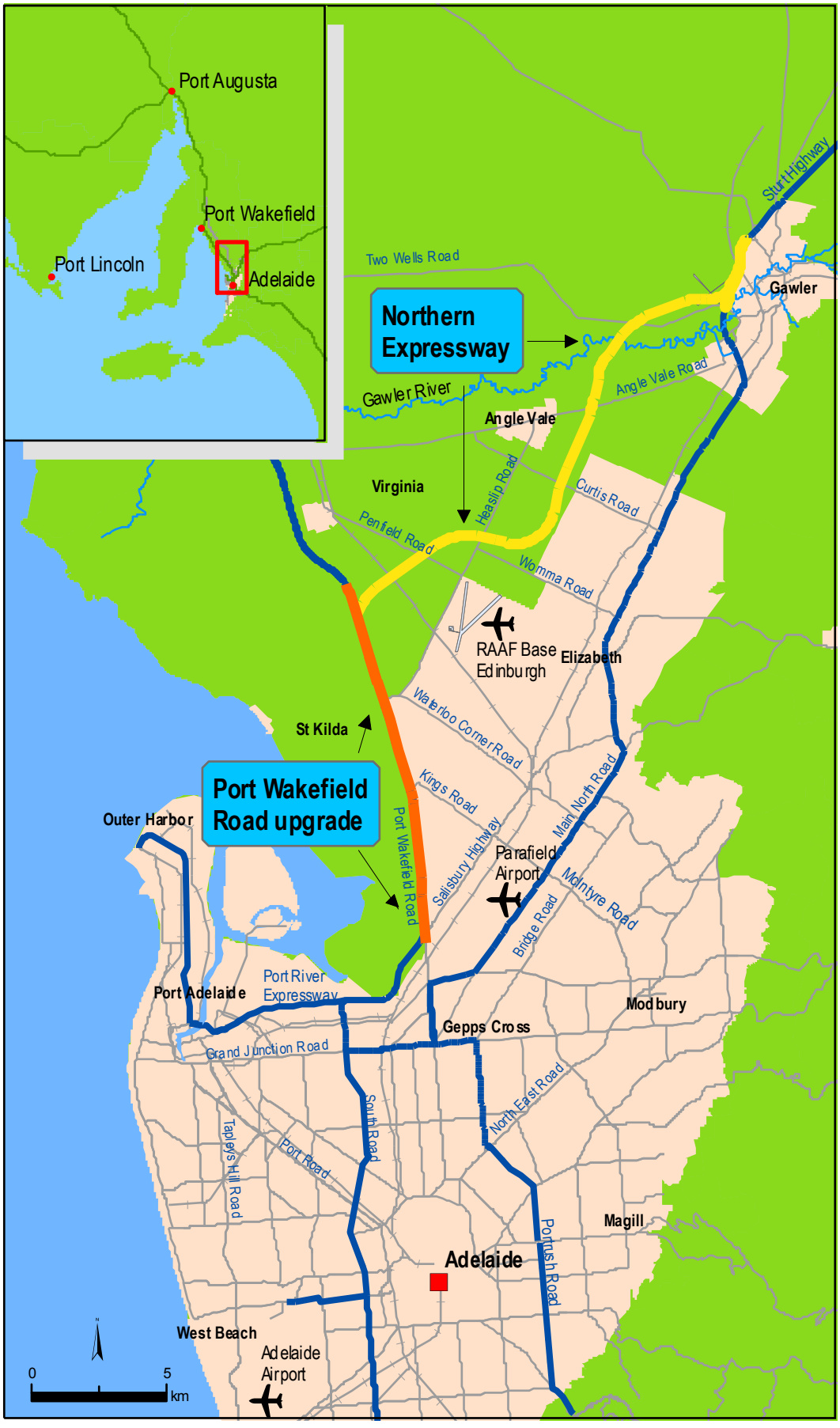

Figure 1.1 **Location Plan**

In early 2005, preliminary planning and design on each of the five route concepts was undertaken. DTEI, with assistance from the Snowy Mountains Engineering Corporation Pty Ltd (SMEC), completed constraint mapping, feasibility assessment, interchange location and design of the expressway connections with the Gawler Bypass, Main North Road and Port Wakefield Road. One such concept route linked with Main North Road north of Munno Para.

In 2005, stakeholder consultation with key government and local stakeholders began, and route and concept planning for the alternative alignments continued. The consultation process developed two stakeholder reference groups: one for government agencies and one with local councils and other representatives. A number of workshops held with these reference groups identified issues, constraints and possible opportunities (described in more detail in Section 3).

In addition to this consultation, preliminary environmental studies of the study area (Figure 1.2) began with preliminary noise monitoring and modelling, preliminary air quality investigation and modelling, and vegetation and fauna assessments. Other investigations included an initial broad traffic assessment, pavement and geotechnical analyses, and property assessments for the various routes identified to that time.

Towards the end of 2005, a consortium consisting of Kellogg Brown & Root Pty Ltd (KBR), SKM, and QED Pty Ltd (QED) was engaged to undertake or provide support in the planning, environmental assessment, community involvement and concept design of the Northern Expressway and Port Wakefield Road Upgrade.

In late 2005, a route selection workshop selected a preferred route for the Northern Expressway. The workshop brought together a range of people with expertise in engineering, land use, community, environment, horticulture and economic development. Four of the conceptual routes that had been chosen for more detailed investigation were compared, evaluated and assessed at the workshop (see Part B). The preferred route selected from the four had the least effect on the environment and community while providing the best value for money.

More detailed concept design and investigations for the selected route led to further modifications, particularly at the proposed intersection points with existing highways to optimise safe and efficient connections.

The Port Wakefield Road Upgrade component of the Northern Expressway project will provide adequate, fit for purpose capability to 2016 when further improvement to the link between the Northern Expressway and Salisbury Highway will be required. This is the subject of a further planning study.

To meet the short-term priorities of the AusLink National Network it was decided to continue with development of the new link (Northern Expressway) and defer planning and construction of the new link from Port Wakefield Road to the Port River Expressway. The short-term demand the Northern Expressway would place on the Port Wakefield Road section would be met by a short-term upgrade.

The Port Wakefield Road Upgrade was subsequently designed between Taylors Road and Salisbury Highway to a standard commensurate with the expected increase in traffic attracted to the corridor when the Northern Expressway is constructed.

The eventual upgrade of the Port Wakefield Road link to expressway standard will complete the northern access link from Gawler to Port River Expressway.

The proposed Northern Expressway route, with additional variations, was adopted by DTEI for further investigation under the environmental assessment process (see Section 2) which has produced this Environmental Report.

500m investigation corridor Study area

Figure 1.2 **Study Area**

Wider community engagement on the proposed route began in November 2006. Issues raised during engagement in late 2006 are being given ongoing consideration during preparation of this report and during the display period. The community has further formal opportunity to comment during the display period for this report, and submissions will be taken into account and responded to where feasible in the Supplement to this Environmental Report.

1.4 Objectives of the Northern Expressway and Port Wakefield Road Upgrade

The primary objectives of the Northern Expressway Project are to:

- improve transport efficiency
- improve road safety
- enhance economic opportunities and outcomes for the State
- provide a more effective connection with port and rail facilities
- minimise adverse effects on the environment and the community.

The proposed Northern Expressway and Port Wakefield Road Upgrade will provide significant State and regional benefits. Together with the Port River Expressway, this high standard link to the Port of Adelaide will contribute to the delivery of *South Australia's Strategic Plan* Objective 5 – Building Communities; Target 5.11 Infrastructure to support communities in regions.

The *Strategic Infrastructure Plan for South Australia* (2005) identifies 'completion of the link from the Sturt Highway to Outer Harbor' as a priority for the road network and reflects the South Australian Government's strong support for the development of the Expressway. It includes 'the upgrade of Port Wakefield Road to expressway standard' as part of this link.

The Northern Expressway and Port Wakefield Road Upgrade will contribute to economic growth in the State and nationally through improved efficiencies for transport, particularly for export, thereby expanding export potential. The project will maximise the opportunity for freight transport to gain access to producers, transport hubs, freight gateways and markets, achieve better delivery times and increase cost efficiency to gain a competitive edge, while improving safety significantly.

Furthermore, by improving the transport link to the regions north of Adelaide, such as Gawler and the Barossa, rural and residential communities will be more accessible to business, industry, and commuters who will also benefit through reduced travel times and increased safety.

An integral theme of *South Australia's Strategic Plan* and all government activities is the pursuit of environmental sustainability. A number of principles have been adopted to maximise the sustainability of this proposed road construction project, and guide how the project affects the community. These principles draw from the work undertaken to date and are provided below to define the future direction of the project through its detailed design, construction and operation. The final two sections of this report draw together sustainability considerations and environmental management.

Economic

- Enhance the efficient movement of goods.
- Improve prosperity through the creation of sustainable economic growth.
- Maintain long-term financial viability for the State.
- Where possible, maximise the efficient use of existing infrastructure.

Social

- Actively seek solutions which protect or enhance the liveability of local areas including the minimisation of adverse noise and visual effects.
- Actively involve the community in an integrated and inclusive process which fosters the exchange of knowledge with the community.
- Identify and protect sites of cultural significance.
- Increase and maintain high levels of accessibility through the placement of infrastructure and the provision of transport choices.
- Where possible, remove sources of congestion and seek to avoid lengthening travel trips, particularly to key destinations on a local and regional scale.
- Recognise the needs of regional areas and attempt to meet these needs where possible.
- Where possible, minimise changes to existing land uses.
- Manage any technical or other risks in a responsible manner.

Environmental

- Protect and enhance biodiversity through the protection and use of native species and the management of weeds, pests and diseases.
- Avoid the pollution or degradation of water, land and air resources, and where this is not possible, minimise any adverse impacts.
- Contribute to the conservation of our water supplies through the implementation of water efficiency measures.
- Limit the project's contribution to climate change through the minimisation of greenhouse gas emissions associated with the project.
- Reduce environmental impacts through the choice of sustainable materials with low embodied energy and high recycled contents.
- Minimise waste to landfill through the efficient use of material, reuse and recycling.

1.4.1 The main elements of the Northern Expressway

The proposed Northern Expressway crosses the lower part of the Northern Adelaide Plains. It leaves the Gawler Bypass in a westerly direction and crosses the Gawler River near Wingate Road. It then bypasses

to the east of the town of Angle Vale, through the land containing the former Smithfield Magazine, north of the suburb of Munno Para, before heading in a westerly direction, avoiding the RAAF Base Edinburgh, and connecting to Port Wakefield Road north of Taylors Road.

The main elements of the proposal are as follows:

- 70 to 100 m wide fenced corridor
- divided carriageway (two lanes each way) with a median and a posted speed limit of 110 km/h
- connections at the Gawler Bypass and Port Wakefield Road
- interchanges (access ramps including overpasses) at:
  - the Gawler Bypass
  - Curtis Road (south-facing ramps)
  - Heaslip–Womma roads
- Expressway overpass at:
  - Taylors Road and the Adelaide–Perth/Darwin rail line
- local road overpasses at:
  - Two Wells Road
  - Angle Vale Road
  - Curtis Road
  - Heaslip Road
- road closures at Whitelaw Road, Hillier Road, Fradd Road, Petherton Road, Argent Road, Penfield Road, Huxtable Road, Short Road, Stanley Road and Norma Road, and a service road adjacent to the Gawler Bypass (Atyeo Road to Lange Road)
- appropriate lighting at interchanges
- landscaping and stormwater management infrastructure
- provision for cyclists and pedestrians on local road overpasses.

Further detail of the road design can be found in Part C.

Land is being acquired for future ramps/interchanges at Two Wells Road (for southbound traffic), Curtis Road (for northbound traffic) and Angle Vale Road (for traffic in both directions). The decision and timing for these additional ramps/interchanges will be based on an assessment of need and traffic demand following the consultation process and responses to the environmental assessment process.

In addition, a borrow pit excavation site, adjacent to the Gawler River near Wingate Road, is likely to provide the materials required for the main overpasses, interchange approach and exit ramps.

1.4.2 The main elements of the Port Wakefield Road Upgrade

The Port Wakefield Road Upgrade is part of the existing National Network with works being carried out between the proposed junction of the new Northern Expressway just north of Taylors Road, and immediately south of the Salisbury Highway overpass at Dry Creek.

The Port Wakefield Road Upgrade will include:

- new signalised at-grade junction with the Northern Expressway
- upgrade of Taylors Road and St Kilda Road junctions
- upgrade of existing signalised junctions at Waterloo Corner Road and Bolivar Road
- additional southbound lane from Ryans Road to Salisbury Highway and additional northbound lane through the Globe Derby Drive junction
- other treatments to Port Wakefield Road to reduce direct access, improve safety and maintain reasonable traffic flow, including:
  - new sets of signals at Ryans Road and Martins Road
  - reduction of right-turn movements onto Port Wakefield Road
  - reduction of direct property access onto Port Wakefield Road for many properties, with access via newly constructed service roads, to maintain safety for traffic on Port Wakefield Road
  - removal of some right-turn at-grade junctions to left in, left out only
  - extra U-turn facilities within the median
  - increased capacity at junctions
  - service relocations.

Some land acquisition will be required to accommodate the works, but much of the upgrade will be carried out within the existing road reserve.

1.5 The AusLink National Network

In June 2004, the Australian Government introduced, in the AusLink White Paper, a new approach to national land transport infrastructure planning. The initiative contains the Australian Government's national transport plan and transforms the way Australia plans, funds and delivers land transport infrastructure. Under AusLink, the Australian Government is taking a strategic approach to Australia's future by ensuring that the nation's land transport network meets future challenges (DOTARS 2006). The AusLink plan focuses on corridor planning and provides an integrated approach to prioritising and funding a rolling plan of works.

The AusLink National Network comprises the national highway and rail corridors and connects all Australia's mainland capital cities. The network provides the passenger and freight backbone of Australia's national land transport system through road and rail and provides links to strategic ports and airports (DOTARS 2006).

The Northern Expressway and Port Wakefield Road Upgrade will be partially funded through the AusLink Investment Program. These two components of the Northern Expressway Project represent a single project, under AusLink, which is planned for implementation between 2007 and 2011.

The Northern Expressway Project is consistent with the following AusLink objectives for the National Network identified by the Australian Government:

- improving national, interregional connectivity for people, communities, regions and industry
- improving national, interregional and international logistics
- enhancing national, interregional and international trade

- enhancing health, safety and security
- being consistent with our obligation to current and future generations to sustain the environment
- being consistent with viable, long-term economic and social outcomes
- being linked effectively to the broader transport network.

1.6 Project phases and timing

Table 1.1 outlines planning, design, construction and operation activities for the Northern Expressway and provides indicative time frames for the works.

Table 1.1
Indicative timing for each of the project's phases (Northern Expressway)

Phase	Activities	Timing
Phase 1 *Concept planning*	• Route concept planning/route selection • Initial consultation with key stakeholders • Preliminary environmental investigations	2003–2006
Phase 2 *Concept design*	• Route concept design • Community involvement • Environmental assessment – Detailed environmental investigations – Environmental Report – Supplement document	2006–2007
Phase 3 *Pre-construction*	• Land acquisition • Detailed design • Obtain environmental and other approvals (if required)	2007–2008
Phase 4 *Construction*	• Construction	2008–2011
Phase 5 *Post-construction*	• Operation and maintenance	2011 onwards

Table 1.2 outlines planning, design, construction and operation activities for the Port Wakefield Road Upgrade between Taylors Road and the Salisbury Highway and provides indicative time frames for the works.

Table 1.2
Indicative timing for each of the project's phases (Port Wakefield Road Upgrade)

Phase	Activities	Timing
Phase 1 *Concept planning*	• Initial consultation with key stakeholders • Preliminary environmental investigations	2003–2006
Phase 2 *Concept design*	• Route concept design • Community involvement • Environmental assessment – Detailed environmental investigations – Environmental Report – Supplement document	2007
Phase 3 *Pre-construction*	• Land acquisition • Detailed design • Obtain environmental and other approvals (if required)	2007
Phase 4 *Construction*	• Construction	2007–2008
Phase 5 *Post-construction*	• Operation and maintenance	2008 onwards

1.7 The proponent

DTEI is the proponent for construction of the Northern Expressway and Port Wakefield Road Upgrade. It is a joint project between DTEI and the Australian Government Department of Transport and Regional Services (DOTARS). Representatives from both organisations form the Government Steering Committee, which is the decision-making body for the project and acts as a conduit for both South Australian and Australian Government Ministers. The project is proposed to be jointly funded by the Australian Government, through the AusLink Program (administered by DOTARS), and the South Australian Government.

The potential environmental, social and economic effects are being assessed within the one environmental assessment process, although some of these effects are quite different for the Northern Expressway and the Port Wakefield Road Upgrade. The environmental assessment process is explained in Section 2.