

5. Alternative Concepts Considered

5.1 Overview

The proposed South Road Superway has been identified as the most practical and feasible course of action for upgrading this section of South Road. This section outlines the process for determining the current design as the preferred option.

5.2 The 'no new project' option (to 2031)

Should the current situation on South Road remain until 2031, it is likely that the only changes made within the study area would be minor upgrades of intersections on other routes, with no mid-block improvements, other than on Hanson Road, between Grand Junction Road and Cormack Road.

Thus the road network would become significantly congested. Traffic would probably move into residential areas and diminish local amenity; businesses would become more difficult to access; congestion would limit opportunities for right turn access.

The increased traffic on the road would also lead to a greater risk of crashes and reduced safety.

5.3 Concept options considered

A series of engineering and environmental investigations have had input from Port Adelaide Enfield Council, local business operators and landowners on their specific transport and business needs. The findings of these investigations provided valuable information to a series of workshops for DTEI, Council and the project team.

An initial workshop presented a range of options for the main alignment of the South Road Superway Project and reinforced the requirement that there would be no consideration of an alignment away from South Road.

Other criteria developed at this time were:

- all main alignment options were to provide interchanges to Port River Expressway and Grand Junction Road
- no connection would be made to Cormack Road due to road safety issues
- underpasses could not be considered for this section due to the high watertable, greater impact on land and businesses, and likely disruption to traffic and access during construction.

Consideration was given to alternatives that connect to the north–south corridor south of Regency Road. However, the location of the corridor, either on the existing South Road alignment or in a separate corridor, is subject to further study and would not form part of this investigation.

Existing and projected peak hour traffic volumes were used to determine intersection configurations at key locations such as at Grand Junction Road and Cormack Road.

In identifying and developing the concept options, consideration was given to the above constraints, and the project objectives (see Section 1.5). The options were formulated after extensive consultation with key stakeholders, businesses and industry groups. The Australian Rail Track Corporation (ARTC) and Port Adelaide Enfield Council were also heavily consulted throughout the process. Data collected on business needs, access routes, the number and nature of vehicle movements, along with suggestions for improvements to the local road network, informed the concepts. Extensive community engagement will continue throughout the environmental impact assessment process.

The rigorous investigation process led to the development of four feasible options:

N1

DTEI reference scheme: at grade with flyovers (at Cormack and Grand Junction Road)

This option has the South Road Superway Project constructed to the west of the existing South Road alignment with overpasses over Cormack Road to South Terrace and over Grand Junction Road. The main alignment would initially have three lanes in each direction with a wide median, which could become a fourth lane depending on future demands.

Two-lane one-way service roads would be provided in both directions north of Days Road to Port River Expressway with signalised intersections at Grand Junction, Cormack Road and South Terrace under the overpasses. The service roads would cross the Wingfield rail line and would have full boom gate control. South of Days Road, a two-lane one-way service road would be provided in the southbound direction from Days Road to the Coopers Brewery access.

The service roads would be connected to the ramps at Grand Junction Road; the south facing ramps would be located south of Days Road to improve traffic operation. North of Grand Junction Road the ramps and service roads would merge together.

N2

Revised reference scheme with reduced land acquisition

Option N2 closely matches Option N1, particularly in its main alignment. The South Road Superway Project would be constructed to the west of the existing South Road alignment, with overpasses over Grand Junction Road and from Cormack Road to South Terrace.

The primary differences from Option N1 are changes to service roads and the local road network: The service road would not be continuous between Port River Expressway and Days Road. The western side of the north–south corridor would be serviced with a road between Days Road and the overpass at Cormack Road. This option also eliminated the existing rail crossing on South Road.

N3

Short elevated roadway

Option N3 would include an elevated roadway from Port River Expressway to just south of Grand Junction Road constructed on one or two piers south and north of Grand Junction Road respectively.

This option reduces the extent of land acquisition of abutting businesses by providing the service roads and ramp connections under the elevated roadway. The single pier south of Grand Junction Road accounts for the narrower existing road corridor between Grand Junction Road and Days Road.

North facing ramps at the Grand Junction Road interchange would connect directly with the elevated roadway; south facing ramps located south of Days Road would connect directly to Days Road from Grand Junction Road.

A service road would connect Rosberg Road with Cormack Road north of Grand Junction Road. The service road would be located under the elevated roadway to reduce the amount of land acquisition required for this section. Both Francis and Senna roads would connect to this service road, which is expected to be a two-way two lane road.

South of Grand Junction Road, option N3 would provide for one-way service roads only either side of the North–South Corridor and left in/out at Kateena Street, Angle Road and Days Road.

N4

Longer elevated roadway

Option N4 would include an elevated roadway from Port River Expressway to just south of Days Road. It is envisaged the elevated roadway would be constructed on one or two piers south and north of Grand Junction Road respectively.

Along with N3, this option reduces the extent of land acquisition of abutting businesses by running service roads and ramp connections under the elevated roadway. The single pier south of Grand Junction Road accounts for the narrower existing road corridor between Grand Junction Road and Days Road.

For this option, north facing ramps at the Grand Junction Road interchange would connect directly with the elevated roadway; south facing ramps would be located south of Days Road to connect directly to Days Road from Grand Junction Road.

N4 would further incorporate a service road that connects Rosberg Road with Cormack Road north of Grand Junction Road. It would be located under the elevated roadway to reduce land acquisition for this section. Both Francis and Senna roads would connect to this service road, which is expected to be a two-way two-lane road.

South of Grand Junction Road, option N4 would feature a central pier that allows for a two-way four-lane road that could provide full access to key side roads.

5.4 Preferred concept selection process

A design options assessment workshop for the project in April 2009 brought together staff from DTEI, the consultancy project team, and representatives from Port Adelaide Enfield Council and ARTC.

The purpose of the workshop was to review and assess the four concept designs for project, and identify preferred option(s) for further analysis and costing. The four designs were described as:

- Reference Design (N1)
- Reference Design – Modified (N2)
- Short Elevated Roadway (N3)
- Long Elevated Roadway (N4).

Workshop participants were divided by discipline/area of interest into four smaller groups; two groups focused on engineering and accessibility aspects; and two assessed business impacts and community/environmental effects. A comprehensive review and assessment on each of the four designs then used a pre-determined multi-criteria matrix with defined weightings for each criterion.

Criterion development and the key outcomes of the workshop are summarised below.

Objectives and approach

The assessment process compared the main alignment options with the aim of determining a 'preferred' option, which would be carried over into the next stage of the planning investigation and form the basis for the subsequent concept design. Alternatives were compared against the base case of the Reference Design alignment (N1).

A weighted multi-criteria evaluation matrix technique was adopted to assess the relative benefits and adverse effects of each alternative concept design. The assessment criteria used and the weightings allocated to them are described in the following sections.

Assessment criteria and weightings

The criteria adopted for the assessment process were derived from the project objectives. Criteria were selected that would best provide a measure of difference between alternatives; they were not necessarily the most significant in relation to the project objectives. For example, safety is a key project objective but it is assumed that the design for each alignment alternative would provide a safe solution. Safety as an assessment criterion therefore would not assist to differentiate between options.

Sub-criteria for each of the main assessment criteria were also developed for further differentiation. **Table 5.1** shows the adopted main criteria and their relationship to project objectives. Each main criterion was assigned a weighting to reflect its perceived relative importance to key stakeholders.

Table 5.1 Assessment criteria

Objective	Criterion	Definition
To provide a safe, efficient, sustainable and integrated strategic land transport link for road and freight movement between the inner northwestern areas of Adelaide, Port Adelaide and Northern Expressway	Estimated construction cost	Total capital cost of the project including lifecycle costing
	Constructability	Ease of acquiring properties and of construction that minimises impacts and complexity to businesses and traffic flows
	Functionality	Upgraded South Road and its interchanges meet the operational and freight access needs <i>(The interchanges operate efficiently and do not impact on free flowing traffic on the upgraded South Road nor the operation of adjacent local roads. Freight vehicles have unambiguous and direct access to key destinations.)</i>
To reduce congestion along South Road and the impact of freight/traffic movements on the local road network and local communities	Local accessibility	Characteristics of movement to/from/between the various precincts located either side of South Road <i>(The aim is to provide an indication of the impacts on access and severance to local areas abutting South Road.)</i>
To achieve a design solution that minimises impacts on business activity ultimately and during construction	Business impacts	Number of privately owned or operated properties that will be acquired (partially or whole) to develop the project. <i>(The aim of this criterion is to indicate public/business reaction to the proposed scheme.)</i>
To minimise the effects on local communities and the surrounding natural environment and where possible enhance community and environmental opportunities	Community effects	The quality of amenity of residents and the visual character of users of South Road. <i>(This will measure the impact of the north–south corridor on the quality of the amenity for people living in the area and road users.)</i>
	Environmental effects	The level of disturbance or damage to native vegetation, fauna habitats, wetlands and greenhouse gases.

Workshop outcomes

In groups, workshop participants assessed Options N2, N3 and N4 against the base case of N1. Each criterion was ranked according to a scale ranging from -3 (significantly worse than the base case) to +3 (significantly better than the base case).

The workshop ranked Option N4 highest with a total score of 105, followed by N3 with a score of 95.

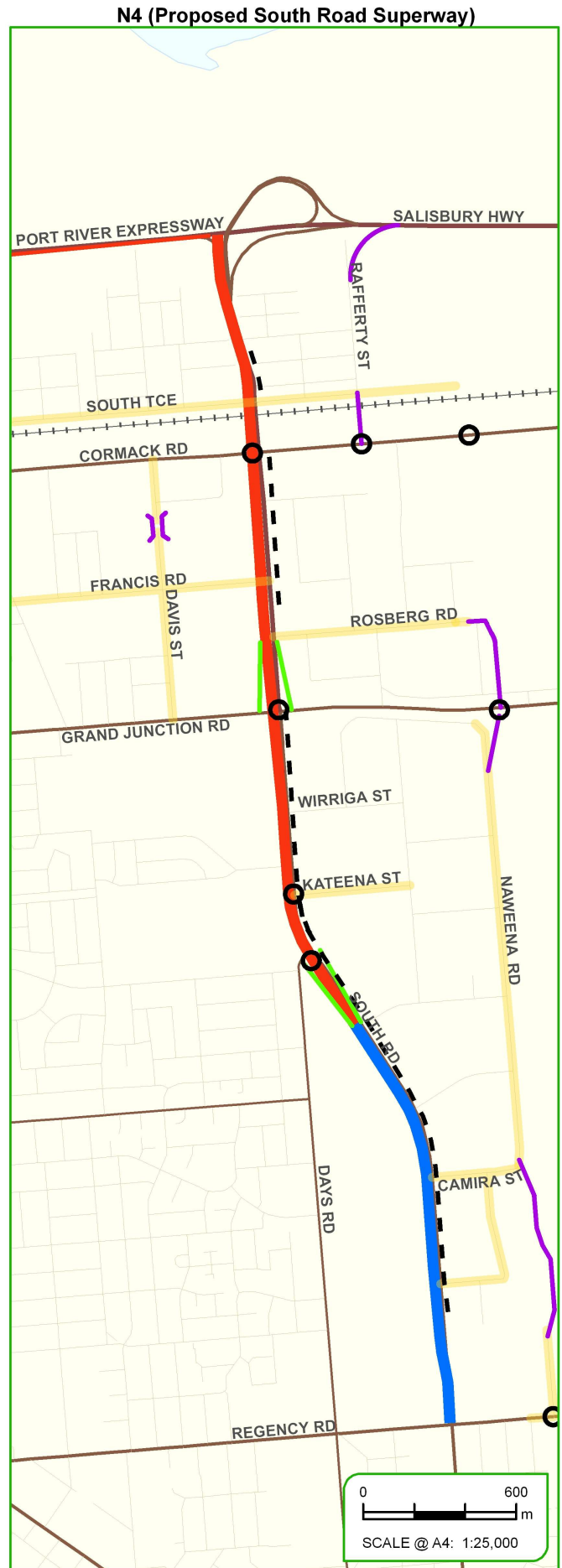
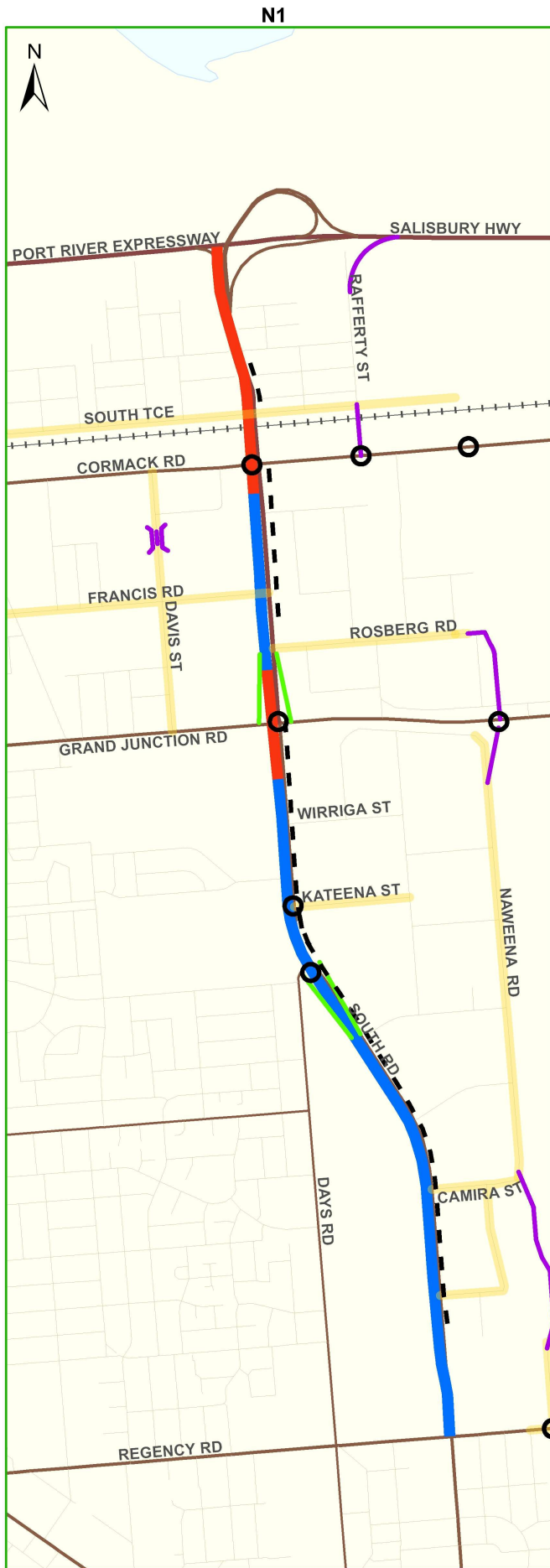
Following the assessment by each group and consensus scoring by the entire group, a number of general project issues were discussed to progress the more detailed analysis of the base reference scheme (Option N1), and the highest ranking option of N4.

Options N1 and N4 are shown on **Figure 5.1**, and include proposed changes to the local road network.

5.5 Preferred concept and expected costs

Option N4 allows a greater length of free-flowing South Road to be established (4.8 kilometres) compared to any other option (N1, N2 or N3).

The longer elevated roadway option (N4) is considered to be the optimum design solution: it will improve traffic efficiency and management, minimise construction effects such as property acquisition and timeframes, and enhance road safety and local accessibility. Less land will be required for construction, effects on businesses and landowners will be less, and east–west accessibility for commuters and freight vehicles optimised relative to other options. The N4 longer elevated roadway option will give better environmental outcomes, while helping achieve the Government’s broader economic, social and environmental priorities.



Options N1 and N4

- Proposed Traffic Signals
- Proposed Local Road Network Upgrades
- Road at Ground Level
- Proposed New Road Link
- Road Above Ground Level
- Service Road
- On/Off Ramp

Figure 5.1