

## 18 Visual analysis

### 18.1 Introduction

A visual assessment is a structured analysis of the existing landscape character and scenic quality of a study area against which the visual effects of a proposed development are assessed.

The proposed Northern Expressway corridor will have both positive and negative effects on the surrounding environment. Positive effects may include landscape works such as revegetation, feature tree planting and urban design elements which will improve the overall landscape character of many locations. Negative effects may include the loss or interruption of views from nearby residential areas caused by bridge embankments, mounds, noise barriers or the introduction of views of traffic. The visual assessment carried out for the proposed Northern Expressway has assisted in identifying the potential for enhancing the positive visual effects and opportunities of the proposal and has helped to ensure that any negative effects are reduced, eliminated or mitigated.

### 18.2 Visual assessment methodology

The assessment of the visual effects associated with construction of the proposed Northern Expressway was carried out in three parts involving:

- analysis of the landscape character and scenic quality of the existing visual environment. The Northern Expressway will pass through the Northern Adelaide Plains visual catchment which includes the general area around the proposed Northern Expressway, from where it would be viewed. The corridor study area was then divided into ten landscape character areas, with each area having common distinguishing visual characteristics including landform, land use, watercourses, vegetation and available views. Each landscape character area was also assessed as to whether it is of high, moderate or low scenic quality
- analysis of the main visual changes that will be likely to occur taking into account the proposed road design and implementation of the Urban and Landscape Design Strategy (refer to Part B, Section 7.4.11)
- assessment of the potential visual effects brought about by the proposed changes. The direct visual effect of the proposed corridor on the existing landscape was assessed, as was the visual effect on views from the surrounding area. Measures to minimise any negative effects, and opportunities to create or enhance positive effects have then been proposed.

### 18.3 Existing visual environment

#### 18.3.1 General context

The Northern Expressway will pass through the Northern Adelaide Plains visual catchment which includes significant suburban, semi-rural and rural areas on the northern fringe of Adelaide. For the purpose of this study, the catchment was defined by the following boundaries:

- Port Wakefield Road to the west
- Main North Road and the Gawler Bypass to the east

- RAAF Base Edinburgh and the suburbs of Munno Para West, Andrews Farm, Davoren Park and Elizabeth West to the south
- Two Wells Road and the suburb of Buchfelde to the north.

### 18.3.2 Landform and land use

South of the Gawler River, the region is characterised by a flat, fertile plain, while to the north-east of the river, the landscape is characterised by a low belt of red sand dunes and sand sheets which represent a major topographic feature. Much of the native vegetation within the visual catchment has been cleared. Isolated stands of introduced vegetation have been planted as windbreaks or for screening and to provide shade around rural residences. The proposed Northern Expressway would be located within an area of agricultural and intensive horticultural production (including vegetables, almonds, olives, wine grapes, flowers and nursery products).

### 18.3.3 Views and landmarks

Due to the open and flat nature of the land, long distance views to the Mount Lofty Ranges are possible from many locations within the visual catchment. These views are broken only by stands of screening vegetation and variations in the local topography. Views of the Mount Lofty Ranges would become more prominent for travellers as the proposed Northern Expressway heads north-east, particularly when it passes north of the Gawler River. Views of RAAF aircraft carrying out routine patrols are an interesting visual feature of the skies of the study area, as are the gliders that operate near Gawler.

### 18.3.4 Landscape character and scenic quality

The proposed Northern Expressway will pass through highly altered countryside which comprises a series of landscape settings including areas of flat open plain used for horticultural and agricultural activities, a riparian corridor, small pockets of remnant vegetation and rural residential areas. The vegetated corridor of the Gawler River passes through the area and provides a small area of important natural green space.

Within the Northern Adelaide Plains visual catchment, there is suburban development to the east along Main North Road and to the west along the southern section of Port Wakefield Road (from Salisbury Highway to Waterloo Corner Road). The rural living area of Macdonald Park and the township of Angle Vale are both within the visual catchment area.

When compared to other visual catchment areas around Adelaide, the Northern Adelaide Plains visual catchment is generally of low to moderate scenic quality. More natural sites within the area (such as the Gawler River) have the highest scenic quality.

## 18.4 Effects of the project on the existing environment

The study area was divided into ten landscape character areas based on their differing physical and visual characteristics. An assessment of each area, a summary of the effects the project will create and measures proposed to minimise effects within each area are outlined in Table 18.1. A location plan, photography and detailed descriptions of each landscape character area, as well as the potential effects and proposed mitigation measures are provided in the *Urban Design, Landscape and Visual Assessment Technical Paper*.

Table 18.1

**Landscape character areas, effects and mitigation measures along the proposed Northern Expressway**

<b>Landscape character area</b>	<b>Landscape character</b>	<b>Scenic quality and visual sensitivity</b>	<b>Proposed changes, effects and measures to minimise effects</b>
10. Glider field and harness racing track	<p>Glider strip is located on flat land surrounded by crops. Harness racing track is surrounded by a dense vegetation screen on all sides.</p> <p>From the Gawler Bypass there are broad, sweeping views across the glider field to the Gawler River and beyond.</p>	<p>Scenic quality: moderate –high</p> <p>Small residential community to the east of the Gawler Bypass will be highly sensitive to visual change.</p> <p>Residents of Buchfelde will be sensitive to visual change.</p>	<p>New interchange will join the proposed Northern Expressway to the existing Gawler Bypass.</p> <p>Bridge embankments may restrict views to the east for residents of Buchfelde. Some vegetation will need to be removed from around the harness racing track.</p> <p>Significant landscape plantings around the interchange will help to minimise the visual effect of the proposed Northern Expressway.</p>
9. Two Wells Road	<p>Land is gently undulating and has an open pastoral feel. Sand hills in the distance to the north.</p> <p>Mount Lofty Ranges form a dominant backdrop.</p> <p>Land use includes cropping and irrigated market gardens. Residential properties exist along Two Wells Road.</p>	<p>Scenic quality: moderate</p> <p>In general, people living along Two Wells Road will be moderately sensitive to views of the Expressway. Residents in close proximity to the overpass will be highly sensitive to visual change due to the loss of existing views and new views of the road.</p>	<p>An overpass will be provided at Two Wells Road.</p> <p>Overpass embankments will be highly visible from the surrounding area and a dominant visual feature of the landscape.</p> <p>Landscape planting will help to soften and screen the overpass embankments reducing the visual effect.</p> <p>Aesthetic considerations will be integral to the bridge design.</p>
8. Gawler River	<p>Land is undulating, with a deep river valley.</p> <p>Large river red gums line the river corridor.</p> <p>Surrounding land is predominantly used for cropping and grazing.</p>	<p>Scenic quality: high</p> <p>As one of the last remaining natural environments within the area, it is particularly sensitive and vulnerable to disturbance and alteration.</p>	<p>Bridge will be constructed over river and Wingate Road will be realigned.</p> <p>Tree removal will be necessary and views to the river from surrounding areas will change significantly with the introduction of a new infrastructure element.</p> <p>Bridge over river will be designed to minimise the loss of native vegetation. Landscape rehabilitation works will occur within river corridor and Native Vegetation Act offset planting will be carried out.</p>
7. Angle Vale Road	<p>Land gently undulates on approach to the Gawler River.</p> <p>Land use includes orchards, market gardens, cropping and grazing with residential properties along Angle Vale Road.</p> <p>Mature gum trees on Angle Vale Road are a dominant landscape feature.</p> <p>Views of the Gawler River vegetation to the north. Roadside vegetation screens views to the south.</p>	<p>Scenic quality: moderate</p> <p>In general, residents of the area will be highly sensitive to visual change.</p> <p>Residents of Bain Road and those in the immediate vicinity of the Angle Vale Road overpass will be extremely sensitive to the visual changes that will arise from the Expressway due to its close proximity.</p>	<p>Angle Vale Road overpass will be constructed over the proposed Northern Expressway. Removal of large trees will be necessary.</p> <p>Overpass embankments and the proposed Northern Expressway will be a dominant foreground feature for residents of Bain Road. They will experience loss of views to the Mount Lofty Ranges and river.</p> <p>Planting on overpass embankments, along western side of Expressway corridor and along service road will provide visual screening for residents of Bain Road and will reduce the visual effect.</p>

Landscape character area	Landscape character	Scenic quality and visual sensitivity	Proposed changes, effects and measures to minimise effects
6. Curtis Road and Smithfield Magazine Area	<p>Terrain is flat, but large earth walls of a dam dominate the landscape.</p> <p>Red brick magazine buildings provide visual interest.</p>	<p>Scenic quality: moderate–high</p> <p>Residents on western edge of Andrews Farm will be moderately sensitive to visual change.</p>	<p>Curtis Road interchange will be a dominant landscape feature, visible from the surrounding road network.</p> <p>The interchange will not be visible to the majority of Andrews Farm residents due to existing fences and mounds.</p> <p>Land around the interchange will be revegetated creating visual interest and reducing impact of the overpass structure.</p>
5. Macdonald Park area	<p>Near Argent Road, the Smith Creek drain broadens from a deep, weed-infested channel to a shallow grassed swale. Surrounding land is flat.</p> <p>Land use includes rural residential area of Macdonald Park, almond and olive orchards, vineyards, horticulture, cropping and sheep grazing. Road verges are well vegetated with planted trees and shrubs.</p> <p>Several of the old Smithfield Magazine buildings have been converted into houses and other heritage sites also exist, adding an interesting visual and cultural element to the area.</p> <p>Distant views to the Mount Lofty Ranges are only available on roads running in an east–west direction.</p>	<p>Scenic quality: moderate</p> <p>Macdonald Park will be highly sensitive to the visual changes that will arise from the proposed Northern Expressway.</p>	<p>A 2–3 m high mound will be constructed around the southern side of Macdonald Park to provide a buffer between residential properties and the Expressway. Closure of Petherton Road will change local access arrangements.</p> <p>Mounding and dense vegetation buffer will provide some respite from the visual effect of the Expressway. However, some residents may feel a loss of privacy as the new Expressway passes to the rear of their properties.</p> <p>Existing vegetation on Petherton Road provides a strong visual buffer between the proposed Northern Expressway and the existing residential area.</p> <p>There is opportunity for the proposed Northern Expressway to interact with the heritage buildings and local road network in a positive way. The existing vineyards and orchards will provide visual interest along the edge of the Expressway corridor, and views to these will be retained.</p>
4. Intersection of Womma Road and Heaslip Road	<p>Topography is relatively flat, with localised mounding around Smith Creek drain.</p> <p>Land use includes olives and almond orchards, vineyard, floricultural area, wholesale plant nursery, greenhouses, hobby farms, packing sheds and residential properties.</p> <p>Distant views of Mount Lofty Ranges to the east and foreground and middle ground views of vegetation. Aircraft from the RAAF Base Edinburgh provide aerial visual interest.</p>	<p>Scenic quality: low–moderate</p> <p>Residential properties will be moderately sensitive to visual change.</p>	<p>Foreground views will change significantly with interchange becoming a prominent visual feature. Large areas of inaccessible land associated with the ramps provide for management of stormwater and revegetation.</p> <p>Roundabouts provide focus for more formal landscape treatments. Bridge embankments will be planted with a mix of native shrubs, groundcovers and grasses to enhance visual effect.</p>

Landscape character area	Landscape character	Scenic quality and visual sensitivity	Proposed changes, effects and measures to minimise effects
3. Penfield Road	<p>Localised mounding, although the landform remains fairly flat. Irrigated market gardens, orchards and several private equine trotting tracks are main land uses.</p> <p>Scattered remnant vegetation remains along Penfield Road. Large planted trees and power lines are the main landscape features, with background views of the Mount Lofty Ranges to the east.</p>	<p>Scenic quality: low–moderate</p> <p>Not sensitive to visual change due to non-residential land use.</p>	<p>The proposed Northern Expressway will pass through this area but there will be no significant infrastructure elements within it, therefore visual effect will be minimal.</p> <p>Important distant views to the Mount Lofty Ranges and foreground views of market garden crops will be maintained. Road verge will have minimal landscape treatments but some planting will be provided where the proposed Northern Expressway meets Penfield Road. Suitable site for artwork installation.</p>
2. Huxtable Road and the Taylors Road rail crossing	<p>Terrain is flat with rail line elevated above surrounding land. Area of intense horticultural production dominated by greenhouses and irrigated market gardens.</p> <p>Shelterbelt planting and railway corridor planting is of poor visual quality. Road verges degraded and heavily weed infested.</p> <p>Distant flanking views of the Mount Lofty Ranges available where not obstructed by vegetation screening.</p>	<p>Scenic quality: low–moderate.</p> <p>Low sensitivity to visual change. Very few residential properties and these have existing boundary planting which will screen views of the proposed development.</p>	<p>Bridge over the Adelaide–Alice Springs/ Darwin rail line will be the largest and most visually dominant of all the proposed Northern Expressway overpasses. It will provide access to views that will not otherwise be available to travellers through the area.</p> <p>Removal of shelterbelt trees will be necessary on corner of Pellew Road and Taylors Road.</p> <p>Bridge embankments will be highly visible to local traffic but will be vegetated to provide stabilisation and to integrate the structure into the landscape. Aesthetic considerations will be integral to bridge design. As planting matures, the visual effect will be reduced.</p>
1. Port Wakefield Road	<p>Topography is flat and open with land used for market gardens, greenhouses and cropping. Residential properties are located along Taylors Road and Port Wakefield Road.</p> <p>Views to Mount Lofty Ranges limited by vegetation around property boundaries.</p> <p>Dense screen of vegetation and power lines within the Port Wakefield Road median dominate the existing landscape.</p>	<p>Scenic quality: low</p> <p>Residential properties near Port Wakefield Road will be moderately sensitive to visual change.</p>	<p>Installation of traffic lights and lighting is proposed at junction of the proposed Northern Expressway and Port Wakefield Road.</p> <p>Visual effect will be minimal, considering the low scenic quality of the existing environment.</p> <p>Excellent opportunity to make significant improvements to the visual quality of this area. Landscape works at junction will enhance visual amenity and unite the proposed Northern Expressway with existing vegetation on Port Wakefield Road.</p>

Figure 7.9 provides an overview of the Urban and Landscape Design Strategy drawn from the above assessment. Details of the indicative landscape concept treatments are contained in Section 7.

## **18.5 Environmental management**

### **18.5.1 Principles adopted to minimise effects**

A series of design objectives and principles were identified to develop design solutions that minimise negative visual effects and enhance visual opportunities of the project. Measures to minimise effects at specific locations are detailed in Table 18.1 while general environmental management principles are detailed in the following sections.

### **18.5.2 Measures to minimise effects during planning and design**

Mitigation measures proposed to reduce visual effects include:

- development of an Urban Design Framework that establishes design objectives to ensure potential visual effects are considered in the design of all infrastructure elements
- establishing a landscaping theme that is visually integrated with land use and vegetation patterns of the surrounding landscape
- locating the route and visually dominant bridge structures at a reasonable distance from dense residential areas to reduce the visual impact of embankments during the day and to minimise the visual intrusion of interchange lighting at night
- ensuring aesthetic considerations are integral to the design of bridge structures and noise barriers by incorporating visual elements of texture, colour and form into their design.

### **18.5.3 Measures to minimise effects during construction**

The visual effect of the proposed Northern Expressway would be greatest during and immediately following construction, with the negative effects decreasing as the landscape plantings mature and as people become accustomed to the visual changes that have occurred.

Mitigation measures to minimise visual effects during construction include:

- retaining existing trees where possible to assist with screening the construction site
- densely planting overpass embankments to reduce their visual impact on surrounding residents once construction works are completed
- mass planting of large areas of open space with native species between the proposed Northern Expressway and interchange ramps to reduce the visual scale of the interchanges
- enhancing the approach to the Gawler River crossing with additional landscape plantings
- use of landmark trees and massed low plantings to reinforce the intersection of the proposed Northern Expressway with Port Wakefield Road and to provide improved visual amenity in this area
- installing artwork installations at strategic locations to create visual interest and a sense of journey for those travelling along the road
- installing directional lighting at interchanges to minimise the effect on residential properties.

#### 18.5.4 Measures to minimise effects post-construction

Mitigation measures to minimise visual effects post-construction include:

- ongoing maintenance of the landscape plantings within the road reserve to ensure plant growth and to control weeds
- replanting landscape areas that have failed.

### 18.6 Conclusion

The proposed Northern Expressway would have an effect on the existing visual environment as well as on the local character and amenity of the area through which it passes. Viewers in closest permanent proximity to the corridor would be affected to the greatest degree (particularly those people living or working nearest to the interchanges or overpasses). Viewers near the following locations would experience the greatest visual change from existing conditions:

- residents living on the southern and eastern edges of Macdonald Park (who would be exposed to mounding and vegetation screening)
- residents living near Paternoster Road in Gawler (who would see the interchange)
- residents living in the vicinity of the Womma Road and Heaslip Road interchange (who would be exposed to landscaped overpass embankments)
- residents living along Angle Vale Road and Bain Road in the vicinity of the interchange (steep batters associated with the overpass would screen views to the surrounding area)
- residents living near Two Wells Road (who would have views blocked by the proposed overpass).

The horticultural land use of the region provides a variety of interesting views for the passing motorist. There is great opportunity to expand upon these views and emulate, through sensitive landscape design, the contrasting colour, texture and linear geometries of the region through which the proposed Northern Expressway would pass.

The Urban Design Framework outlined in Part C, Section 7.2.5, would be integral to all project phases including concept design, detailed design and construction. By integrating the proposed Northern Expressway into the landscape, providing an interesting journey experience, addressing sustainability issues and providing structures of good visual quality, negative visual effects of the project would be minimised.

The proposed Northern Expressway also provides opportunity for a design that highlights the positive elements of the area as Adelaide's northern gateway. Large areas of land along the proposed Northern Expressway corridor and around interchanges provide a significant opportunity to carry out revegetation works with local native plant species, thereby improving biodiversity in the region.

Over time, many of the negative effects would be mitigated as the landscape plantings mature and as people become accustomed to the Northern Expressway in the landscape.

