Appendix I

Visual Assessment and Urban Design Strategy
Shortland to Sandgate
Visual assessment and urban design strategy for proposed upgrade of H23
## Contents

1. Introduction .............................................................................................................. 3

2. Existing landscape and built form character ......................................................... 4

3. Proposed development ............................................................................................. 5

4. Visual impact assessment ......................................................................................... 6
   Project visibility
   Visual assessment
   Conclusion

5. Urban design strategy .............................................................................................. 11
   Urban design objectives and principles
   Concept urban design framework
1. Introduction

The purpose of this report is to summarise the assessment of the visual impact of the proposed route and set down a strategy for the development of a well integrated, appropriately designed project which has minimal adverse impacts on the area.

In order to do this a brief contextual analysis of the area has been carried out. The preferred route has been developed to avoid and minimise as many impacts on this context as possible and the visual impact assessment assess the impacts of this route on the landscape setting. The results of the assessment provide an indication of impacts expected and guide the development of the concept design.
2. Existing landscape and built form character

The study area is situated approximately 8km north west of Newcastle town centre on the west side of the Hunter River.

It is a low lying flat landscape crossed by a tributary of Ironbark Creek called Deepbridge Creek. To the north east the land rises to a low ridge or bank bordering the Hunter River. To the north the land rises gently to a low hill formed by the capping of a land fill site. To the south topography is fairly flat for several kilometres until rising towards Newcastle town centre.

Vegetation is primarily grazing land with groups and lines of trees comprising weed recolonised natives and introduced species. This combination of relatively flat land with trees generally blocks long distance views however on the higher areas panoramic views above the trees are available.

Aside from the Ironbark creek tributary there are several low lying wetland water bodies including in the Shortland Wetlands Centre and to the west of the Sandgate Cemetery.

The landuse of the area is mixed diverse range:
- Sandgate Cemetery is a dominant feature as is the rail line and associated goods yard.
- The Shortland Wetland Centre in the south of the site is unobtrusive and set in woodland.
- There are three pockets of single storey residential areas situated at the north middle and south end of the study area.
- A small golf course is situated on the former landfill site.
- A short 200m length of planted road embankment and road constructed as part of the previous project sits incongruously in the centre of the site.
- A high voltage power line and associated pylons are located across the site and finally the radio mast towers over the whole area.

The proposed development is a continuation of the Jesmond to Shortland section of the inner city bypass which was opened in June 1993. The bypass is 2 lane dual carriageway. It is well vegetated with a successful mix of native species. It has a well designed suite of bridges and retaining walls.

In summary the area is not considered to be of significant value in landscape/ scenic terms however there are a several important areas that need to be sensitively treated including the housing areas, the cemetery and the Shortland Wetlands Centre.
3. Proposed development

In summary the proposed route is a 1.8km continuation of the 2 lane dual carriageway from a grade separated interchange at Shortland in the south to an intersection with the Pacific Highway at Sandgate in the north.

In order to provide this route in principle the road would need to be in cutting under Sandgate road, on embankment passing the Wetland Centre, on bridge for approximately 250m over Deepbridge Creek, on the existing embankment built for the project in the early 1990’s as part of the Jesmond to Shortland contract, on a 52m bridge over the rail line and on a gradually decreasing embankment past the Cemetery. Noise mitigation would be needed at locations where the road is close to properties and increases noise levels past minimum guidelines.

The interchange at Sandgate would comprise on and off ramps in a northerly direction, an overbridge continuing Sandgate Road, an on-ramp from Sandgate road and an off-ramp before the interchange. The intersection and Sandgate would be at-grade with traffic lights.

The line of this route has been in the local plans for many years [when?] and a reservation has been set aside as a continuation of the inner city bypass. It is the shortest route connecting the two roads and utilises a short section of planted embankment previously built for the project from surplus fill. The route therefore minimises costs and the extent of the project and is considered in urban design terms the most desirable location for the road.
4. Visual impact assessment

The visual assessment is broken down into two parts: the visibility of the proposed development illustrated on the following aerial photographs and the visual impact of the proposed development described in the following tables.

4.1 Project visibility

Due to the flat open nature of the landscape the project would be visible from much of the surrounding landscape and housing areas, however the presence of tree groups and woodland mitigates this visibility significantly. A further mitigating factor is the presence of dense vegetation on the embankment constructed as part of the previous project.

The main obstructions to wider visibility of the project would be the ridge upon which the Pacific Highway sits to the east of the area, and small hill created by the capping of the landfill site to the north west of the area. In addition woodland on the edge of Shortland and around the Wetland Centre would block views to the housing areas to the west. Beyond these obstructions long distance views are available, in some cases as far as the foothills of the Great Dividing Range.

The approximate extent of visibility is shown in the following figure. It is based upon the ridgelines created by the Hunter River banks and the landfill site. It has not been corrected for vegetation and buildings.
4.2 Visual assessment

For the purpose of this report visual impact is defined as the combined effect of the visual sensitivity of the view and the magnitude of the impact of the development. The ratings for each are given a numerical value which is averaged and rounded up to give a total value for visual impact. This provides a relative assessment of impact which; provides an understanding of the visual impact of the development; aids comparisons between options; and provides a guide to the development of the design.

The Visual impact values are: Low (1), Low – medium (2), Medium (3), Medium – high (4) and High (5).

Visual sensitivity refers to the nature of the viewer’s location and how sensitive it is to the proposed change. For example the nature of the current view may be industrial or rural and all shades between - an important factor in determining visual impact. The value and popularity of the viewpoint (park, church, residential property or street) is also important.

Magnitude of impact refers to the nature of the project and its proximity to the viewer. For example a large interchange might have a very different visual effect to a section of road or a bridge. Likewise a development situated 1km from the view point has a much reduced visual effect than one 100m away.

The main areas experiencing a notable adverse visual impact from the project are the 3 housing areas on Sandgate Road, Astra Street and Maitland Road, the Shortland Wetland Centre and Sandgate Cemetery. These impacts are described in the following table.

Table 1: Visual impact schedule

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Photograph</th>
<th>Sensitivity</th>
<th>Magnitude of impact</th>
<th>Visual impact value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties on Astra Street</td>
<td><img src="image" alt="Looking west from Astra Street" /></td>
<td>Medium (3)</td>
<td>High (5)</td>
<td>Medium - High (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The existing view is primarily low level across the floodplain curtailed by vegetation and the existing road embankment.</td>
<td>The road will be approximately 20m from the housing at its closest point and 60m when it leaves the embankment on to bridge at a height of approximately 7m above the floodplain. The bridge would be 240m in length with a noise wall at the northern end. The structure will be a major element obstructing views.</td>
<td></td>
</tr>
<tr>
<td>Viewpoint</td>
<td>Photograph</td>
<td>Sensitivity</td>
<td>Magnitude of impact</td>
<td>Visual impact value</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Properties on Maitland Road</td>
<td>![Looking south from Maitland Road (Pacific Highway)]</td>
<td>Low - Medium (2)</td>
<td>Long distance vegetated views are currently available over the study area and eventually as far as Sugar Loaf Mountain on a clear day. However the views are across the Pacific Highway and also take in the rail goods yard.</td>
<td>Medium (3)</td>
</tr>
<tr>
<td>Properties on south east side of Sandgate Road</td>
<td><img src="image" alt="Properties on south east side of Sandgate Road" /></td>
<td>Low - Medium (2)</td>
<td>Existing views from these properties are of Sandgate Road, the residential area opposite and the vegetation surrounding the Wetland Centre. The proposed road would not be a significant change in the quality of the view and is likely to reduce the level of existing traffic on Sandgate Road.</td>
<td>Low - Medium (2)</td>
</tr>
<tr>
<td>Properties on north west side of Sandgate Road</td>
<td><img src="image" alt="Looking east toward housing on Sandgate Road" /></td>
<td>Medium (3)</td>
<td>Existing views from these properties are over the proposed road reservation towards the Wetland Centre and largely encompass grassland and woodland.</td>
<td>Medium – High (4)</td>
</tr>
</tbody>
</table>

The intersection of the road and Pacific Highway will be in close proximity to the houses. However it is an at-grade junction and heads south away from the properties as opposed to across the view of the properties.
<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Photograph</th>
<th>Sensitivity</th>
<th>Magnitude of impact</th>
<th>Visual impact value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties near Sandgate roundabout</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Low (1)</td>
<td>Low (1)</td>
<td>Low (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The existing view is towards Sandgate Road and the roundabout. Views are blocked by existing planting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandgate Cemetery</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Low - Medium (2)</td>
<td>Medium – high (4)</td>
<td>Medium (3)</td>
</tr>
<tr>
<td></td>
<td><img src="image3.png" alt="Image" /></td>
<td>The existing view is curtailed by the row of trees planted alongside the cemetery; however glimpses of the rail goods yard and more distant views of the landscape are available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image4.png" alt="Image" /></td>
<td>Low - medium 2</td>
<td>Medium High (4)</td>
<td>Medium (3)</td>
</tr>
<tr>
<td></td>
<td><img src="image5.png" alt="Image" /></td>
<td>Existing views from the edge of the Centre are largely across the grassed flat floodplain. The main artefacts in the view are the high voltage lines and pylons, Sandgate road can also be seen in the distance. The edge of the Centre has a low mound partially planted with groups of trees and shrubs which mitigates potential impacts to an extent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deepbridge floodplain from Shortland Wetland Centre</td>
<td><img src="image6.png" alt="Image" /></td>
<td>Low - medium 2</td>
<td>Medium High (4)</td>
<td>Medium (3)</td>
</tr>
<tr>
<td></td>
<td><img src="image7.png" alt="Image" /></td>
<td>The proposed road is on embankment and bridge in close proximity to the centre. The embankment tapers up to approximately 7m high where it becomes a 240m long bridge crossing the floodplain.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 Conclusions

The general character of the landscape and built form of the area is not considered highly sensitive and has been significantly altered by the range of different land uses. The presence of existing artefacts such as the rail line, roads, radio mast and power lines are an indicator of the general capacity of this landscape to accommodate further change.

However there are certain areas of the landscape which have qualities that should be safeguarded through a sensitive concept design. These are the flood plain area of Deepbridge Creek and the Wetland Centre, the wetland area to the north of the site and Sandgate Cemetery.

In terms of visual impacts the housing around Astra Street and on the west side of Sandgate road are adversely affected and the concept design should be developed to address this impact.
5. Urban design strategy

The purpose of the urban design strategy is to help develop a concept design which fits the new road into its built and landscape context and hence avoids or minimises impacts on the local community and public space.

This strategy will be achieved by the following objectives and principles.

5.1 Objectives & principles

Continue the design quality of the existing inner city bypass.

- Provide a well vegetated attractive median planted with native species.
- Provide a well vegetated verge with open areas where good views are available.
- Provide a simple and refined single span overbridge with spill through abutments.

Existing inner city bypass character

Provide a simple, refined and slender bridge structure over the flood plain.

- A two rail bridge barrier should be used to reduce the apparent depth of the bridge and allow good views for road users.
- Piers should be refined, slender wall type integrated headstock or column structures to appear simple and uncluttered and to allow views across the floodplain. Spans should be as close to 50m as possible to match the span of the bridge over the rail line.
- Noise walls if required should be transparent to reduce the apparent depth of the bridge and allow good views for road users.
- If practical the superstructure of the bridge over the rail line should be similar in appearance to the floodplain bridge.
- Embankments at the abutments should be laid back as flat as possible.

Create an appropriate fitting setting for the Cemetery and the Wetland Centre.

- Provide a well planted edge to the Wetland Centre with a view corridor kept towards the entrance area.
- Grade the embankment to 3:1 to minimise the impact of the embankment.
- Reinforce the existing planting along the edge of the Cemetery.
• If practical introduce a low mound or false cutting between the cemetery and road.

Integrate the proposed landform into the existing topography

• Roll over tops bottoms and ends of cuttings.
• Grade out embankment slopes to 3:1 where feasible but no less than 2:1

5.2 Urban design framework

The following plan provides a conceptual design approach for the development of the project, subject to further consultation with stakeholders. The subsequent photographic precedents have been provided as a guide to the design direction for project elements including bridges, noise walls and embankments.
1. Interchange densely planted to integrate with existing woodland. Overbridge simple and refined structure to match bridges on existing bypass. / 2. Views kept open towards Wetlands Centre entrance, subject to Centre's agreement. / 3. Densely planted boundary along Wetlands Centre. / 4. Line of trees along access road to filter views and integrate road. / 5. Flood plain area kept open in character embankment grassed only. / 6. Deepbridge Creek bridge, a slender simple structure with clear noise walls if required and two rail barriers to allow good views and minimise visual obstruction. / 7. Line of trees to help filter views from Astra Street. / 8. Existing planted embankment retained. / 9. Railway bridge to similar style to floodplain bridge to reduce project complexity and reduce impacts. / 10. Dense screening and low false cutting along cemetery edge. / 11. Partial screening and open long distance views towards Great Dividing Range. / 12. Open views of Wetland area. / 13. Densely planted median to match adjacent bypass.
Examples of potential bridge structures which would be aesthetically appropriate in this setting. Simple attractive piers, slender superstructure, deep shadow line under the deck, open barriers and wide spans. (Top – Bridge over the Karuah River, Bottom – Wami Bridge, Kings Highway, Left – Mittagong bridge Hume Highway)
Examples of transparent noise walls on bridges. (Top – City West Link, Bottom – M4)

Example of a false cutting for visual and noise screening at the top of an embankment. (North Kiama Bypass)