



For the Existing Highway corridor, the strategic access plan was initially developed with key grade-separated junctions at:

- Englands Road / Stadium Drive
- North Boambee Road / Cook Drive
- Thompsons Road / Halls Road
- Combine Street / Albany Street
- North of Coffs Creek near Beryl Street
- Bray Street / Orlando Street
- Arthur Street / Mastrocolas Road
- Bruxner Park Road / James Small Drive south
- Old Coast Road / James Small Drive north

In addition, east-west overbridges are proposed at Park Avenue / Moonee Street and High Street / Harbour Drive. The schematic concept design is described in detail in Section 4.

3.3 Constraints Analysis

To date, the Inner Bypass corridor has been defined only as a broad band of land up to 1km wide. This contrasts with the well-defined existing highway, which occupies a much narrower road reservation.

In order to provide more certainty on potentially feasible route options within the Inner Bypass corridor, a range of planning and technical investigations have been undertaken to identify route options. These investigations have focussed on identification of constraints such as topographical features, current and future land use, residential areas, flora and fauna features, agricultural production and existing infrastructure such as schools, roads and railways.

Constraints mapping was developed during the numerous technical investigations and this has provided a key input to the ongoing concept development. A range of the constraints is presented in Figure 3.3 to Figure 3.7. They include:

- Figure 3.3 Ground elevation map
- Figure 3.4 Land use (including banana lands and intensive cultivation), development and zoning
- Figure 3.5 Agricultural and forestry land classification
- Figure 3.6 Native vegetation communities
- Figure 3.7 Key habitats and wildlife corridors

A composite constraints map that combines the key constraints used in the route development process is presented in Figure 3.8. Figures showing the key constraints in relation to the Inner Bypass options are also produced in Community Update 4 that is to be released with this report.

It is important to note that the constraints mapping exercise revealed that there are many, often severe, constraints to identifying route options and highway development in the study area. This reflects the urban or near urban setting of the corridors which means there is no realistic or feasible route option that is not influenced by substantial constraints of one form or another. The constraints identified in the investigations will be key considerations when a comparative assessment of the options is conducted. The constraints and issues identified in the technical investigations serve to clearly highlight many of the relative impacts of the options.

3.4 Urban Design and Landscape Context

Hassell consultants carried out a strategic urban design and visual assessment of the study area to identify and undertake a comparative assessment of visual impact, user experience and urban impact of the corridor options. Details are contained in *Working Paper No 2* (Hassell, 2004). Throughout the corridor refinement and route identification process, the urban designers worked closely with the engineering team to identify key landscape and urban design issues and the options were progressively refined in response to those issues.

The following key landscape and urban design principles were used as the basis for assessing the existing visual environment:

Landform

- Undulating landscapes have a greater diversity of visual experience than flat landscapes
- Higher undulating landscapes may be more visually prominent and are therefore more visually sensitive than flat landscapes

Vegetation

- Homogenous vegetation types strengthen the landscape character of an area
- Forest has a greater screening capacity than open grassland

Land Use

- Land use types are often closely associated to landform types and influence vegetation cover

Urban Structure

- The Coastal Range and spur ranges (e.g. Roberts Hill Ridge) and the coastline provide a natural boundary to urban expansion
- The existing highway divides the urban area physically
- The maintenance of an active and successful retail/commercial district is dependent upon minimising restrictions on pedestrian movements and limiting vehicular traffic flow.

The study identified the visual baseline for the study area as being made up of landforms comprising the coastal flats containing the majority of development, coastal foot slopes, and upper ranges and valleys. These features provide a natural boundary to urban expansion. Vegetation that contributes to the visual and scenic character of the landscape is closely linked to these landforms. Coastal wetlands found predominantly near the coast are interspersed with cleared land. Further inland beyond the urban development there is a mix of cleared agricultural land and woodland, with predominantly forest within the upper ranges and valleys.

The land use between the forested upper ranges and coast comprises urban development, rural / cleared land interspersed with areas reserved for recreation and conservation.

The urban structure of Coffs Harbour is fundamentally influenced by the topography and coastline, as well as the urban development and existing transport corridors. For instance, the existing highway divides the urban area physically. The five major influences on the urban structure identified in the urban design study include: the coastline, the base of the upper ranges and valleys, the existing highway, the CBD and the broader Coffs Harbour urban area.

A comparative assessment of the level of impact of both the Existing Highway and Inner Bypass options on the surrounding character of the environment is provided in Section 7.5.

3.5 Existing Highway

The concept of upgrading the Existing Highway in the Coffs Harbour area has attracted some strong support within sections of the community since the Strategy was launched in September 2001. Development of the existing Pacific Highway to provide a level of capacity and functionality equivalent to a new dual carriageway divided road such as a bypass, would require a major construction undertaking. It is clear that such a development would entail a complete restructuring of the Existing Highway corridor, with a new urban motorway being established in parallel with the adjoining local road network in a manner that fundamentally changes the interaction between City land use and transport functions.

Earlier investigations considered various staged scenarios including an incremental upgrade based on progressive implementation of grade separations at key nodes, widening and amplification of sections through the CBD and provision of east-west links for local traffic and pedestrian / cycle usage. However, it was apparent that an equitable comparison with a potential Inner Bypass corridor could only be made if a complete or 'ultimate' upgrade scenario was developed. Such an upgrade would require significant changes to the current highway formation, road network and surrounding urban development and is likely to include:

- Local service road development both within and adjacent to the Existing Highway reservation with major property acquisition and impact.
- Provision for higher speed travel for trips on the upgraded highway (including through trips and longer intra city travel) to say 80 km/h, typical of other urban motorways in highly developed urban areas.
- Amplification of the corridor to provide a separate north / south local arterial route adjacent to the highway, possibly with a section as a 'parkway' design through the CBD area, similar to the Eastern Distributor in Sydney.
- Possible tunnelling under Macauleys Headland ridge (Mastrocolas Road to Bay Drive) and major realignment across Roberts Hill ridge (Thompsons Road to Combine Street) to achieve capacity and higher travel speed geometry
- Grade separation of all key access nodes (comparable to the current arrangement at Arthur Street) for safe access to and from the motorway
- No at-grade right turn movements at intersections along the new highway and provision of multiple grade separated east / west local road and pedestrian crossings.
- Removal of local public transport services and facilities from the highway.

Details of the schematic concept for this 'ultimate' upgrade scenario are provided in Section 4.

3.6 Development of Inner Bypass Route Options

Development of potential route options has been undertaken using a digital terrain model and aerial photographic interpretation as inputs into the MXRoad modelling software for geometric design. Key points of difference from the earlier investigations are a more westerly sweep of the North Boambee valley to reduce impacts on the Isles Industrial Estate and increase separation from Bishop Druitt College and an option to align the bypass close to the railway line between Shephards Lane and Mackays Road.

The main local road interaction of the Inner Bypass would be at Coramba Road, near its intersection with Bennetts Road. North and south of this point there are two potentially feasible alignments with a common 'cross-over point' near Coramba Road. As a result, there are effectively four route option

possibilities. These are described in more detail in Section 4, together with the possible use of tunnels instead of cuttings through prominent ridgelines.