

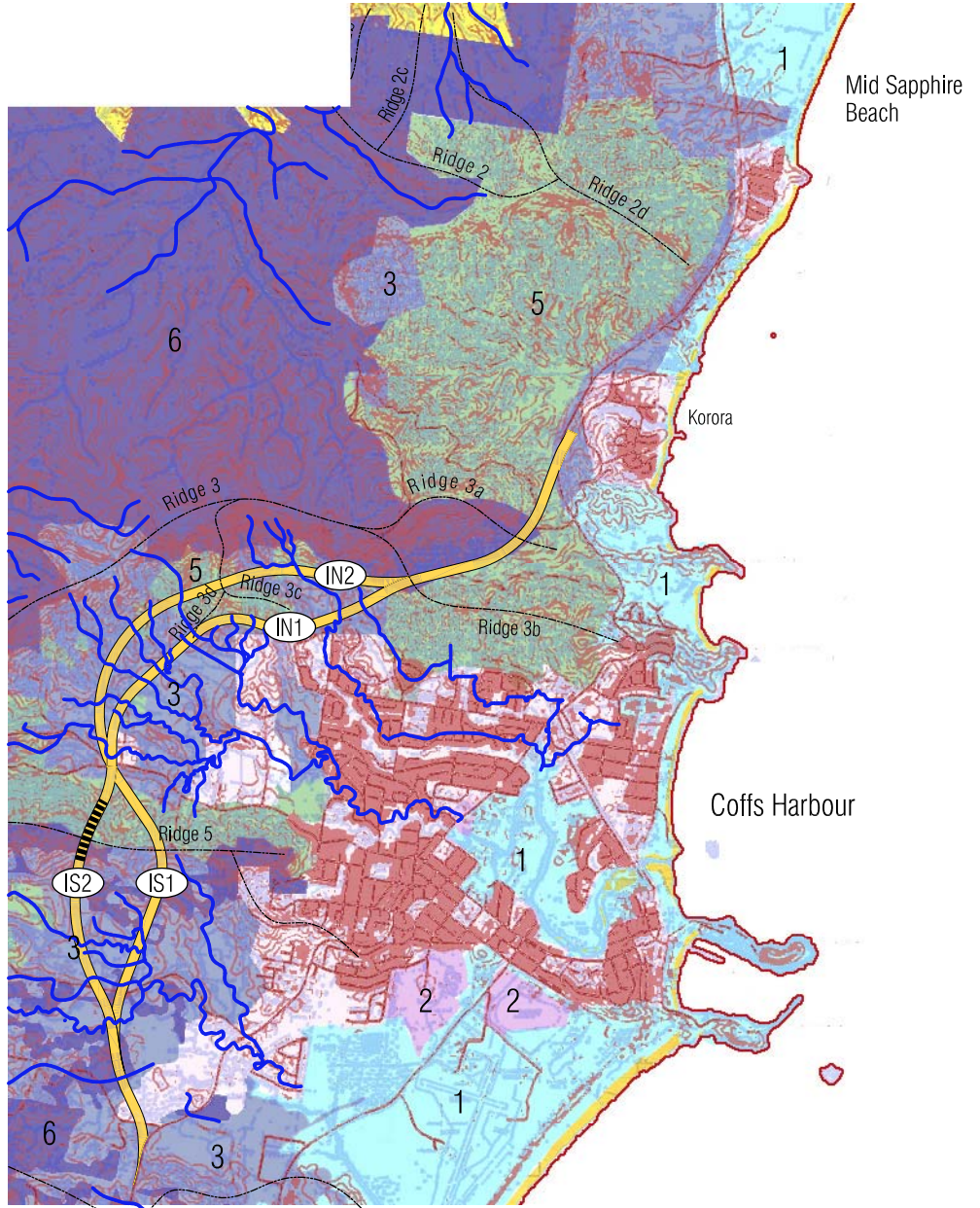
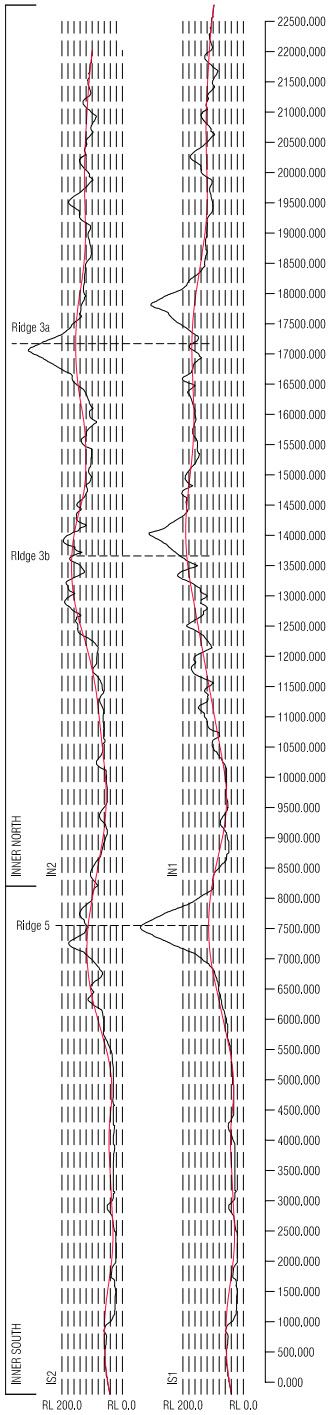
04 Road Proposal






4.2 Inner Bypass Options









Two feasible route options have been identified in the inner bypass corridor for the Pacific Highway. Each is between 11.0 and 11.4km long with a common 'cross-over point' in the vicinity of Coramba Road, near its intersection with Bennetts Road. The northern and southern sections of the options are interchangeable and combine to form four variants of the two main alignments. These are illustrated in Figure 4.2 over page and described as follows:

- *Inner South 1:* This option deviates from the existing highway south of the Englands Road roundabout, aligning to the east of the Coffs Harbour City Council (CHCC) waste depot and to the west of Isles Industrial Park. This route crosses North Boambee Road approximately 300m west of Bishop Druitt College and continues north toward the southern ridgeline of the Coffs Harbour basin, crossing at the lowest saddle in the ridgeline approximately 100m west of Buchanans Road before proceeding north-west to Coramba Road, crossing at the Bennetts Road intersection.
- *Inner South 2:* This alignment is initially the same as Inner South 1 but deviates from that route south of North Boambee Road and tracks further to the west, passing the southern Coffs Harbour ridgeline at a much higher point about 800m west of the other alignment. This ridge crossing would likely necessitate a 560m long tunnel to avoid a cutting in excess of 100m deep.
- *Inner North 1:* From Coramba Road this alignment veers north-east, crossing Spagnolos Road and Shephards Lane before turning easterly, in close and parallel to the railway line for about 1.6km up to Mackays Road. From this point it deviates from the railway line to pass through another main ridgeline near the western end of Gatelys Road. Further north the alignment skirts the West Korora basin crossing Bruxner Park Road before rejoining the existing highway at Korora Hill.
- *Inner North 2:* This alternative alignment features a more westerly sweep of the Coffs Harbour basin, providing maximum separation between the alignment and existing residential areas. It crosses Shephards Lane at its western extremity passing over the railway east of the railway tunnel under Shephards Lane. The route passes through and then behind a major ridgeline near the end of Shephards Lane and traverses a relatively isolated valley, well shielded from the majority of residential areas. It then passes through the same ridge line as Inner North 1 near the western end of Gatelys Road and from that point the two northern alternatives are the same on the curved approach to the existing highway.

With both of the northern options, tunnels could be used to eliminate potential 60m deep cuttings, one on Inner North 1 and two on Inner North 2.



-  Inner North 1
-  Inner North 2
-  Inner South 1
-  Inner South 2
-  Proposed Tunnel

Ridges		Drainage Corridors	
	Ridge 2a		Drainage Corridors
	1 Coastal wetland		4 Cleared Land (pastoral)
	2 Cleared Land (Recreational)		5 Cleared Land (crops)
	3 Woodland		6 Forest

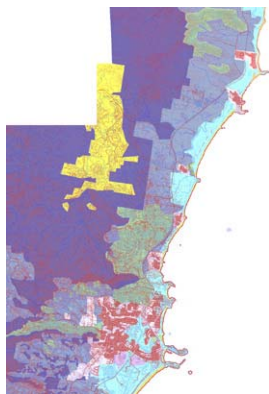
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FIGURE 4.2 - Inner Bypass

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Plan- 1:75,000 @ A4
Section- 1:125,000 (horizontal)
1:25,000 (vertical)



05 Visual Impact



The visual impact of the options is defined by the extent of change in the visual environment as viewed by people from surrounding areas. The visual catchment areas are illustrated on Figure 5.0.

5.1 Visual Catchment 1

Both the Existing Highway and Inner Bypass Options proposals pass through this visual catchment. Visual catchment 1 is bounded by ridges 2d and 3a and contains a majority of rural (crops) with some recreational and urban development on the coastal fringes. It should be noted that the recreational and urban developments are all located to the east of both road proposals and are oriented towards the coast and do not overlook the road proposals.

The potential visual impacts of the Existing Highway may include the following:-

- primarily the road would take the same form, although increased traffic volumes may increase the requirement for noise attenuation; and
- the potential grade separated intersection at Bruxner Park Road may have a high visual impact on the adjacent properties, which would be difficult to mitigate due to the road corridor constraints.

The potential visual impacts of the Inner Bypass Options may include the following;

- the intersection with the existing highway would require a larger overall road footprint and therefore may have a high visual impact on adjacent properties although these impacts could be successfully mitigated; and
- the route across ridge 3a may have a low visual impact on the entire catchment.

5.2 Visual Catchment 2

Only the Inner Bypass Options pass through this visual catchment. Visual catchment 2 is bounded by ridges 3a, 3b and 5 and contains residential and cleared land. The following outlines the potential visual impacts of this proposal on this catchment.

The potential visual impacts of the Inner Bypass Options may include the following;-

- the route across ridge 3a, 3b and 3c may have a low visual impact on the entire catchment. The inclination will affect the degree of this impact.;
- the Inner North 2 route, at the base of the foot hills may have a high visual impact on the adjacent properties, although these impacts could be successfully mitigated;
- the Inner North 1 route, at the base of the foot hills may have a high visual impact on the adjacent properties, which would be more difficult to mitigate than the Inner North 2 routes impacts due to the road corridor constraints; and
- the route across ridge 5 may have a low visual impact on the entire catchment. This may be mitigated by a tunnel through this ridge.

05 Visual Impact

5.3 Visual Catchment 3

Only the Existing Highway passes through this visual catchment. Visual catchment 3 contains the urban centre of Coffs Harbour. The following outlines the potential visual impacts of this proposal on this catchment.

The potential impacts of the Existing Highway may include the following;-

- the introduction of grade-separated crossings may have a high visual impact on the adjacent properties, which would be difficult to mitigate due to the road corridor constraints;
- increased road widths to accommodate extra lanes have a high visual impact on the adjacent properties, which would be difficult to mitigate due to the road corridor constraints; and
- increased traffic volumes may have a high visual impact due to the increased requirement for noise attenuation, which would be difficult to mitigate due to the road corridor constraints.

5.4 Visual Catchment 4






The Existing Highway and the Inner Bypass Options pass through this visual catchment. Visual catchment 4 is bounded by Ridges 5 and 6 and currently only has ribbon development along the existing highway, although this will change in the future as development extends west. The following outlines the potential visual impacts of this proposal on this catchment.

The potential impacts of the Existing Highway may include the following;-

- the introduction of grade-separated crossings may have a high visual impact on the adjacent properties, which would be difficult to mitigate due to the road corridor constraints; and
- increased traffic volumes may have a high visual impact due to the increase requirement for noise attenuation, which would be difficult to mitigate due to the road corridor constraints.


The potential impacts of the Inner Bypass Options may include the following;-

- the route across ridge 5 may have a low visual impact on the entire catchment. This may be reduced by a tunnel through this ridge;
- the route through the centre of the catchment may have a high visual impact on the adjacent properties, although these impacts could be successfully mitigated; and
- the intersection with the existing highway may have a high visual impact on the adjacent properties, although these impacts could be successfully mitigated.

-  Existing Highway
-  Inner North 1
-  Inner North 2
-  Inner South 1
-  Inner South 2

 Proposed Tunnel

 Visual Catchment Areas (refer report text)

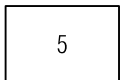
 Ridge Lines

 Coastal wetland

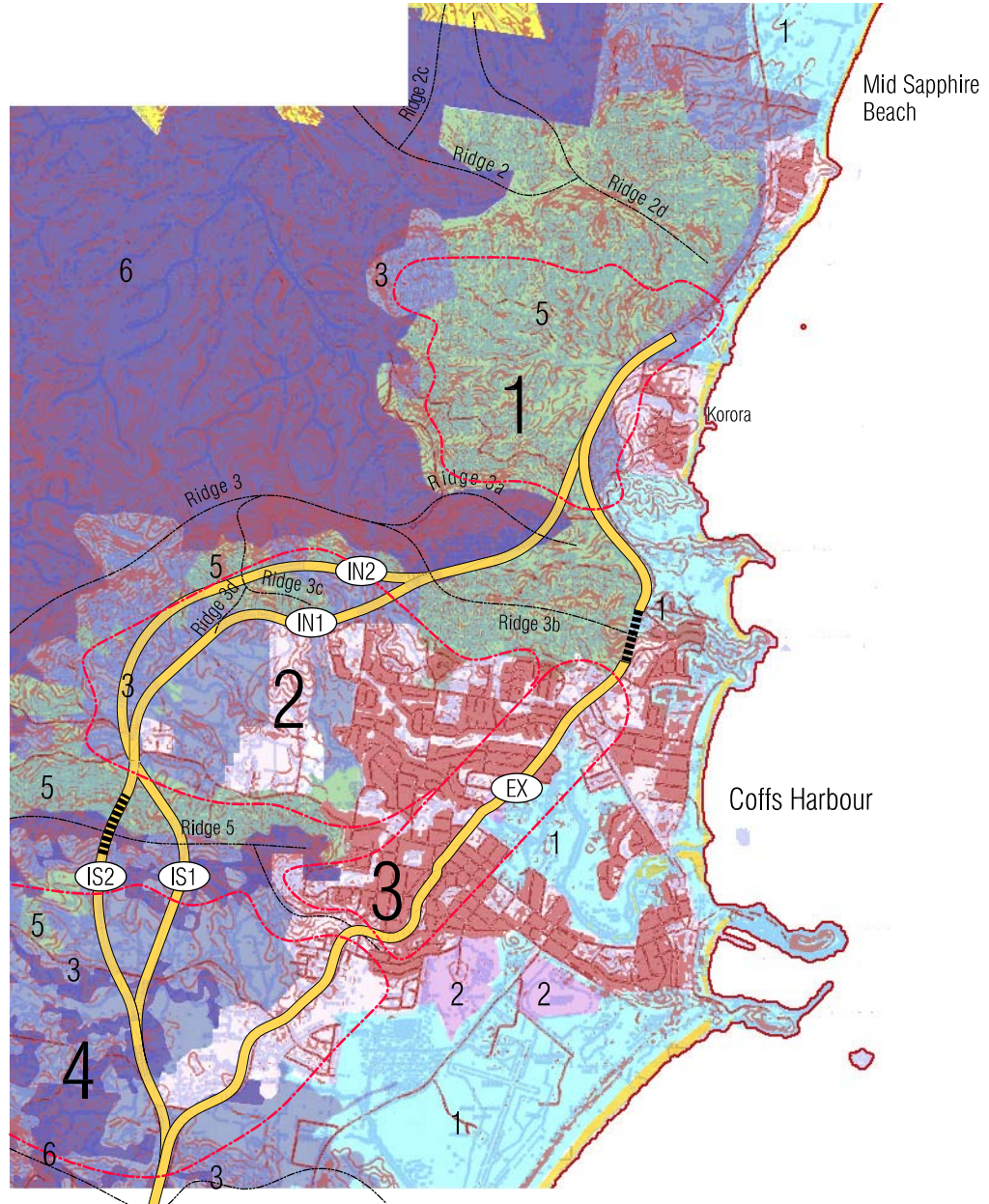
 Cleared Land (Recreational)

 Woodland

 Cleared Land (pasture)

 Cleared Land (crops)

 Forest

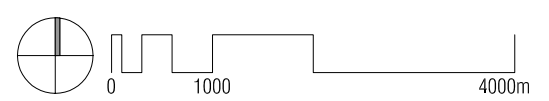


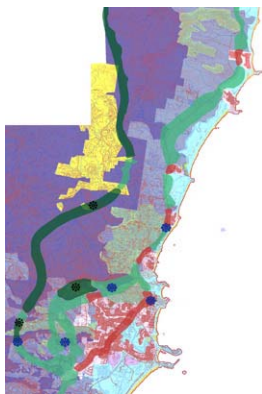
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FIGURE 5.0 - Visual Catchments

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The road user experience of the proposed routes is defined by the adjacent visual environment, topography and opportunities for potential views. These qualities are summarised graphically in Figure 6.0 over page.

6.1 The Existing Highway

The changes to the user experience travelling along the Existing Highway may be as follows:-

- the introduction of noise walls for noise attenuation, may result in a sense of enclosure within the road corridor itself;
- the limited space for these noise walls may result in noise walls with a form which cause a loss of orientation through a lack of visual connection to the immediate surroundings;
- a less varied experience as traffic flows increase due to the introduction of grade-separated intersections; and
- the loss of a coastal view at ridge 3b due to the introduction of a tunnel.

6.2 The Inner Bypass Options

The user experience travelling along the Inner Bypass Options may be as follows:-

- open bushland views through the southern portion of the road;
- coastal views at ridges 5 and 3b;
- district views at ridge 3c;
- an enclosed user experience as a result of a tunnel running through ridge 5;
- enclosed user experience through ridges 3a, 3b, and 3c, as a result of either tunnels or deep cuttings;
- enclosed bushland north of ridges 3b and 3c;
- enclosed urban views east of ridge 3c;
- open bushland views through the northern portion of the road.



Existing Highway



Inner North 1



Inner North 2



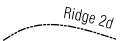
Inner South 1



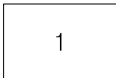
Inner South 2



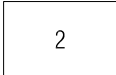
Proposed Tunnel



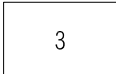
Ridge Lines



Coastal wetland



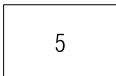
Cleared Land (Recreational)



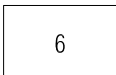
Woodland



Cleared Land (pasture)



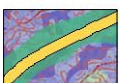
Cleared Land (crops)



Forest



Urban Enclosed



Bushland/Rural Glimpses



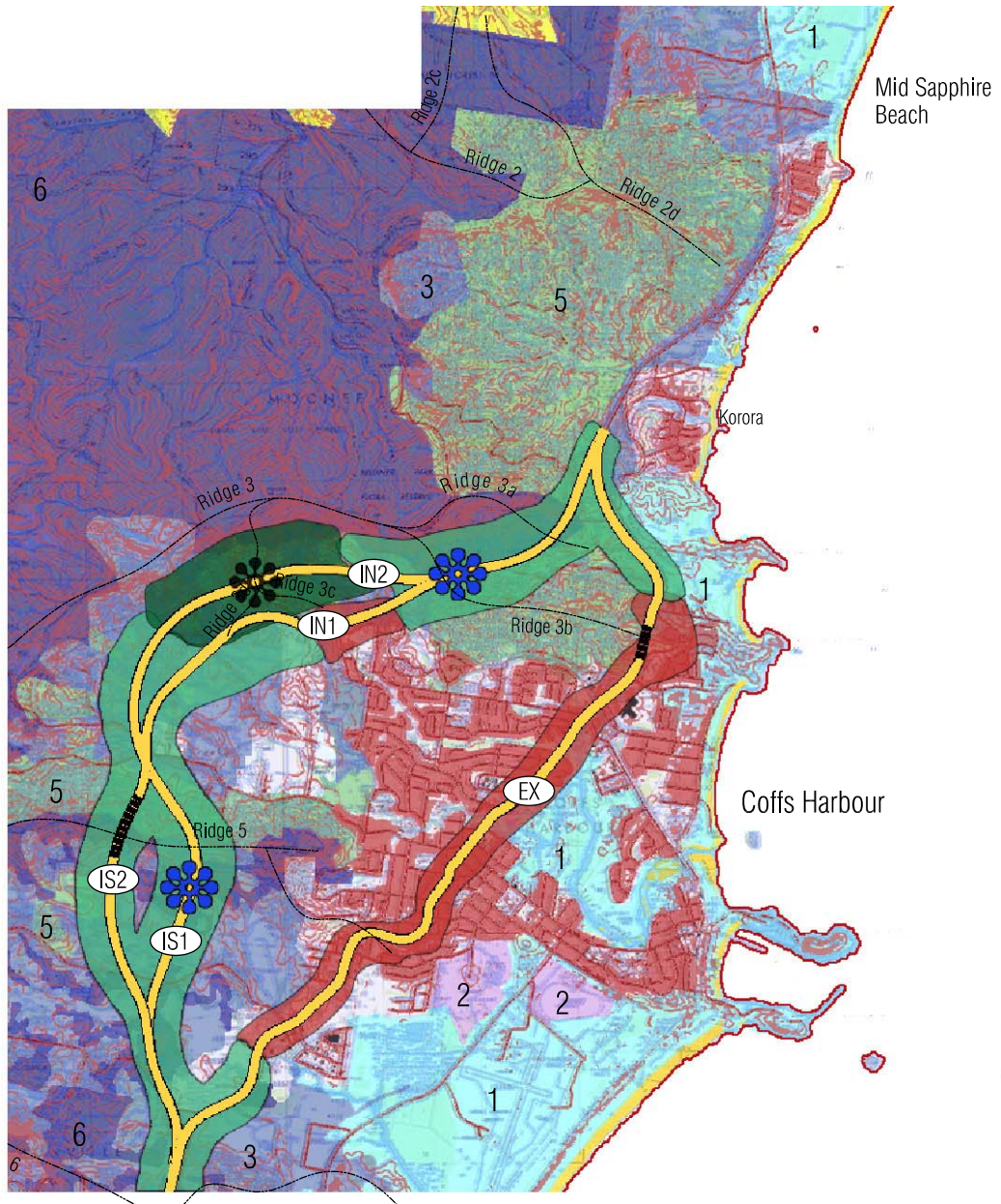
Bushland Enclosed



Potential for District Views



Potential for Coastal Views

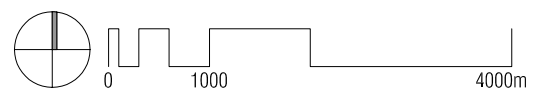


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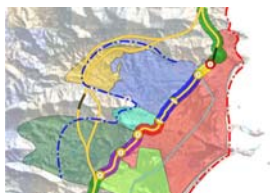
FIGURE 6.0 - User Experience

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07 Urban Impact



The urban structure of Coffs Harbour will be impacted on by both the Existing Highway and the Inner Bypass Options.

7.1 Highway Areas

The effects of the Existing Highway on the area immediately adjacent to the highway are illustrated in Figure 7.0 and can be described as follows:-

Area 1. Limited impacts on the urban structure.

Area 2. The existing roadside light industrial / commercial areas along the existing highway will be contained within the grade separated intersection at Englands Road, and Halls Road / Thompsons Road. The frontage access can be accommodated within the existing road reserve and this, along with the existing urban use (light industrial / commercial) may absorb the impact of the highway upgrade.

Area 3. The two residential catchments abutting the existing highway between the grade separated intersections at Combine Street and Halls Road / Thompsons Road currently do not have access to the existing highway. Therefore the upgrade of the highway would have little impact on the existing urban structure.

Area 4. The CBD and surrounding retail / commercial precinct contained between the grade separated intersections at Combine Street and Orlando Streets may be fragmented by an upgrade of the existing highway. The lost opportunities for vehicular traffic flow to cross the highway may impact on the CBD.

Area 5. The commercial district which is contained between the grade separated intersection at Orlando Street and Arthur Street is currently fragmented and so an upgrade of the existing highway would have little effect on the urban structure.

7.2 Urban Areas

The physical boundaries, and those created by the options and existing roads, form areas with different urban characteristics. These areas will be affected differently by each of the bypass options, and can be summarised as follows:-

Urban Area A. This area is ideally suited to accommodate urban expansion, which has already commenced on the fringes of the light industrial / commercial ribbon development along the existing highway. The Highway Upgrade option may disconnect the area from the rest of Coffs Harbour, although the proposed ring road would provide an extra link. The Inner Bypass Options proposal would divide the area itself although this could be mitigated by the planning of the future development.

Urban Area B. This area has been developed near capacity, with ridge 5 physically containing it. The existing highway separates area B from the eastern urban development physically, although visual connections are provided through level changes. The Highway Upgrade option would do little to change this.

The Inner Bypass Options have no direct impact on this area.

Urban Area C. This area is ideally suited to accommodate urban residential development, which already occurs to the east, in area D. The Inner Bypass Options proposal may reduce the size of area C only slightly as the coastal foot slopes already provide a physical barrier to its size. The urban impact of the inner bypass could be mitigated by planning of the future development .

The Existing Highway Upgrade Option has no direct impact on this area.

Urban Area D. The existing highway currently provides for numerous traffic flows between the residential catchment contained within area D and the eastern areas of Coffs Harbour. The Highway Upgrade option will result in most of these cross roads being cut and may therefore disconnect area D from the eastern areas of Coffs Harbour.

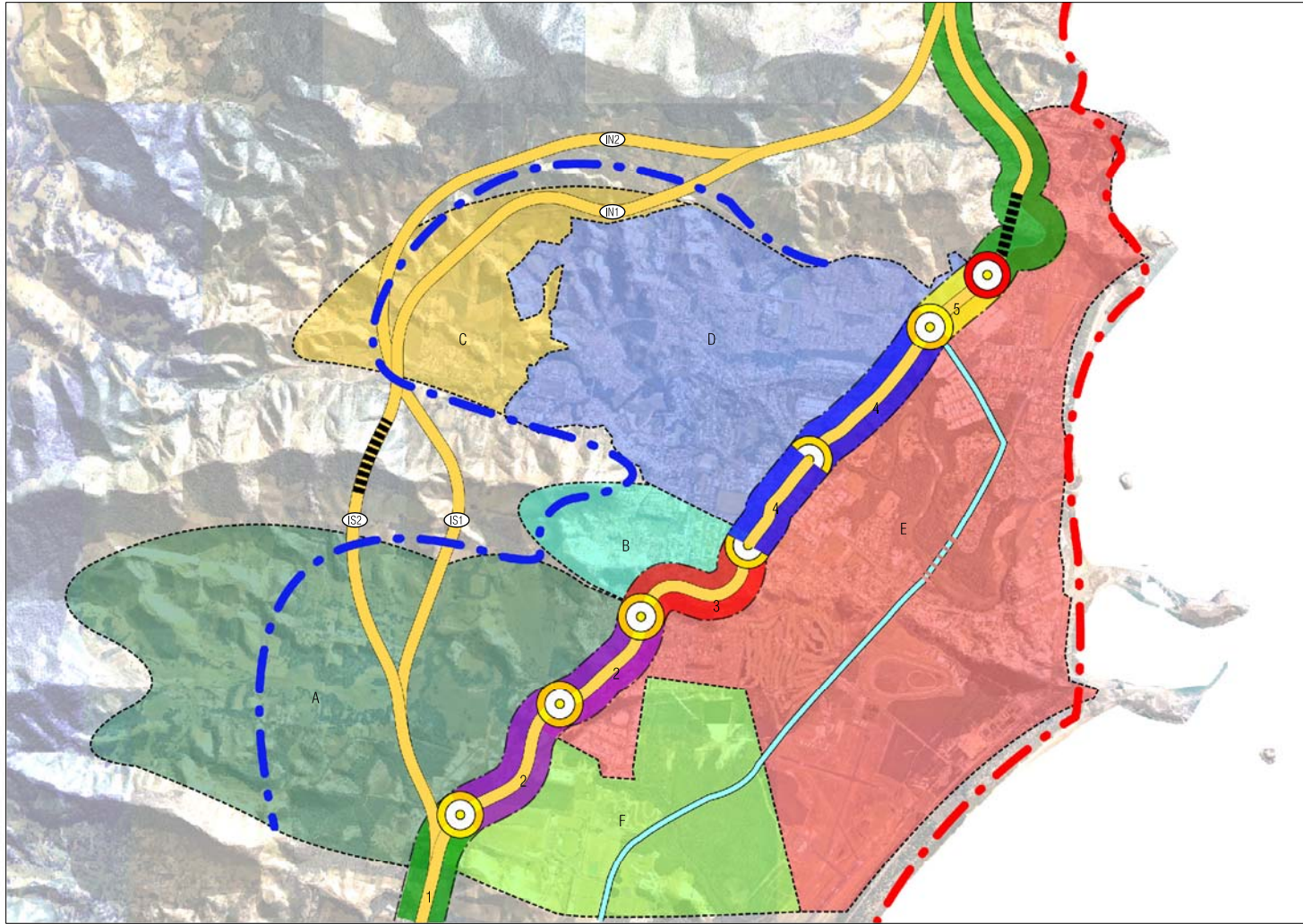
The Inner Bypass Options present possible minor impacts along the northern fringe of this area. Potential improvements to traffic flow may occur in this area as a result of the Mastrocolas Road Interchange.

Urban Area E. This area is nearing its development capacity, containing a mix of residential / commercial / recreation / nature reserves, with the coastline containing it physically to the east, and the highway containing it to the west. The existing highway provides for numerous traffic flows between area E and the western areas of Coffs Harbour. The Highway Upgrade option will result in most of these cross roads being cut and thus may disconnect area D from the western areas of Coffs Harbour.

The Inner Bypass Options have no direct impact on this area.

Urban Area F. This area is ideally suited to accommodate urban expansion, which has already commenced on the fringes of the light industrial / commercial ribbon development along the existing highway. Currently, the only western access is through the Stadium Drive roundabout, which will be maintained or enhanced with any option. Thus, whilst the Highway Upgrade option would strengthen the western boundary of area F, neither road proposal will greatly affect this area.

The Inner Bypass Options have no direct impact on this area.



- Existing Highway
- Inner North 1
- Inner North 2
- Inner South 1
- Inner South 2
- Proposed Tunnel

- Indicative boundary to urban expansion
- Physical boundary to urban expansion

- New full diamond split level crossing
- Existing full diamond split level crossing
- New half diamond split level crossing
- Proposed ring road

Highway Areas

- Area 1 adjacent to upgraded highway
- Area 2 adjacent to upgraded highway
- Area 3 adjacent to upgraded highway
- Area 4 adjacent to upgraded highway
- Area 4 adjacent to upgraded highway

Urban Areas

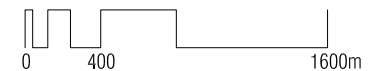
- Urban area A
- Urban area B
- Urban area C
- Urban area D
- Urban area E
- Urban area F

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FIGURE 7.0 - Urban Impact

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08 Comparative Assessment

8.1 Comparative Assessment

A comparative assessment of the 'significance' or level of impact on the surrounding character is provided as an indication of the ability of the environment to absorb the proposal. These classifications were categorised as follows:

- **high** - little or no capacity to absorb impact of proposed elements resulting in major change to the surrounding character;
- **medium** - moderate ability to absorb proposed elements which are considered in keeping with surrounding character; and
- **low** - will have little impact on surrounding character and may result in some positive outcomes.

	Visual Impact (Section 5.0)	User Experience (Section 6.0)	Urban Impact (Section 7.0)
Existing Highway	High	High	High
Inner Bypass Options	Medium	Low	Low

This rating system is then applied to each criteria using the following methodology:

Visual Impact. The impacts are judged upon:

- number of people affected, with the greater the number people affected the higher the rating; and
- the degree of change, with the higher the degree of change the higher the rating.

User Experience. The impacts are judged upon the road users sense of:

- visual connectivity with the surrounding landscape, with the greater the loss in visual connectivity, the higher the rating;
- enclosure within the road corridor, with the greater the sense of enclosure, the higher the rating (for example, noise walls and tunnels providing medium and maximum ratings respectively); and
- orientation within the immediate surrounds, with the greater the loss of orientation experienced, the higher the rating.

Urban Impact. The impacts are judged upon:

- the degree of change to the urban fabric, with the greater the degree of change in the urban fabric, the higher the rating; and
- the opportunity to aid the connectivity of the urban areas, with the greater the potential for increased connectivity the lower the rating.

08 Comparative Assessment

8.2 Potential Urban Design Outcomes

The following sections illustrate examples of the potential urban design outcomes for each Bypass option. These are presented together with images of the existing character for comparison purposes.

8.2.1 Upgrade of Existing Highway

This option may result in the following urban design outcomes (refer figures 8.2). Key elements of these outcomes may include;

- vertical noise walls for noise attenuation;
- grade-separated intersections;
- the introduction of a tunnel; and
- some street closures.



Figures 8.1 (Existing Character). Examples of the typical landscape characters through which the Upgraded Highway would pass. From far left to right: woodland, residential areas with noise walls on one side, and the Coffs Harbour CBD.



Figures 8.2 (Potential Urban Design Outcomes). Examples of potential urban design outcomes for the Existing Highway. From far left to right: an aerial view of Lyons Road / Pacific Highway interchange, an enclosed road corridor formed by walls on both sides on the Gore Hill freeway, and a tunnel along the Nundah bypass in Queensland.

8.2.2 Inner Bypass Options

This proposal may result in the following urban design outcomes (refer figures 8.4). Key elements of these outcomes may include;

- design noise attenuation solutions, to provide for coastal and district views;
- landscaped noise wall solutions used for noise attenuation; and
- a wider road corridor providing a fully landscaped buffer zone used for noise attenuation, and a visual barrier.



Figures 8.3 (Existing Character). An example of the typical landscape character through which the Inner Bypass Options would pass.



Figures 8.4 (Potential Urban Design Outcomes). Examples of potential landscape treatments for the Inner Bypass Options. From left to right: a new section of Pacific Highway looking north from Lyons Road overbridge, a vegetative zone on the Gore Hill freeway acting as a noise barrier, and a noise wall and integrated landscape solution along the Gore Hill freeway.