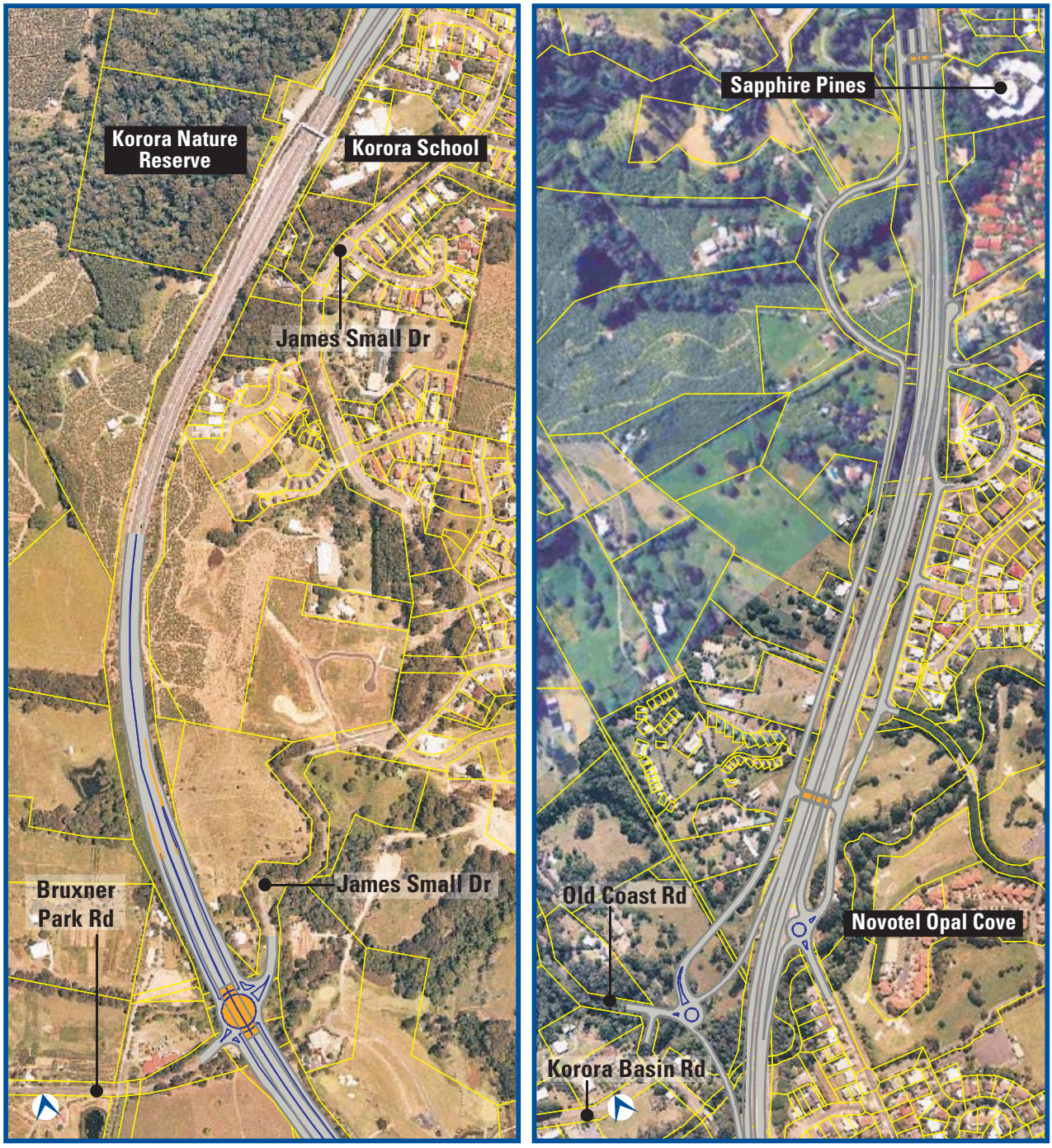

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FIGURE 4.1D
EXISTING HIGHWAY UPGRADE CONCEPT

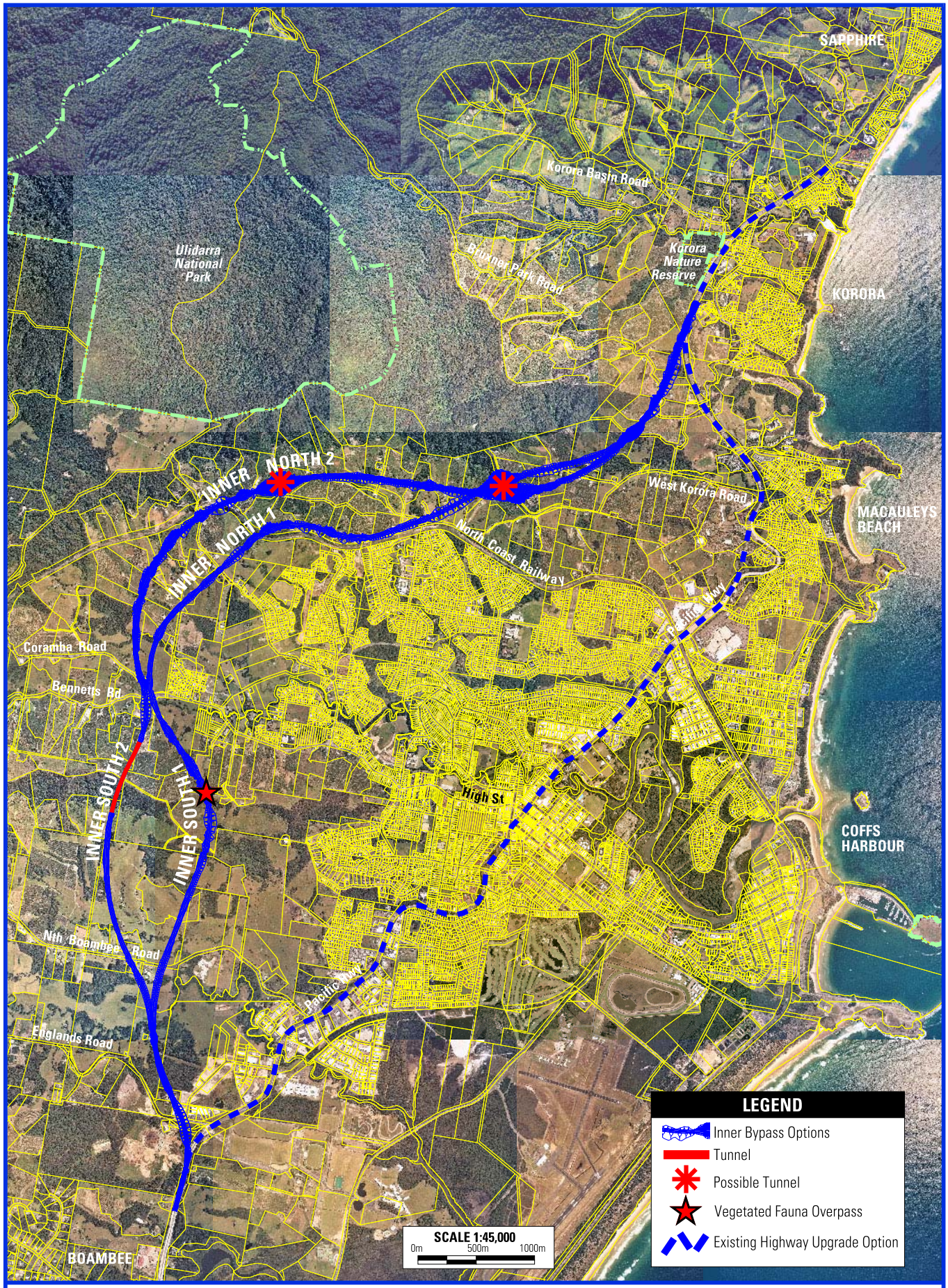

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FIGURE 4.2
INNER BYPASS OPTIONS

The two southern and two northern components are illustrated in Figure 4.2 and described below:

- *Inner South 1 (IS1):* This option deviates from the existing highway just south of the Englands Road roundabout, aligning to the east of the CHCC waste depot and to the west of Isles Industrial Park. It crosses North Boambee Road approximately 300m west of Bishop Druitt College and continues north toward the low saddle in the Roberts Hill ridgeline approximately 100m west of Buchanans Road before proceeding north-west to Coramba Road, crossing near the Bennetts Road intersection.

- *Inner South 2 (IS2):* 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, to the Roberts Hill ridgeline about 800m west of the other alignment. Due to the higher terrain in this area a cutting theoretically 103m deep, 290m wide and 560m long would be required to achieve a desirable vertical alignment. As it is not feasible to provide a cutting of such magnitude, a 560m long tunnel is proposed for this alignment. This route then proceeds north to Coramba Road, crossing near Bennetts Road intersection.

- *Inner North 1 (IN1):* From Coramba Road this alignment veers north-east, crossing Spagnolos Road and Shephards Lane before heading east to Mackays Road, following close and parallel to the railway line for about 1.6km. 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 (IN2):* This alternative alignment features a more westerly sweep of the West Coffs Harbour basin. Beginning at Coramba Road it proceed to cross 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 that is shielded from the residential areas of West Coffs Harbour. It then passes through the same ridgeline 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.

As Roberts Hill Ridge provides a Regional Koala Movement Corridor, provision has been made for a vegetated fauna overpass on the Inner South 1 Option where it crosses the ridge. In addition to providing for koala (and other native fauna) movements, the fauna overpass would maintain the visual continuity of the Roberts Hill Ridgeline.

With both of the northern options, short tunnels could potentially be used to eliminate the deep cuttings at the Gatelys Road ridge (70m) on Inner North 1 and at both the Shephards Hill ridge (55m) and Gatelys Road ridge (60m) on Inner North 2. It should also be noted that by providing tunnels it would be possible to lower the proposed gradeline of the highway by up to 18m, thus providing better vertical alignment, reducing the quantity of embankment fill required in the adjacent area to make the highway less visible and reduce noise impacts. It is anticipated that the required tunnels be in the form of twin bored tunnels each containing two travel lanes and an emergency stopping lane. Each tunnel would be approximately semi circular in shape having an area of about 114m^2. The implementation of tunnels would not only minimise the footprint of the proposed roadway, but also avoid severance of vegetated ridgelines that act as fauna movement corridors.

The various north/south routes created by combining the separate northern and southern components have been named routes A, B, C and D as shown in Table 4.1. To define the tunnelling options within

the various routes, a notation using the suffix "T" and a number indicating the number of tunnels incorporated within the route has been used.

Table 4.1 Route Option Components and Combined Route Options

North / South Route Combination	Combined Route Option	Tunnel Route Options
IS1 & IN2	A	A – 0T & A – 2T
IS1 & IN1	B	B – 0T & B – 1T
IS2 & IN2	C	C – 1T & C – 3T
IS2 & IN1	D	D – 1T & D – 2T

The proposed road is typically 31m wide with a cross-section based on a dual carriageway, having two dual lane shouldered pavements, separated by a 7m median. The width of formation varies with terrain, with fill batters sloping at 1:2 H:V, while the benched cut batters have slopes varying between 0.5:1 H:V and 2:1 H:V depending on depth.

Depending on the route option, up to 11 highway bridges may be required to cross various creeks, roads and the North Coast Railway. Highway bridges would generally be provided as twin one-way bridges each having a pavement width of 10.5m. The proposed bridge over Coffs Creek and Coramba Road would be required to be 14m wide to allow for an interchange at this location.

Where bridges are not provided for waterway crossings, drainage culverts sized to allow passage of design storm events would be provided. Where it is considered necessary to provide fauna underpasses, these culverts may be enlarged to provide for this. Fauna overpasses would be required where the options cross Regional Koala Movement Corridors on ridgelines if tunnels are not provided and may be required where the options cross Local Koala Movement Corridors on ridgelines if tunnels are not provided.