

Great Lakes Council

HAWKS NEST 3(A) BUSINESS ZONE REVIEW AND STRATEGY

December 2004

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1.0 Introduction

Andrews Neil Environmental Pty Ltd was engaged by Great Lakes Council in November 2003 to undertake a review of the 3(a) General Business Zone at Hawks Nest.

Hawks Nest and Tea Gardens are located on the northern shore of Port Stephens and have been a popular area for both retirees and holiday makers for many years. Hawks Nest in particular is a popular holiday destination with access to both ocean beaches and the more protected waters of Port Stephens and also the Myall Lakes National Park.

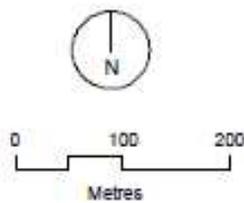
Council's brief notes that Hawks Nest "*has a leafy informal setting created by trees adjacent to roads, many low scale buildings, low density and grassed road edges and drains.*" Council also notes that Hawks Nest has a Koala population which is listed as an endangered population under the *Threatened Species Conservation Act 1995 (TSC Act)* and koala activity within and around the 3(a) Business Zone area is high. A Recovery Plan pursuant to the TSC Act for the endangered Koala population at Tea Gardens/Hawks Nest has recently been approved by the Minister.

The project brief identifies the following key project objectives:

- determine the amount of land that will be required to be zoned 3(a) General Business in Hawks Nest to meet the shopping needs of the future population.
- Identify what part of the commercial zone should be retained in the event that the amount of such land currently zoned can be reduced.
- Identify the land within the town centre that is important for protection as a Koala movement corridor and to recommend measures to ensure the proper management and protection of the land so identified.
- Determine the amount and location of land that should be retained/provided for car parking in the town centre.

Figure 1 shows the study area and current zoning.

A community consultation meeting was conducted at Hawks Nest on 24 June, 2004. Some of the issues raised by members of the local community and landholders are summarised in Appendix 1.



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Figure 1 - Study Area

Great Lakes Council
 Hawks Nest 3(a) Business Zone Study
 Hawks Nest

Date: December 2004

Job Number: 03667

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2.0 Future Population Growth

2.1 Population and Housing Characteristics

In October 2003 Council adopted the Tea Gardens/Hawks Nest Conservation and Development Strategy. Although the draft strategy was exhibited in August and September, 2000 its adoption was delayed by the need to resolve a number of issues including the potential for development at North Hawks Nest.

The Great Lakes Local Government Area generally is characterised by lower than average household incomes which is partly explained by higher than average numbers of retirees. At the 2001 Census average weekly household income was only \$400-499 compared to the NSW average of \$800-999 and 53.6 % of households comprised couples without children compared to only 34.9 % for the state. Consequently average occupancy of households is only 2.3 persons compared to 2.6 for NSW as a whole. In Tea Gardens/Hawks Nest household occupancy is even lower at just 2.2 persons.

Census data also shows that the proportion of dwellings at Hawks Nest which are not permanently occupied increased in the last intercensal period while the reverse was true for Tea Gardens. This reflects the continuing divergence of the character of the two areas with Hawks Nest increasingly serving a tourism role while new land releases at Tea Gardens have resulted in permanent residents and an increase in families.

The Myall River Downs Local Environmental Study (Parsons Brinckerhoff, 2003) summarised the demographic trends for Tea Gardens/Hawks Nest as follows:

- *The locality is strongly represented by retirees, with increasing concentrations of persons aged 65 and over being recorded in every Census since 1986;*
- *The growth in retiree residents has been balanced by the declining representation of young people under 25, being most pronounced in Tea Gardens;*
- *Hawks Nest since 1986 has strengthened its role as a retiree and holiday home destination, evidenced by a declining permanent population, declining household sizes, increases in the number of persons in retiree age groups and increasing rates of unoccupied dwellings; and*
- *Tea Gardens has catered for most of the dwelling and population growth experienced in the two towns since 1986 and continues to develop its role as the preferred area for permanent residents, due mainly to new housing areas becoming available.*

2.2 Population Growth Estimates

Council reviewed its Section 94 plan assumptions for the Tea Gardens/Hawks Nest area in August 2003 in conjunction with the final Conservation and Development Strategy. Population projections for the area are based on linear growth because Council believes that "it more accurately reflects development or migration-driven changes to population". The key assumptions which underpin Council's population projections are:

- *average approval rate of 90 applications per year for new lots;*
- *overall lot vacancy rate of 20 %, as a market buffer;*
- *dwelling vacancy rate of 25 % to account for seasonal use of dwellings;*
- *overall occupancy rate of 2.2 people per occupied dwelling*

Council's population estimates also acknowledge the significant increase in population which occurs in the area and in Hawks Nest in particular during peak holiday seasons, as shown in the following tables:

Location	Dev Trend	2001	2006	2011	2016	2021	2026	2031
Tea Gardens	Low	1,372	1,973	2,551	3,085	3,920	4,509	5,454
	Medium	1,372	2,137	2,862	3,598	4,649	5,413	6,606
	High	1,372	2,293	3,207	4,111	5,379	6,317	7,759
Hawks Nest	Low	1,173	1,225	1,237	1,416	1,578	1,783	1,997
	Medium	1,173	1,229	1,254	1,416	1,578	1,783	1,997
	High	1,173	1,237	1,254	1,416	1,578	1,783	1,997
Total	Low	2,545	3,198	3,789	4,500	5,498	6,292	7,451
	Medium	2,545	3,366	4,116	5,013	6,228	7,196	8,603
	High	2,545	3,530	4,461	5,526	6,957	8,100	9,756

Location	Dev Trend	2001	2006	2011	2016	2021	2026	2031
Tea Gardens	Low	1,757	2,500	3,232	3,907	4,655	5,355	6,095
	Medium	1,757	2,707	3,625	4,557	5,521	6,428	7,384
	High	1,757	2,904	4,062	5,207	6,388	7,502	8,672
Hawks Nest	Low	2,806	2,909	2,939	2,989	2,998	3,080	3,162
	Medium	2,806	2,919	2,979	2,989	2,998	3,080	3,162
	High	2,806	2,939	2,979	2,989	2,998	3,080	3,162
Total	Low	4,564	5,408	6,170	6,896	7,653	8,435	9,258
	Medium	4,564	5,626	6,603	7,546	8,520	9,508	10,546
	High	4,564	5,843	7,040	8,196	9,386	10,582	11,834

(Tea Gardens/Hawks Nest Conservation and Development Strategy, Great Lakes Council, September 2003)

The strategy also identifies the potential development precincts which will generate population growth in the area. Significantly, other than North Hawks Nest all of the future areas for rezoning for residential development are to the north and west of Tea Gardens. Council has indicated that the maximum development likely at North Hawks Nest would be approximately 50 hectares which might yield some 400 dwellings. Based on Council's Conservation and Development Strategy, this and the other areas identified have the potential to accommodate a population of approximately 10000 people, which is greater than the permanent population predicted by Council for Tea Gardens/Hawks Nest in 2031.

The strong spatial link between future growth and Tea Gardens rather than Hawks Nest is clearly demonstrated in the precinct plan from the Conservation and Development Strategy.

2.3 Tourist Visitation

Council's population projections include estimates and projections of peak tourist numbers based on Census data on unoccupied dwellings. In 2001 the peak summer population of Hawks Nest is indicated as more than twice the permanent winter population (2806 summer compared to 1173 winter). By 2031, Council projections indicate that the recent trend to a higher proportion of unoccupied dwellings in Hawks Nest will have reversed and the peak summer population increase, while still significant, will be closer to 50 % (3162 summer compared to 1997 winter).

These projections acknowledge both the relatively limited potential for additional dwellings at Hawks Nest and the likelihood of an increase in the long term in permanent occupancy of the dwelling stock as accessibility to the area and standard of local services continues to increase.

One element of tourist visitation which appears not to be fully reflected in the above figures is visitors to caravan parks and camping grounds and motel style accommodation. It is considered possible that across the whole of the Tea Gardens/Hawks Nest area the projections are underestimated by up to 20 per cent. For example, caravan sites within the area are estimated to be approximately 1600 in total with known sites at Hawks Nest and Jimmys Beach of 283 and 190 respectively and there are also estimated to be in the order of 300 motel rooms in the area.

However, reliable data is not available which would allow an alternative projection to be prepared. For the purposes of this study it is sufficient that the potential underestimation be considered as a factor in establishing a conservative approach to floorspace demand for the purposes of evaluating options.

3.0 Hawks Nest and Tea Gardens Shopping Centres

The traditional strip shopping centres at Hawks Nest and Tea Gardens are now supplemented by the new centre at Myall Quays anchored by a Bi-Lo supermarket.

At Hawks Nest the main frontage of the centre is to Booner Street with secondary frontage to Mungo Brush Road. Good laneway access and off street parking locations provide for easy access for servicing and for customer. Despite the extent of the 3(a) zone, most development is located at the eastern end with only the bottle shop near the western end intersection of Yamba and Booner Streets. Total floorspace at Hawks Nest has been estimated at 2850 sq m which is developed at a floorspace ratio of approximately 0.4:1.

Figure 2 shows uses within the shopping centre at December, 2004. The main active retail frontage is along Booner Street with a secondary frontage to Mungo Brush Road. There is no active retail frontage to Yamba Street other than at the corner of Yamba and Mungo Brush Road.

Retail activities at Haws Nest and Tea Gardens have operated for many years meeting the needs of the permanent residents that stay year round and the influx of holiday makers over the summer months. The retail activity in this area would be significantly less if it was not for the tourists and holiday makers that come to this destination. Obviously the businesses that operate out of Hawks Nest balance the low turn over through the winter with the boom times over the summer. There are at least 207 holiday properties listed for rent on various web sites in the Hawks Nest Area. As an indication of the level of activity in the area, one cluster of holiday dwellings are rented for \$200 per week in the winter months and \$1,050 during the summer months. This fluctuation in population is not an unusual scenario for small regional towns up the eastern sea board of Australia and has to be taken into consideration if the retail planning for these areas is to be effective.

The Hawks Nest 3(a) General Business Zone currently covers an entire block bounded by Yamba Street, Booner Street and Tuloa Avenue. This zoned area came into existence in 1982 under LEP No. 10 and covers 2.6 hectares. Residential development is not permitted in this zone unless it is associated with a commercial or retail development on the same land.

The retail and commercial activities at Hawks Nest currently are:

Medical Centre and Chemist	Butcher
Newsagent	Delicatessen
Real Estate Agent	Assorted Goods Shop
Hot bread Shop	Baby Wear Shop
Gift Shop	Café (closed)
Surf Shop	Fruit and Vegetable Shop
Take Away Food	Chinese Restaurant
Garage with café and Restaurant	Assorted Goods Shop
Gift Shop	Credit Union
Sports Shop	IGA Store
Bottle Shop (Western End)	

There is one shop that is for sale and a vacant lot for sale in this retail precinct. Great Lakes Council has received only very limited proposals for new commercial development for this precinct in recent years, the last being for a commercial development and associated residence on Lot 67 which was completed in 2004.

The traditional retail and commercial activities in the shopping precincts at both Hawks Nest and Tea Gardens are now supplemented by the new shops and Bi-Lo supermarket at Myall Quays. The Myall Quays Estate is a 230 Ha residential development with frontage onto the Myall River. Within the commercial area of this estate is the Myall Quays Shopping Village with a 2,000 square meters BI_LO supermarket and 13 specialty retail stores covering approximately a further 1,500 square meters of space. Car parking for 200 vehicles is provided in association with this shopping village. All three centres must compete for both residents and tourists expenditure and it would be expected that the traditional centres have lost some trade to the new shopping village, particularly the supermarket.

4.0 Future Commercial Land Requirements at Hawks Nest

The future role of Hawks Nest will in part be determined by the extent of future growth of the new Myall Quays shopping village. Given that virtually all population growth forecast in the Tea Gardens/Hawks Nest Conservation and Development Strategy is to the west and north of Tea Gardens there will undoubtedly be future pressure for this centre to expand. This would suggest a long term direction of a consolidated holiday role for Hawks Nest.

A study by IBECON (2000) for the Myall Quays shopping village application assessed the potential retail demand for the Tea Gardens Region and concluded that there would be a requirement for an additional 3,000 square meters of Gross Leaseable Area through to 2003 and a demand of 4,500 square meters by 2007/08. It further recommended that a District Department Store and other specialty shops with a town centre of the range of 11-14,000 square meters be planned for in the long term. This analysis supported the introduction of a Bi-Lo supermarket in the Myall Quays shopping centre at Tea Gardens with further capacity for growth. However, we consider that the long term direction for the new centre proposed in the IBECON report including addition of a DDS would not be justified on the basis of Council's population projections.

Notwithstanding, it is likely that the future population of the area covered by the Conservation and Development Strategy will be best served by a moderate expansion of the Myall Quays shopping centre and consolidation of the traditional centres as local convenience centres with an emphasis on continuing to serve the holiday population.

Most of the population growth in the Tea Gardens and Hawks Nest region is occurring and will continue to occur to the north and west of the more traditional retail centres and as these new residential developments are constructed demand for retail space will increase. The offer within the new shopping centre, particularly in relation to food and groceries are generally cheaper and hence can be more attractive than the more traditional street shops in the established village centre areas of Hawks Nest and Tea Gardens. In addition, it would be expected that the leakage to larger centres outside of the immediate region such as Raymond Terrace and Newcastle for more specialist goods and services is likely to remain unchanged even in the medium to long term.

The ultimate population of the area of Tea Gardens/Hawks Nest may increase to over 10,000 permanent residents. However, this is not likely to translate into any significant increase in expenditure at Hawks Nest shops as the increased permanent population would be likely to undertake most of their weekly convenience shopping at the Bi-Lo supermarket at Myall Quays only a short distance away. Similarly, the projected permanent population increase at Hawks Nest from 1173 in 2001 to 1997 in 2031 will be partly offset by a decrease in real terms in visitors during the peak summer season unless housing stock is also increased to maintain the available stock of rental accommodation. This is considered unlikely.

The average retail expenditure per person in non-metropolitan NSW (in 2004\$) is approximately \$8350 per annum of which \$3400 is for food and groceries. The current permanent population of approximately 1200 persons therefore has an expenditure capacity of \$10,020,000 per annum. Our experience and discussions with retail industry experts suggest that typically in coastal centres in NSW, tourist expenditure adds a further 25 % to permanent resident expenditure or slightly more if only the food and grocery category is considered. This data and assumptions are generally consistent with the data used by IBECON in their study in 2000 wherein they identified that in 2000 the total population of the Great Lakes LGA (including tourists) spent \$292 million or approximately \$9420 per person. The total expenditure capacity for residents and tourists (2004) at Hawks Nest is therefore estimated to be \$12.5 million per annum.

A significant proportion of this available expenditure from Hawks Nest will escape the area to Forster, Raymond Terrace and Newcastle and a further significant proportion, particularly of food and grocery shopping, will also escape to Tea Gardens/Myall Quays.

The expenditure required to support different types of floorspace varies widely. For example, the national average annual turnover for supermarkets is approximately \$7300 per square metre but a small corner store may operate successfully on only a fraction of this. Whilst it is not possible to obtain reasonable data on actual turnover at Hawks Nest, for planning purposes it is reasonable to assume that the average annual turnover for floorspace at Hawks Nest should be at least \$2000 per square metre. On this basis (ie a turnover of \$2000 per square metre) the existing 2850 square metres at Hawks Nest would capture \$5.7 million in 2004 or almost half the estimated available retail expenditure of \$12.5 million. If actual turnover is greater than an average of \$2000 per square metre, Hawks Nest could be capturing up to two thirds of the available expenditure of \$12.5 million.

Even with population growth there is a risk that the Hawks Nest centre will not maintain its share of retail expenditure due to competition with other centres outside the area and with the supermarket based centre at Myall Quays in particular. Tourist expenditure is therefore likely to become more rather than less important over the coming years. Similarly, there is clearly potential for any improvement in the share of retail expenditure captured at Hawks Nest to be reflected in improved turnover for existing floorspace to improve sustainability of the centre rather than be directed to additional floorspace, unless that additional floorspace is adding a new facility to the centre.

Accordingly, even with an optimistic growth scenario for Hawks Nest and allowance for likely underestimation of tourist numbers it would not be expected that there would be demand for other than a minor increase in floorspace at the Hawks Nest shopping centre.

The amount of commercial land zoned at Hawks Nest is therefore clearly in excess of both current and future requirements. In fact the area of land which is currently developed for commercial purposes could provide adequately for both the current and future demands for floorspace. Even if floorspace was to increase to 3500 sq m this could be provided within the existing development footprint at a still low overall floor space ratio of 0.5:1.

However, it would provide greater flexibility and potential to encourage better urban outcomes in the medium to long term if some capacity is maintained for new commercial floorspace. This is also prudent in planning terms to allow for future uses which are not currently anticipated.

5.0 Car Parking Usage and Requirements

Hawks Nest as a small local shopping centre of only 2850 sq m would require between 95 and 140 spaces to satisfy Council parking codes. For general retail use at ground level Council requires one space per 20 square metres of floor area and also one space per 30 square metres of floor area for first floor commercial space.

Current supply is split between “on-street” angle parking adjacent to Booner Street, on-street parallel parking and off-street parking off Yamba Street. The two off-street car parks constructed by Council currently provide a total of seventy-one (71) spaces and are accessed from Yamba Street. The angle parking in Booner Street comprises 25 spaces and could be considered to be off street parking from a functional perspective due to its separation from other traffic, notwithstanding its location within the road reserve. Even for the maximum possible parking requirement of 140 spaces the additional supply from parallel on street parking would be sufficient to meet the standard.

However, parking observations on three separate occasions indicate that there is currently more than adequate parking for weekday holiday periods. However, usage patterns clearly favour the parking off Booner Street rather than the off-street parking areas on Yamba Street. Over time these patterns could be expected to move more into balance.

During peak holiday periods and summer school holidays in particular, there is likely to be some apparent excess demand for parking. However, given that RTA standards suggest planning for the 85th percentile only, the existing parking supply would be considered more than adequate for the existing shopping centre.

Assuming redevelopment over time to a maximum of 3500 sq m theoretically would require a further parking supply of approximately 32 spaces. The existing parking supply will therefore be more than adequate for the foreseeable future and would easily be supplemented for the long term by the addition of one more property as off street parking off Booner Street. Council already owns a property acquired for this purpose.

6.0 Koala Habitat Assessment

The Hawks Nest and Tea Gardens Koala population is listed as an Endangered Population under the NSW Threatened Species Conservation Act (1995). This population is known from and in the immediate vicinity of, the towns of Hawks Nest and Tea Gardens in the Great Lakes Local Government Area (Figure 1). The population extends to Yacaaba Head in the south east and the outskirts of the built up area of Tea Gardens to the west. While the population extends in the north to an east west line three (3) kilometres north of the northern boundary of Hawks Nest Golf Course (NSW Scientific Committee, 2000).

In 1998 the population was considered to comprise approximately 21 individuals with that number falling to about 12 individuals. This decline has been attributed to continuing subdivision and clearing of food and habitat trees, road fatalities and dog attack within the Hawks Nest and Tea Gardens area (NSW Scientific Committee, 1999).

In determining the Hawks Nest and Tea Gardens Koala Population to be Endangered the NSW Scientific Committee (1999) found that population numbers had been reduced to such a critical level and habitat so drastically reduced that the population was at immediate risk of extinction.

6.1 Review of Previous Studies

A number of targeted Koala surveys have been undertaken within the Hawks Nest area. EcoPro (Anon, 1998) conducted surveys to determine the preferred browse tree species within the study area while Smith and Worth (1998) also conducted targeted Koala surveys. Payne (2001) completed a Koala Plan of Management (KPoM) for the Hawks Nest area for which additional Koala surveys were undertaken. The findings and recommendations of the KPoM were largely based on the available survey data as well as records from the Myall Koala and Environmental Support Group.

Payne (2001) found that the preferred Koala feed tree within the village area were Swamp Mahogany *Eucalyptus robusta* and Bangalay *Eucalyptus botryoides*. The scattered feed trees are important as they facilitate movement between habitat remnants surrounding the village area. Other species such as Blackbutt *Eucalyptus pilularis* are also important. Although they are not a preferred feed tree, they also help to facilitate movement within the village area. Any development should aim to enhance movement as well as increase frequency of browse trees (Payne, 2001). Within the KPoM Payne (2001) recommends that feed and movement trees be planted along the roadside verges within the village area to provide movement corridors and prevent Koalas entering private yards where they can become susceptible to dog attacks.

NSW NPWS prepared a Draft Recovery Plan for the Hawks Nest and Tea Gardens Endangered Koala Population which was subsequently finalised and adopted in 2004.. This recovery plan was prepared in response to the declining Koala population within the Hawks Nest and Tea Gardens area and the ongoing pressures on the population as a result of continuing development and habitat loss within the area. Some of the recommendations outlined within the adopted koala population recovery plan include,

- Identifying and mapping the distribution of Koala habitat in the Hawks Nest and Tea Gardens area including the mapping of primary and secondary Koala habitat and feed trees as well as mapping of habitat linkages,
- Conservation of habitat areas identified through the above action including the creation of environmental protection zones, voluntary conservation agreements and the declaration of critical habitat.

-
- Implementation of a survey program to monitor the rate of immigration and dispersal within the population as immigration of new individuals is vital in maintaining small Koala populations,
 - Establishment of a program of blackspot identification to reduce the rate of road fatalities and injury,
 - Development and implementation of program that integrates strategic streetscaping and traffic calming,
 - Management of cats and dogs within the area, and,
 - Rehabilitation of degraded habitat to increase the area of high quality habitat and habitat connectivity within the area.

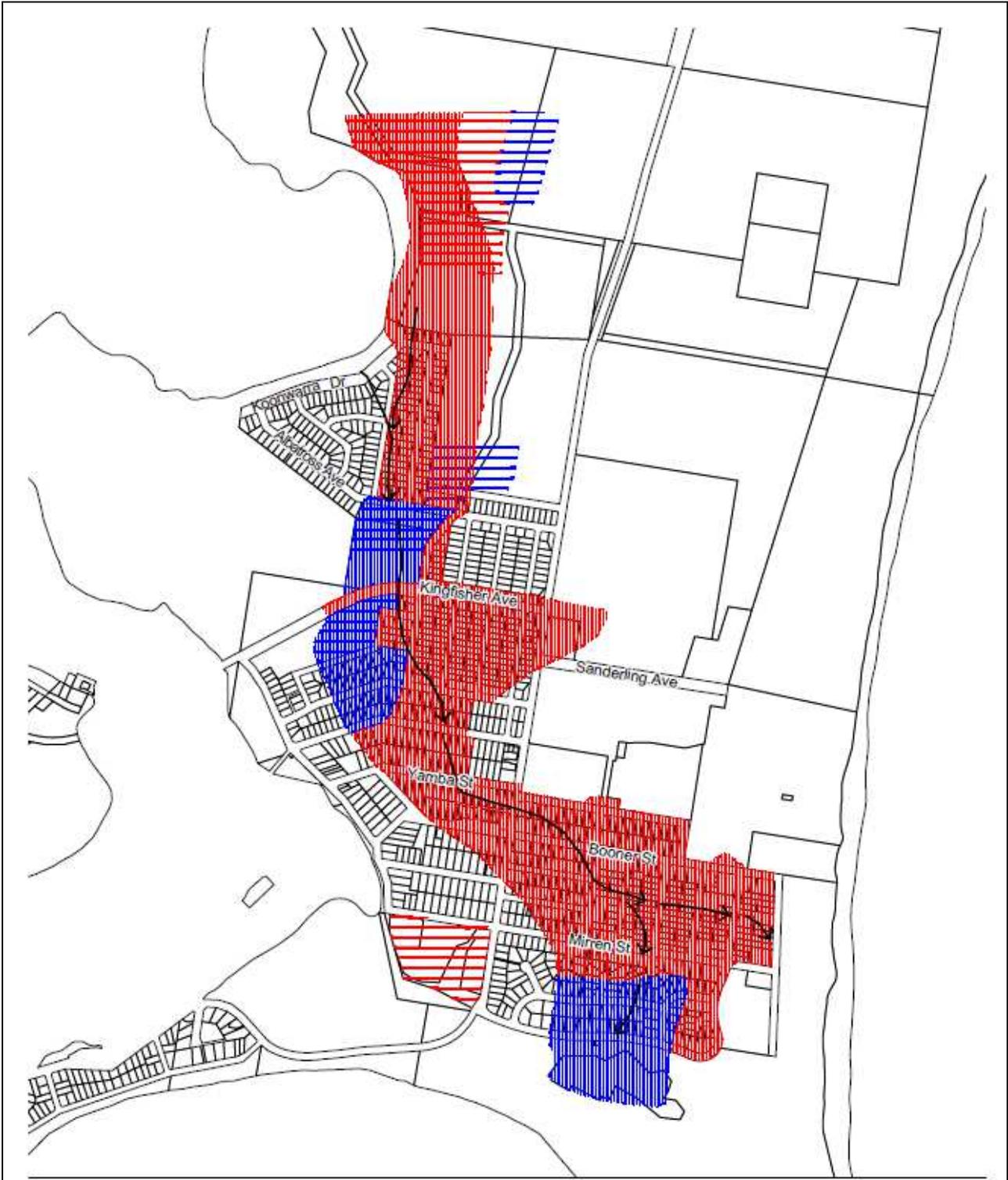
6.2 Potential Movement Corridors

Within the KPoM Payne (2001) outlines the likely Koala movement patterns within the Hawks Nest village area with a distinct pattern of movement from the north western to south east (Payne, 2001) (Figure 3).

Specifically, the typical Koala movement patterns within the village area are described as follows: From beside the Myall River they move south between Koonwarra Dr, Albatross Ave and Monterra Ave to access the public reserve land south of Kingfisher Ave. From here there is a distinct movement pattern to either the golf course or to between Yamba and Booner streets to the beach front via Booner and Mirren Streets (Payne, 2001). Koala movements and home ranges are also known to occur outside this area.

The subject site is identified by Payne (2001) as an area of high Koala activity. Payne (2001) also identified the study site as constituting part of the east west Koala corridor through the village. This corridor is being utilised so that Koalas can reach important areas of the local habitat near the beach and presumably Yaccaba Headland. It is unlikely that the subject site constitutes an important feeding resource for the population but rather acts as a movement corridor. The presence of potential feed and habitat trees within the subject site is important as such trees facilitate movement between habitat remnants within the Hawks nest area.

A review of the mapping of Koala sightings (1992 – 1995) shows there are various locations within the Hawks Nest village that have a distinct concentration of Koala sightings. These concentrations of recorded sightings are likely be related to the quality of habitat, proximity to identified corridors and level of human use of the area. For example there is a distinct concentration of Koala sightings on the corner near the front of the shops on Booner Street. This is likely to be a result of a high level of human use of the area resulting in Koalas actually being spotted as well as the presence of three large *Eucalyptus grandis* which are likely to be used as important feed and corridor trees.



- LEGEND**
-  Core Koala Habitat
 -  Movement Area
 -  Preferred Habitat
 -  Supplementary Habitat
 -  Koala Movement Corridor

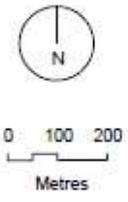


Figure 3 - Movement Corridors

Great Lakes Council
Hawks Nest 3 (A) Business Zone Study
Hawks Nest

Date: December 2004 Job Number: 0366

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6.3 Vegetation Within Zone 3(A)

The dominant eucalypt species within the subject site is *Eucalyptus pilularis* with only three *Eucalyptus robusta* being recorded (see Figure 4). The understorey is mostly non-existent due to clearing and development within the subject site. As discussed earlier, although the vegetation within the subject site does not constitute an important feeding resource it is important as shelter and movement habitat.

A detailed survey of vegetation in the town centre study area was undertaken by Council in the latter part of 2004 including accurate location of trees by GPS. The analysis of this survey is shown in the following table:

Species	Number present	Number with Koala evidence	Percentage with Koala usage
<i>PREFERRED FOOD TREES</i>			
Flooded Gum	4	4	100.0%
Swamp Mahogany	3	2	66.7%
Narrow-leaved Black Peppermint	2	2	100.0%
<i>BROWSE TREES OR OTHER</i>			
Blackbutt	129	2	1.6%
Smooth-barked Apple	1	0	0.0%
Slash Pine	6	0	0.0%
Dead Trees	1	0	0.0%
<i>Eucalyptus</i> sp. (exotic)	1	0	0.0%
Camphor Laurel	1	0	0.0%
Silky Oak	1	0	0.0%

It is clearly demonstrated that preferred food trees form a minor component of the overall tree cover of the investigation area (6.0%) but are extremely well utilised by Koalas. In this regard, of nine (9) preferred food trees present, eight (8) trees showed direct evidence of Koala usage during the investigation (88.9%). Overall Koala activity level in this investigation area was 6.7%.

It is possible that preferred Koala food trees are under-represented in the town centre habitat and the very high utilisation rates of those present suggest that a paucity of preferred food trees in this landscape would be a key limiting factor on Koala habitation.

Council's analysis of the detailed tree survey identified three semi-defined areas of vegetation as follows:

- Western habitat node: Lot 66 & 67 and Lot 87 – 89 DP16379;
- Central habitat node: Lot 81 – 84 DP16379; and
- Eastern habitat node: Lot 78 DP16379

The Western habitat node is of very high importance for Koalas moving through urban Hawks Nest as it is the most direct link for Koalas between recognised core/ high activity areas to the north-west and south-east. The Western habitat node contains very important preferred food trees and provides a relatively continuous movement area from Yamba Street to Booner Street.

The Central habitat node is also important for Koala movements but potentially of lower significance than the Western habitat node. The Central habitat node also contains important food trees but the density of commercial development hinders contiguity of movement from Yamba Street through to Booner Street.

The Eastern habitat node is relatively isolated from the key movement avenues of Koalas, but does contain one preferred Koala food tree that showed evidence of Koala usage (a Flooded Gum).

6.4 Vegetation Within Surrounding Areas

Similar urban areas containing scattered Koala feed and habitat trees occur in the areas surrounding the subject site. As with the town centre site, these areas are all likely to perform a role in providing feed trees and access to larger tracts of remnant vegetation surrounding the Hawks Nest Village such as the large area of Dry Blackbutt Forest occurring to the north east. Although the feeding habitat within the town centre is extremely limited, stable koala ranges, important feeding habitats and movement areas do occur within urban Hawks Nest in general.

The central position of the town centre within the urban area generally suggests that the Koala movement corridors through the town centre are a critical part of lifecycle and population dynamics of the local Koala population. Koalas moving from the core/ high activity areas of Eagle Avenue and central sections of Mermaid Avenue, Binda Street and Yamba Street traverse the town centre when moving to core/ high activity areas identified in the vicinity of middle Corilla and Bowral Streets/ East Close and Bennett/ Beach Street. The trees other than the preferred Koala food trees, predominantly Blackbutts would provide a very important movement and shelter function for Koalas.

6.5 Potential Threats to Koala Movement

Specific threats to Koala movement within the Hawks nest village would appear to be due to urban development and associated habitat removal, road mortality and dog attacks. The retention of Koala feed and habitat trees is important as such areas facilitate Koala movement and access to larger native vegetation remnants. It is important that feed trees such as *Eucalyptus robusta* and habitat trees such as *Eucalyptus pilularis* are retained within the Hawks Nest village and along identified corridors as they are facilitating movement between core feeding areas to the south and north of the village.

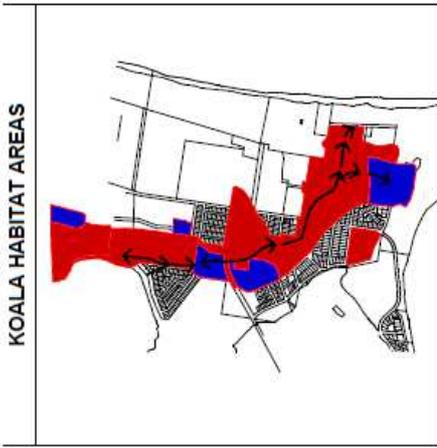
Data collected by the Myall Koala and Environmental Support Group Inc has led to three specific areas of Hawks nest being recognised as Koala mortality Blackspots (NSW Scientific Committee, 2000). These areas include Singing Bridge, Kingfisher Avenue and Mermaid Avenue. To reduce the possibility of road fatalities Payne (2001) recommends that traffic speeds should be reduced to 50 kph in areas where Koalas are likely to be crossing roads. The Recovery Plan for the Hawks Nest and Tea Gardens Endangered Koala Population (NSW NPWS, 1999) outlines a number of management options to reduce the possibility of road fatalities. Options that would be relevant to the subject site include,

- Planting of trees in strategic positions to encourage Koalas to areas where traffic calming devices have been installed,
- Using Koala-proof fencing to guide Koalas away from blackspots and towards less hazardous crossing areas, and,

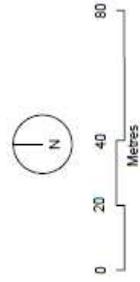
-
- Ensuring appropriate levels of lighting

Dog attacks are a significant cause of Koala death and injury throughout their distribution. These attacks are often associated with fenced yards within urban and rural residential areas (NSW NPWS, 1999). Seven (7) dog attacks by Koalas were recorded in the Hawks Nest and Tea Gardens area between 1992 and 2000 (Myall Enviro Support Group in NSW NPWS, 1999). Management options to reduce the threat of dog attacks that would be relevant to the subject site include,

- Impounding roaming dogs that are in areas where dogs are likely to occur, and,
- Planting of trees in specific positions to allow Koalas to escape.



- Notes:**
1. Street tree planting to incorporate advanced *Eucalyptus* spp. to facilitate koala movement
 2. Traffic management zones to incorporate 40kph speed limit and speed humps



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ARCHITECTURE PLANNING LANDSCAPE ARCHITECTURE URBAN DESIGN

Figure 4 - Trees in the 3A Zone
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 Hawks Nest Business Zone review
 HZMS Nest

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7.0 Strategy Options

The review of Hawks Nest 3A Business Zone has established that:

- On the basis of projected needs there is an excess of land zoned 3A
- There are areas of existing vegetation within the 3A zoned area which are important for the movement of koalas
- There is adequate parking supply for the short to medium term

In developing and evaluating strategy options there are a number of critical factors to be considered in addition to these basic findings. In particular it is clear that all land use options must provide for the continued movement of Koalas through the town centre and protect all existing feed trees. It is also relevant to consider the impact of land use strategies on other potential threats to koalas including any changes or increases in the pattern of traffic movements in and around the town centre.

There are essentially four land use strategy options in response to the above:

- Rezone excess 3a land to 2b medium density residential
- Rezone excess 3a land to 2a low density residential
- Retain 3a zoning to avoid short term development pressure and retain long term flexibility
- Combination of the above ie rezone only some of the excess 3A land

These land use options need to be evaluated on the basis of both the likely development outcomes and the potential for effective koala management options. In relation to the latter there are a number of essential outcomes which have been identified from the investigations and discussions with Council staff:

- no loss of any known Koala use trees (eight identified) within the subject lands, unless human life or property is seriously at risk
- a net increase in the representation of preferred Koala food trees within the town centre to maintain a sustainable habitat function
- no net loss of shelter and movement habitat trees within the town centre

Other koala management options such as traffic calming and undergrounding of powerlines to facilitate street tree planting are independent of the land use strategy chosen. The extent to which any strategy facilitates the enhancement and functioning of the Western and Central habitat nodes is also a critical factor.

The four land use options identified are further discussed below.

1. *Rezone excess 3A land to medium density residential*

The 3A business zone is surrounded to the south, north and west by land zoned 2B medium density residential and this would therefore normally be the alternative zoning to a commercial zone. However, the density of development which could be expected under a 2B zoning would create major constraints to achievement of the objectives of the Recovery Plan for the local Koala population.

It may be possible to encourage more intense development on only a small part of affected sites to retain important trees by use of LEP amendments in conjunction with the identification of restricted building envelopes for each site in a Development Control Plan. However, a 2B zoning will generally create increased expectations for development and likely problems for Council in implementation.

2. *Rezone excess 3A land to low density residential*

Given that the density of development which could be expected under a 2B zoning would likely create major constraints to achievement of the objectives of the Recovery Plan for the local Koala population and residential use is the only valid alternative to commercial use a lower density of residential development may be more feasible.

However, the same issue of encouraging more intense development on only a small part of affected sites to retain important trees will apply, albeit not to the same extent. Restricted building envelopes for each site would still be needed and would need to be enforced through a Development Control Plan. However, the restrictions on development would be such as to create an equity issue with affected owners left with minimal development potential in some instances.

3. *Retain 3A zoning*

The do nothing option is seen by some in the community as the most attractive for koala conservation as there is very limited demand in the short to medium term for further commercial development at Hawks Nest and the current zoning would therefore lead to the least development. However, this is not perceived to be equitable by some landowners. Notwithstanding, there are some positive aspects of retaining the existing zoning from a land use perspective also, principally the retention of future flexibility.

4. *Rezone only part of the excess 3A land*

The final land use option is to retain some of the excess 3A land to allow future flexibility for expansion of the centre and rezone the remainder of the excess 3A land to one or the other (or both) of the residential zones. This achieves some of the advantages of all of the above options. However, it may be difficult to get community agreement on the most appropriate split between 3A and residentially zoned land. A number of additional factors would need to be considered to determine the most appropriate mix of zonings under this scenario.

In conjunction with the above land use options, the major management options for koala protection relate to traffic calming, revegetation and street tree planting. As there is no possibility for removal of the conflict between koala movement and other users of the 3A zone, implementation of these management measures should be integral to whichever land use option is adopted. However, there will be minor differences in the outcomes which can be achieved under the different options.

In addition to consideration of the land use options, there are a number of implementation options which could be considered by Council. These include:

- providing a density bonus for site amalgamations to encourage restricted footprint development for those lots within the Western and Central habitat areas
- use of a Section 94 plan to fund acquisition of habitat areas
- transferable development rights

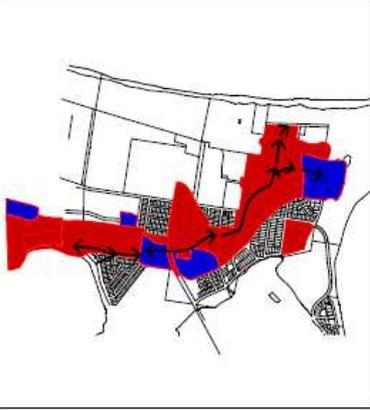
In relation to the latter, there is currently no statutory mechanism in New South Wales to reliably implement the concept of transferable development rights and this is not considered to be a viable option for Hawks Nest.

Similarly, there are problems with the concept of a Section 94 Plan for the purposes of acquiring land for habitat protection and significant issues of precedent which would need to be overcome. If proposed amendments to the legislation are introduced it would be possible to utilise the mechanism of either developer agreements or a flat rate levy to fund acquisition of koala habitat.

However, this would most likely still need to be on the basis of a LGA wide levy and not specifically for Hawks Nest. Under the traditional principles of Section 94 it would be almost impossible to establish a justifiable nexus between development in the 3A zone and the need to acquire land for habitat protection.

The concept of density bonuses through special zoning provisions has real merit in the circumstances of the Hawks Nest 3A Business Zone. If the bonus is significant enough relative to the development potential of the underlying zone, there is a real commercial and financial incentive provided to direct development down the desired path.

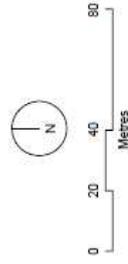
KOALA HABITAT AREAS



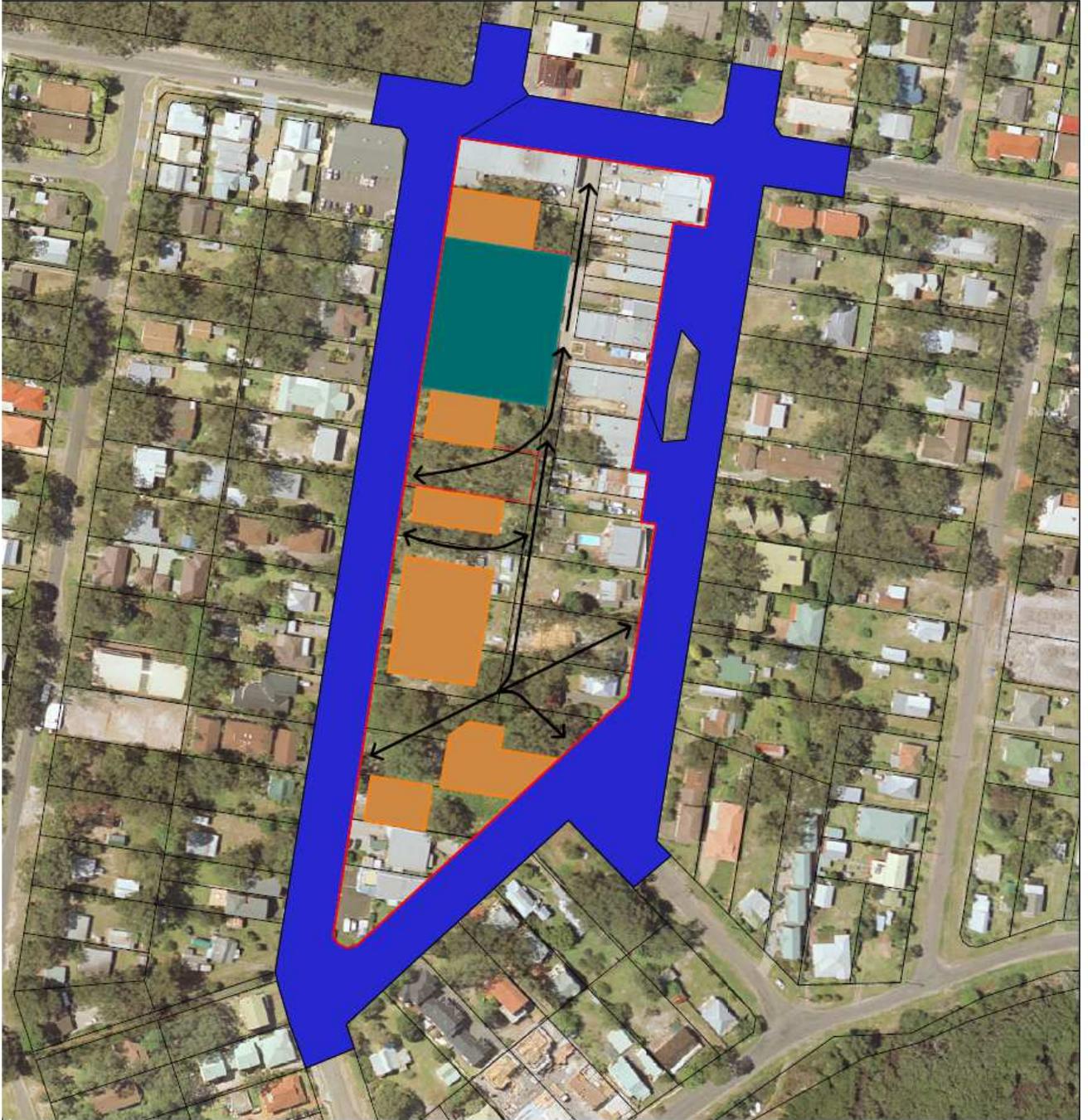
Key
 Core Koala Habitat
 Movement Area
 Preferred Habitat
 Supplementary Habitat

LEGEND
 Potential Development Areas
 Off-Street Parking
 Traffic Management Zones
 Movement Corridors

Note:
 1. Traffic management zones to incorporate 40kph speed limit and speed humps



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 ARCHITECTURE LANDSCAPE URBAN DESIGN
Figure 5 - Management Measures
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8.0 Recommended Strategy

It is clear from the discussion of strategy options that although there is limited demand for additional commercial land in the long term, a residential zoning would have significant consequences for the endangered koala population and make some objectives impossible to achieve. The preferred strategy must achieve the necessary outcomes in relation to tree retention, feed tree replanting and facilitation of koala movement while at the same time allowing for a long term development strategy for the town centre to meet the community's needs.

The recommended strategy has therefore been determined firstly on the basis of assessment of the essential vegetation to be retained for koala movement which comprises all feed trees and all existing vegetation in the Western and Central habitat areas. The other components of the strategy can then be considered including the potential footprint for additional development, the appropriate form of that development and the provision of an acceptable parking and access strategy for additional development.

Figure 5 highlights the critical movement corridors through the town centre, the areas available for potential development and the potential to concentrate off street car parking at the eastern end of Yamba Street encouraging most vehicle movements away from the main koala movement corridors.

In conjunction with the retention of existing vegetation the replanting of significant gaps in the desirable corridors also needs to be addressed. Figure 6 highlights two key areas where replanting needs to be encouraged and the potential areas for street tree planting if undergrounding of power proves feasible.

Review of the potential development areas shown on Figure 5 shows that most sites will have significant constraints to development but could benefit substantially from site amalgamations which would make higher densities feasible. Use of a density bonus clause for some lots and specific replanting requirements would be a valuable part of the strategy.

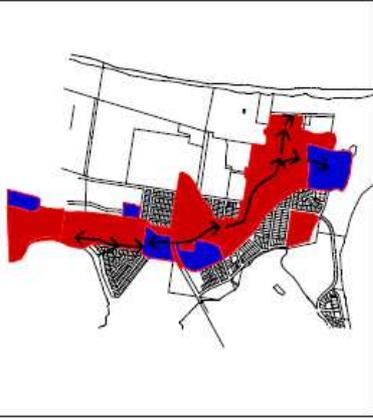
The specific elements of the recommended strategy are:

1. Lot 83 No 22 Yamba Street is Council owned and was acquired using Section 94 funds for car-parking. This land contains very important movement and browse tree resources for Koalas. Lot 83 should be retained for Koala habitat purposes including increased preferred Koala food tree plantings. This Lot is not large enough to create a bushfire hazard to adjacent properties. Council should identify funds from other sources (open space funds, grant funding etc) to enable the site to be "acquired" from the Section 94 fund.
2. Levy Section 94 contributions for the long term acquisition of Lot 80 No 28 Yamba Street to enable creation of a consolidated off street car park with entry and exit at the eastern end of Yamba Street to concentrate vehicle movements in the least sensitive location from a koala movement perspective.
3. Rezone Lots 82-90 and Lot 66 to 2A residential with restricted building envelopes consistent with Figure 5.
4. Rezone Lots A and B to 2B residential to provide an incentive for redevelopment of these commercial uses which are isolated from the main town centre.
5. As part of the rezoning, include a bonus clause which provides for development at 2B density if Lots 85-87 and Lots 88-90 are amalgamated. Koala feed tree replanting could also be a linked requirement under this bonus clause.

-
6. Restrict development on Lots 78, 82 and 84 through at least a Development Control Plan and potentially through the rezoning to the building envelopes shown in Figure 5.
 7. Strategically enhance through supplementary plantings the extent and distribution of preferred and supplementary Koala food trees within the two existing Council carparks (Lots 81 and 79 DP16379) and the access lane off Tuloa Avenue;
 8. Council embellish preferred Koala food trees of the public reserve at the junction of Booner Street and Tuloa Avenue.
 9. Council conduct strategic landscaping using preferred food trees and other use tree species along the northern public verge of Yamba Street as opportunities arise.
 10. Council liaise with Country Energy to consider replacing overhead powerlines with underground power along Yamba and Booner Streets to facilitate enhanced strategic planting with Koala use trees.
 11. Council implement a 40 kph speed restricted environment in the streets surrounding the current 3A zoned area and if necessary in the longer term implement traffic calming procedures to ensure enforcement of the speed environment.

The recommended zoning strategy arising from this is shown in Figure 7.

KOALA HABITAT AREAS

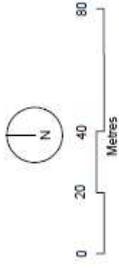


Key
 Core Koala Habitat
 Movement Area
 Preferred Habitat
 Supplementary Habitat

LEGEND
 Supplementary Planting
 Street Tree Planting

- Tree Species**
- *Angophora costata*
 - ▲ *Cinnamom camphora*
 - ✕ Dead
 - ★ *Eucalyptus grandis*
 - *Eucalyptus nicholii*
 - *Eucalyptus pillularis*
 - *Eucalyptus robusta*
 - *Eucalyptus sp.*
 - *Grevillea robusta*
 - ▲ *Pinus radiata*

Note:
 1. Street tree planting is subject to undergrounding of powerlines and is to incorporate advanced *Eucalyptus* spp. to facilitate koala movement.



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 STRATEGIC PLANNING, LAND-USE, ENVIRONMENT, URBAN DESIGN

Figure 6 - Supplementary Planting

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 Hawks Nest Business Zone Review
 Hawks Nest
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 Job Number: D587





LEGEND

- Commercial 3(a)
- Carpark
- Residential 2(a)
- Residential 2(b)
- Lot Amalgamation Bonus Clause



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Figure 7 - Proposed Zoning

Great Lakes Council
Review of Hawkesnest General Business Zone
Hawkesnest Village Zone

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References

NSW Scientific Committee (1999) Final determination '*Koala Population Hawks Nest and Tea Gardens – Endangered Population Listing*'

NSW Scientific Committee (2000) Final Determination '*Hawks Nest and Tea Gardens Population of the Koala*'.

Payne (2001) *Koala Plan of Management for Hawks Nest*. Robert Payne Ecological Surveys and Management.