

# Key Community Infrastructure:

## Local Roads

## Local Bus Facilities

## Local Drainage Works

“road” has the same meaning as in the *Local Government Act* and includes a highway, street, lane, pathway, footpath, cycleway, thoroughfare, bridge, culvert, causeway, road-ferry, ford, crossing, by-pass and trackway, whether temporary or permanent, any part thereof and any thing forming part of these. As such, ‘road’ includes the entire road reservation in the public domain between property boundaries (being the private domain) inclusive of footpaths and nature strips and any structure located on them.

“drainage” means any activity which intentionally alters the hydrological regime of any locality by facilitating the removal of surface or groundwater.

In the context of this chapter, drainage refers to drainage-related works normally found within the road reservation.

## 5.0 Overview of Development and Demand

Since 2005, in conjunction with comprehensive planning for the development of a minimum of 10,000 additional dwellings centred on railway stations and in St Ives, Ku-ring-gai Council has taken a number of studies into the impact such development is likely to have on accessibility within the area. Traffic studies were undertaken in 2006 and these were updated in 2008 incorporating the proposed revisions in the then draft *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* exhibited by the Ku-ring-gai Planning Panel at the end of 2008.

Key issues:

- The total of 12,069 dwellings proposed for Ku-ring-gai in current growth phase (2004-2031) represents a 33.4% increase over the 36,177 dwellings counted at the 2006 census<sup>163</sup>.
- Around 87% of this growth is being concentrated on just 6% of the total land area in the Ku-ring-gai Local Government Area in the six key town centres plus their immediate environs representing a significant change in Ku-ring-gai from a wholly low density residential area, to featuring highly urbanised town centres.
- Additional, concentrated development will generate additional traffic, both vehicular and pedestrian, that will place an additional demand on the local street network including pedestrian facilities and spaces;
- Many key intersections are at or nearing a minimum acceptable level of service; and
- Circulation and access in some key town centres is constrained by an historical block pattern featuring long, linear blocks.

Key needs:

- To successfully effect a change from low-key suburban town centres to highly urbanised town centres in both an economically and environmentally sustainable manner;
- To maintain an acceptable level of service for key intersections despite the increase in pedestrian and vehicular traffic;
- To facilitate access within and around the town centres including access to key attractors such as public transport nodes, retail shopping and services, and key community facilities;
- To facilitate both pedestrian and vehicular access in and around Gordon as the key Town Centre within the Local Government Area maintaining its position in the retail hierarchy;
- To upgrade the pedestrian environment to revitalise the town centres as the population increases and concentrates in order to manage additional pedestrian traffic;
- To improve pedestrian amenity in town centres reinforcing local shopping and supporting future economic development and vibrancy;
- To provide the physical infrastructure that will support and encourage quality developments and ensure that Ku-ring-gai is a place where people will want to live thereby continuing to support sustainable future development; and
- To facilitate commuter car parking on the outskirts of the town centres in order to support public transport usage.

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<sup>163</sup> This was only a nett increase of 640 dwellings since the 2001 census underlining the fact that most of the approvals between 2004 and 2006 were not yet occupied at the time of the 2006 census.

## 5.1 Principles of Nexus

The works programme embraced by the terms: local roads and local bus facilities, is essential to maintain the accessibility and amenity of the town centres within Ku-ring-gai notwithstanding a considerable intensification of development in the immediate vicinity.

It is unreasonable to expect the existing population to suffer a significant cumulative reduction in accessibility and amenity as a result of significant population growth arising from increased housing and housing choice through development.

Local drainage works in the context of this chapter are limited to a number of additional works essentially required within the road reservations in the vicinity of the town centres. These are required to manage stormwater run-off resulting from cumulative development located primarily along the ridgeline. In general, most stormwater management is addressed at the development consent stage and requires individual developments to manage the impact of stormwater run-off from the individual development.

### 5.1.1 Transport and the Journey-to-Work

Reference to demography sections (specifically 2.14.8 The Ku-ring-gai Workforce and the Ku-ring-gai Labour Force and 2.14.11 Motor Vehicles for Ku-ring-gai Households) indicates that the chief mode of transport for the journey-to-work for Ku-ring-gai's employed residents is the car with a total of 54.7% commuting journeys by private car being 51.2% as driver and 3.5% as passenger. Similarly for the workforce the total figure 61.1% represents 56.8% as driver and 4.3% as passenger.

A total of 19.2% of employed Ku-ring-gai residents report using the train to travel to work. At 8,915 persons this figure represents just 8% of the total estimated resident population in the 2006 census. Only 7.2% of Ku-ring-gai's workforce arrives by train.

### 5.1.2 Transport and other trips

The demography analysis in **2.14 The Demography of Ku-ring-gai** provides an analysis of the nature of trips. In **2.14.11 Motor Vehicles for Ku-ring-gai Households** it is shown that only 57,000 of 450,000 weekday trips (all modes) relate to commuting being 12.7%. This compares to a significant number of trips which are unlikely to be accommodated by public transport. For example: 98,000 weekday trips are for social/recreation purposes; 41,000 are for education or childcare; 95,000 are to provide transport for the passenger and 74,000 are for shopping trips. This leads to the outcome of 73.5% of trips being as a vehicle driver or passenger, 8.3% by public transport and 17% as a pedestrian.<sup>164</sup>

One of the key arguments for the concentration of a significant proportion of the anticipated new development in the vicinity of railway stations is to increase the modal share of public transport in general and trains in particular. This emphasis in shifting the modal choice for some key journeys (commuting) while continuing to recognise the dominance of the car for leisure and shopping generates a demand for targeted works within the local street network. Given the nature of travel in Ku-ring-gai, it is unlikely that the concentration of development around the railway stations and bus-nodes is

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<sup>164</sup> The final 1.2% is listed as 'Other'

likely to cause a significant reduction in the dominance of the motor vehicle except, arguably, for the actual journey-to-work. Overall vehicle demand, and its associated impact on roads and intersections, is expected to remain high.

### 5.1.3 Accessible pedestrian-friendly town centres

Modal shift will not be achieved unless it is attractive to leave the car behind. Every car driver, ever train commuter is also a pedestrian at some point. The quality, safety and amenity of the pedestrian environment and its interface with the vehicular environment within the vibrant mix of the local streets is a very important aspect of the success – or otherwise – of urban consolidation.

Spatial priority around railway transport interchanges needs to be around pedestrians, buses and cyclists first to encourage these modes over private vehicles. Public domain works that encourage modal shift are included in this works programme.

It is important to emphasise that the anticipated intensive new development is expected to be the primary cause of significant changes to Ku-ring-gai's typically suburban town centres.

## 5.2 Summary of the Works Programmes

The improvements proposed for the local road-based transport and pedestrian network in Ku-ring-gai include:

- ✓ Upgrading existing intersections, including new or relocated traffic and pedestrian signals and new or augmented turning lanes;
- ✓ Widening and/or realignment of existing roads, streets and lanes;
- ✓ Local Area Traffic Management facilities such as roundabouts, kerb blisters, chicanes, redirected traffic flow and the like;
- ✓ New local roads (streets and laneways) and a railway overbridge (part funded with Railcorp);
- ✓ New commuter-orientated cycleways and cycle parking and storage facilities;
- ✓ New and upgraded public transport facilities including bus and taxi passenger facilities and interchanges and kiss and ride; and
- ✓ Public domain works within the town centres including footpath widenings and upgraded surfaces.<sup>165</sup>

The nexus and apportionment for each distinct aspect of the works programme is separately considered in the following sections. Each aspect is located within the environment of the term 'local roads'.

### 5.3 Local Roads: Nexus for Works to Local Roads

Inherent in the challenge of catering for concentrated new development in the town centres in Ku-ring-gai is the significant change of scale in these centres from typical suburban centres to medium-high density urban centres. This brings about a significant change in urban character together with the resultant impacts of intensifying vehicular traffic, pedestrian and cycling concentrations.

<sup>165</sup> Civic Squares are included as part of the local urban parks component of the Key Community Infrastructure Item: Local parks.

The existing traffic network essentially caters for the low density development that has typified Ku-ring-gai until recently. New higher density development potential is concentrated along the Pacific Highway and, in the case of St Ives, along Mona Vale Road which intersects with the Pacific Highway between Gordon and Pymble. In each of these town centres, work is required to maintain and facilitate access to the centres, circulation within the town centres and cross-suburban access as a result of intensive redevelopment.

The existing pedestrian environment also caters for the low density development that has typified Ku-ring-gai. The concentration of nett 10,000 additional dwellings in and around the town centres will bring about a considerable increase in the pedestrian traffic. Works within the public domain (being all land outside the private domain) are required just to maintain pedestrian access within the town centres as well as facilitate adequate access to public transport and other destinations.

The works programmes have been developed and costed after extensive studies to meet the objectives of maintaining access – both vehicular and pedestrian in and around the centres. Because the inherent purpose of local roads is to facilitate access to destinations, works which serve development concentrated in and around the town centres are not necessarily wholly located within the catchment boundaries of the town centres. Notwithstanding, the functionality of the town centres with the intensive new development foreshadowed is dependent on the provision of these new roads.

Analysis of the anticipated development in the town centres indicated that, in some centres, additional local roads were needed to facilitate access both to the centre, and within the centre, to facilitate the circulation of vehicular traffic and to improve pedestrian permeability.

The nexus for the new roads and the essential modifications to the road network in each centre is further argued below in the context of the total strategy for each of the town centres.

It must be emphasised that Ku-ring-gai Council has targeted a variety of mechanisms to achieve the urban form of the town centres outlined in the sections below, minimising direct development costs provided for under this Contributions Plan. This Contributions Plan represents one aspect of the integrated infrastructure funding strategy together with mechanisms under *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010* as well as funding from Council's own resources and strategic management of Council's assets. The integration of this works programme is complex and complete and it is essential that each area fulfils its role in the delivery of the whole.

In addition to the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and the *Ku-ring-gai Development Control Plan (Town Centres) 2010*, the works identified in the following sections are further supported by the *Ku-ring-gai Public Domain Plan 2010*, *Ku-ring-gai Parking Management Plan 2010* and the *Draft Ku-ring-gai Integrated Transport Strategy 2010*. Ku-ring-gai has taken an integrated approach to planning for and supporting development in the Local Government Area.

### **5.3.1 Gordon Town Centre**

Extensive background studies for Gordon, culminating in the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010*, identified the following objectives and challenges arising from

the process of transforming a suburban centre into a major urban centre with increased vehicular and pedestrian demands - and strategies to meet those challenges.

#### **Pedestrian Access and Circulation: Objectives and Challenges**

- To improve east–west pedestrian connections on the western side of Gordon;
- To improve the safety and amenity of pedestrian paths in the retail core; and
- To improve connections across the Pacific Highway and railway between east and west sides of Gordon.

#### **Pedestrian Access and Circulation: Strategies**

- Create a clearly defined and safe pathway system along both sides of the Pacific Highway from Ryde Road to Ravenswood School;
- Provide new pedestrian crossings or pedestrian refuges at the intersection of the Pacific Highway with Merriwa Street, McIntyre Street Dumaresq Street Park Avenue, Moree Street to support pedestrian movement;
- Improve pedestrian connections in the retail core area by providing new footpaths to Wade Lane and a system of pedestrian connections through to the Pacific Highway;
- Create a new pedestrian link through the residential area on the western side of St Johns Avenue to Merriwa Street via new streets and new through-block connections;
- Open up the area around the old Gordon Public school building to allow public access all around the building;
- Maintain and upgrade existing access ways and create new access ways around and through the new Council owned civic building;
- Provide a new through-block connection within the mixed use area between the Pacific Highway and Fitzsimons Lane; and
- Upgrade and widen footpaths along Park Avenue and Henry Street connecting to the residential areas to the east.

#### **Integrated Transport: Objectives and Challenges**

- Provide a contemporary transport interchange facility on the western side of the railway station;
- Support implementation of the Mona Vale to Macquarie Strategic Bus Corridor; and
- Provide bicycle parking facilities at key destination points.

#### **Integrated Transport: Strategies**

- Upgrade and expand the existing bus stop area on the western side of the railway station to provide new interchange facilities. Include a new bus stop area catering for buses, a new taxi rank and a 'kiss and ride' area;
- Continue negotiation with Ministry of Transport and local bus companies to secure new bus route via Pacific Highway and Ravenswood Avenue to new transport interchange;
- Provide secure bicycle parking facilities for commuters at the transport interchange including lock up facilities;
- Provide new local cycle way (on-road marked) along Dumaresq Street from the Pacific Highway to Vale Street;
- Signpost the informal commuter routes on the eastern side of Gordon along Rosedale Road; and
- Provide a new bus stop for Strategic Bus Corridor located on western side of the Pacific Highway near the intersection of Ryde Road for residents and employees in the northern part of Gordon Centre.

#### **Vehicle Access, Circulation and Parking: Objectives and Challenges**

- To reduce the dominance of car parking areas on the public areas of Gordon;

- To reduce pedestrian and vehicle conflicts in the town centre streets;
- To redesign traffic signal configuration along the Pacific Highway to improve local traffic conditions and reduce congestion at key intersections;
- To facilitate widening of the Pacific Highway in key locations to three lanes in each direction;
- To introduce new roads on the western side of Gordon town centre to improve vehicle access and circulation around the retail core; and
- To modify existing roads and lanes to accommodate changes in traffic management measures.

#### **Vehicle Access, Circulation and Parking: Strategies**

- Provide new pedestrian activated traffic signals on Pacific Highway north of Moree Street, for a mid-block pedestrian crossing;
- Modify signals at the intersection of St Johns Avenue and the Pacific Highway to accommodate one-way flow, and remove right-turn from Pacific Highway to St Johns Avenue;
- Provide new traffic signals at Pacific Highway and Ravenswood Avenue to allow right turn from the Highway, to replace the right-turn removed at St Johns Avenue;
- Remove the traffic signals at Park Avenue and Pacific Highway intersection, with Park Avenue to become one-way east bound to Wade Lane. Left turn only from Pacific Highway into Park Avenue;
- Modify traffic flow on Wade Lane to be one way south bound (currently north bound);
- Modify signals at Dumaresq Street and Pacific Highway intersection to accommodate a third north-bound lane and provide pedestrian crossings to all sides;
- Acquire land for new roads between St Johns Avenue and Moree Street; Moree Street and Dumaresq Street; and Dumaresq Street and McIntyre Street;
- New service lane to be provided at rear of Gordon Centre (as part of site redevelopment);
- St John's Avenue to become one way west bound between Wade Lane and new street on the western side of the highway. Traffic signals at St Johns and Pacific Highway intersection to be modified to remove right turn movements;
- Fitzsimons Lane to be modified to provide a wider carriageway and a verge and footpath on both sides of the lane;
- Plan for widening of the carriageway of the Pacific Highway around the Dumaresq Street intersection; and
- Plan for widening of the carriageway on the western side of the Pacific Highway between Bushlands Avenue and Yarabah Avenue.

Transport modelling for the Gordon Town Centre was undertaken by GTA consultants<sup>166</sup> and updated to reflect the then draft revised *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* which was exhibited at the end of 2008 by the Ku-ring-gai Planning Panel, adopted for referral to the Minister for gazettal on 27 May 2009 and gazetted on 25 May 2010.

The analysis supported the need for the construction of several new roads to break up the long linear blocks on the western side of the Pacific Highway as follows:

A link road between Dumaresq Street and McIntyre Street  
A link road between Dumaresq Street and Moree Street<sup>167</sup>

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<sup>166</sup> GTA Consultants: Gordon Town Centre Redevelopment – Traffic Study dated October 2008

<sup>167</sup> There are two targeted link roads between Dumaresq Street and Moree Street under the *Draft Ku-ring-gai Development Control Plan (Town Centres) 2009*. This Contributions Plan includes the area that is proposed to

### A link road between Moree Street and St Johns Avenue

The Roads and Traffic Authority noted that the success of the proposed traffic management scheme depends on all new local roads being implemented.<sup>168</sup>

The two remaining are regarded as critical to the functionality of the town centre into the future and, accordingly, the required land is zoned SP2 Infrastructure under the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* which was gazetted on 25 May 2010.

An additional proposed new road link between St Johns Avenue and Moree Street is also supported by the Roads and Traffic Authority of NSW.<sup>169</sup>

## 5.3.2 Turramurra Town Centre

Extensive background studies for Turramurra, culminating in the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010*, identified the following objectives and challenges arising from the process of transforming a small suburban centre into an urban centre with increased vehicular and pedestrian demands - and strategies to meet those challenges.

### **Pedestrian Access and Circulation: Objectives and Challenges**

- To improve north-south pedestrian connections from Granny Springs Bushland Reserve via the town centre through to Turramurra Memorial Park;
- To improve access across the Pacific Highway;
- To improve connections across the railway line between Rohini Street and William Street/Ray Street;
- To improve connections from Duff Street to Kissing Point Road; and
- To improve connections from Turramurra Avenue to Eastern Road.

### **Pedestrian Access and Circulation: Strategies**

- Provide a new path from Duff Street through Granny Springs Bushland Reserve to the new street (Stonex Street);
- Create a new through-block pedestrian link from the new street (Stonex Street) through to the Pacific Highway (provided as part of future site redevelopment);
- Create a new through-block pedestrian link from the Pacific Highway through to Forbes Lane (provided as part of future site redevelopment);
- Create a new through-block pedestrian link between Rohini Street and Gilroy Lane (provided as part of future site redevelopment);
- Create a new through-block pedestrian link from the Pacific Highway through to Gilroy Lane (provided as part of future site redevelopment);
- Create a new through-block pedestrian link from Gilroy Road through to Cameron Park (provided as part of future site redevelopment);
- Provide improved pedestrian connections to Turramurra Memorial Park via Gilroy Road;

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be zoned SP2 for infrastructure provision under *Draft Ku-ring-gai Local Environmental Plan (Town Centres) 2008*. The other potential link road is not included in this Contributions Plan works programme in the interests of maintaining a reasonable contribution rate but is intended to be sought by direct negotiation depending on the nature and timing of key development sites.

<sup>168</sup> Letter from the Roads and Traffic Authority in response to the s62 notification for Gordon and Pymble Town Centres originally dated 25 September 2006 and reiterated 24 October 2008.

<sup>169</sup> Roads and Traffic Authority of NSW: Draft LEP – Section 62 Notification and Pymble and Gordon Town Centres Traffic Changes, letter dated 24 October 2008.

- Provide a new pedestrian link from Ray Street over the railway line via a new bridge at the northern end of Rohini Street (provided as part of future site redevelopment);
- Encourage the incorporation of a pedestrian bridge over the highway where it is properly integrated into new developments on both sides of the highway (provided as part of future site redevelopment); and
- Provide a public access way from Boyd Street to the Pacific Highway through the Hill View Estate (provided as part of future site redevelopment).

#### **Integrated Transport: Objectives and Challenges**

- To provide a contemporary bus facility on the northern side of the railway station in cooperation with Ministry of Transport and local bus companies;
- To provide bicycle parking facilities at key destination points;
- To support the provision of additional bus services to Turramurra Station; and
- To provide a continuous cycle way link from Kissing Point road to Turramurra Memorial Park.

#### **Integrated Transport: Strategies**

- Provide a new on-road marked cycle way along Kissing Point Road, Pacific Highway, Rohini Street and Eastern Road;
- Provide a new off-road shared pedestrian/cycle way via Hill View Estate, Pacific Highway (by addition of structure to existing road bridge), Turramurra Avenue and Gilroy Road;
- Provide bicycle parking facilities at key destination points such as the town square, Rohini Street and the railway station;
- Investigate opportunity for integrated bicycle/commuter parking as part of the enhanced transport interchange in Rohini Street;
- Provide new location specifically designed for taxi ranks in Forbes Lane and Rohini Street;
- Provide new pull over area specifically designed for kiss-and-ride in Forbes Lane, Rohini Street and Boyd Street;
- Provide a new covered walkway over the rail line at the station in cooperation with Rail Corp Easy Access Upgrade; and
- Provide new alternative bus routes via proposed road bridge at Ray Street and proposed new road between Turramurra Avenue and Gilroy Road.

#### **Vehicle Access, Circulation and Parking: Objectives and Challenges**

- To reduce the dominance of at-grade car parking areas on the public areas of Turramurra;
- To reduce pedestrian and vehicle conflicts in the town centre streets;
- Redesign traffic signals configuration along the Pacific Highway to improve local traffic conditions and reduce congestion at key intersections;
- To facilitate the widening of the Pacific Highway between Ray Street and the railway to three lanes in each direction; and
- To introduce new roads on the northern and southern sides of Turramurra to improve vehicle access and circulation around retail core.

#### **Vehicle Access, Circulation and Parking: Strategies**

- Acquire land for a new two-way local road between Gilroy Road and Turramurra Avenue along the northern boundary of the Uniting Church;
- Provide new two-way road bridge over the railway connecting Ray Street and Rohini Street (provided as part of future site redevelopment);
- Provide a new two-way local road between Kissing Point Road and Duff Street (provided as part of future site redevelopment);
- Remove the existing traffic signals at Rohini Street and provide new signals at the intersection of Turramurra Avenue and the Pacific Highway (including new right turn access into/out of Pacific Highway);

- Provide at grade car parking adjacent to community facilities for short stay visitors;
- Facilitate the widening of the Pacific Highway between Ray Street and William Street (along the northern side) to increase number of lanes (provided as part of future site redevelopment);
- Widen Gilroy Lane and Forbes Lane to create pedestrian priority streets that include two-way traffic and on street parking;
- Reduce road width of Rohini Street and reduce traffic speeds; and
- Make provision for the widening of Kissing Point Road at the intersection with the highway for a dedicated left-turn lane.

Transport modelling for the Turramurra Town Centre was undertaken by GTA consultants<sup>170</sup> and updated to reflect the then draft revised *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* exhibited at the end of 2008 by the Ku-ring-gai Planning Panel.

The analysis supported the need for the construction of a new road to connect Gilroy Avenue to Turramurra Avenue. This road is regarded as critical to the functionality of the town centre into the future and, accordingly, the required land is zoned SP2 Infrastructure under the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* which was gazetted on 25 May 2010.

### 5.3.3 Lindfield Town Centre

Extensive background studies for Lindfield culminating in the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010*, identified the following objectives and challenges arising from the process of transforming a small suburban centre into an urban centre with increased vehicular and pedestrian demands - and strategies to meet those challenges.

#### **Pedestrian Access and Circulation: Objectives and Challenges**

- To improve north-south pedestrian connections from Gladstone Parade to Balfour Street;
- To improve access across the Pacific Highway at Lindfield; and
- To improve north-south pedestrian connections from Tryon Road and Woodside Avenue.

#### **Pedestrian Access and Circulation: Strategies**

- Create a new pedestrian link from Bent Street through to Beaconsfield Parade;
- Create a new through-block pedestrian link from the Pacific Highway through to Woodford Lane (provided as part of future site redevelopment);
- Create a new through-block pedestrian link between Lindfield Avenue and Milray Street (provided as part of future site redevelopment);
- Create a new through-block pedestrian link from the Woodside Avenue to Havilah Road (provided as part of future site redevelopment);
- Provide pedestrian crossings or similar on Lindfield Avenue coordinated with main pedestrian routes;
- Encourage the incorporation of a pedestrian bridge over the highway where it is properly integrated into new developments on both sides of the highway (provided as part of future site redevelopment);

<sup>170</sup> GTA Consultants: Turramurra Town Centre Redevelopment – Traffic Study dated September 2008

- Relocate the existing signalised pedestrian crossing on Lindfield Avenue to the intersection of Lindfield and Tryon Road;
- Upgrade the pedestrian precinct and pedestrian crossings across the Pacific Highway and Lindfield Avenue to better link the east and west town centre precincts;
- Provide traffic calming measures at the corner of Tryon Road and Milray Street; and
- Investigate the inclusion of a pedestrian crossing at the intersection of Havilah Road and Lindfield Avenue.

#### **Integrated Transport: Objectives and Challenges**

- To upgrade access to Lindfield Station in association with Rail Corp;
- To provide a contemporary bus facility on Lindfield Avenue adjoining the railway station in cooperation with Ministry of Transport and local bus companies;
- To provide bicycle parking facilities at key destination points;
- To support the provision of additional bus services to Lindfield Station; and
- To provide a continuous cycle way link from the eastern to the southern side of Lindfield.

#### **Integrated Transport: Strategies**

- Provide a new covered walkway and lifts at the rail station in cooperation with the Rail Corp Easy Access Upgrade;
- Upgrade the existing bus stop on the eastern side of the railway station to support increased bus services to and from Lindfield Station. (In partnership with Ministry of Transport);
- Provide new 'kiss-and-ride' facilities on Lindfield Avenue and Woodford Lane;
- Provide accessible parking spaces on Tryon Lane;
- Provide a new on-road marked cycle way along from Balfour Street, across the highway to Lindfield Avenue;
- Provide bicycle parking facilities at key destination including Tryon Place, Woodford Lane and the new town square; and
- Signpost the informal commuter cycle route on the eastern side of Lindfield, along Nelson Road and Trafalgar Avenue.

#### **Vehicle Access, Circulation and Parking: Objectives and Challenges**

- To reduce the dominance of at-grade car parking areas on the public areas of Lindfield;
- To reduce pedestrian and vehicle conflicts in the town centre streets;
- Redesign traffic signals configuration along the Pacific Highway to improve local traffic conditions and reduce congestion at key intersections;
- To introduce new roads on the western side of Lindfield to improve vehicle access and circulation around the retail core; and
- To make modifications to existing streets and lanes to improve local vehicle access.

#### **Vehicle Access, Circulation and Parking: Strategies**

- Acquire land for a new two-way local road between Bent Street and Beaconsfield Road;
- Close the existing Balfour Lane and relocate to a new alignment with car parking to be relocated to basement parking (as part of site redevelopment);
- Widen Woodford Lane and Bent Lane to create a pedestrian priority street that includes two-way traffic, on-street parking as well as footpaths. Extend Woodford Lane directly through to Beaconsfield Parade;
- Modify signals at the intersection of Balfour Street and the Pacific Highway to maintain traffic flows;

- Relocate the pedestrian activated traffic signals on Lindfield Avenue to the intersection of Lindfield Avenue and Tryon Road, to improve traffic flow, pedestrian access and safety and integrate with Lindfield station Easy Access Upgrade;
- Widen Havilah Lane to create a pedestrian priority street that includes two-way traffic, on-street parking as well as footpaths;
- Widen Kochia Lane footpath through increased setbacks, to improve pedestrian access between Lindfield Avenue and Havilah Lane; and
- Close Tryon Place and Tryon Lane and replace with new service lane system (part of site redevelopment).

Transport modelling for the Lindfield Town Centre was undertaken by ARUP consultants<sup>171</sup> and updated to reflect the then draft revised *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* which was exhibited at the end of 2008 by the Ku-ring-gai Planning Panel.

The analysis supported the need for the construction of a new civic street between Beaconsfield Parade and Bent Street. This road is regarded as critical to the functionality of the town centre into the future and, accordingly, the required land is zoned SP2 Infrastructure under the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* which was gazetted on 25 May 2010.

#### 5.3.4 Pymble Town Centre

Extensive background studies for Pymble culminating in the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010*, identified the following objectives and challenges arising from the process of transforming a small suburban centre into an urban centre with increased vehicular and pedestrian demands - and strategies to meet those challenges.

##### **Pedestrian Access and Circulation: Objectives and Challenges**

- To provide a new continuous pedestrian connection from Telegraph Road to Station Street via the town centre and Pymble Park;
- To improve connections from the residential areas to the south-west across the Pacific Highway and across the railway line to Grandview Street;
- To improve connections from Grandview Street to Robert Pymble Park;

##### **Pedestrian Access and Circulation: Strategies**

- Create a pedestrian accessway from Park Crescent to Grandview Street (as part of site redevelopment);
- Widen Park Crescent footpath to allow improved pedestrian circulation and the potential for footpath dining;
- Provide a new mid-block pedestrian link between Station Street and Telegraph Road (as part of site redevelopment);
- Create a new through-block pedestrian access way from Grandview Lane public car park to Station Street;
- Upgrade and widen (as part of site redevelopment) the existing Council owned pedestrian access way from Grandview Lane public car park to Grandview Street;
- Continue to work with Rail Corp to achieve an upgrade of the station with new lifts and pedestrian bridge;
- Upgrade the pedestrian underpass to create a well lit safe access route under the Pacific Highway. Continue discussions with the Roads and Traffic Authority

<sup>171</sup> ARUP Consultants: Ku-ring-gai Council Lindfield Town Centre – Extension to Traffic and Parking Study dated September 2008

regarding future widening of highway through Pymble and potential for new and wider pedestrian underpass; and

- Increase the pedestrian amenity and safety in Grandview Street and Park Crescent by providing an additional pedestrian crossing/traffic island narrowing.

#### **Integrated Transport: Objectives and Challenges**

- To provide bicycle parking facilities at key destination points.
- To support the provision of additional bus services to Pymble Station.
- To provide a continuous cycleway link from Telegraph Road to Station Street.
- To upgrade the access to Pymble Station.

#### **Integrated Transport: Strategies**

- Upgrade the existing bus stop in Grandview Street to meet the required level of service;
- Provide new 'kiss and ride' bays and taxi ranks on Grandview Street and Everton Street;
- Continue to work with Rail Corp regarding Easy Access Upgrade of Pymble Station including the provision of lifts and a wider walkway;
- Provide a new on-road marked cycleway from Pymble Avenue via Everton Street, Pacific Highway to Station Street;
- Provide a new off-road shared pedestrian path/cycle way between Telegraph Road and Station Street via Robert Pymble Park; and
- Provide bicycle parking facilities at key destination points such as Robert Pymble Park and the railway station.

#### **Vehicle Access, Circulation and Parking: Objectives and Challenges**

- To increase the number of on-street and off-street car parking areas to support businesses in Pymble town centre;
- To reduce pedestrian and vehicle conflicts in the town centre streets;
- Redesign traffic signals configuration along the Pacific Highway to improve local traffic conditions and reduce congestion at key intersections;
- Facilitate the widening of the Pacific Highway to three lanes in each direction through Pymble town centre;
- To introduce new roads on the northern side of Pymble to improve vehicle access and circulation around the retail core;
- To make modifications to existing streets and lanes to improve local vehicle access;

#### **Vehicle Access, Circulation and Parking: Strategies**

- Reduce the width of Grandview Street to become one way south bound and angle parking on the southern side between Pacific Highway and Alma Street;
- Realign Grandview Lane to meet Park Crescent at a X-junction;
- Acquire land to extend Grandview Lane through to Station Street;
- Acquire land to extend Post Office Lane through to Park Crescent;
- Facilitate the widening of the Pacific Highway at Livingstone Avenue to improve traffic flow (setbacks provided as part of site redevelopment);
- Provide a new and expanded public parking area on Grandview Lane;
- Modify traffic signals at Livingstone Avenue to maintain traffic flows; and
- Provide a dedicated left turn lane on the Pacific Highway on the northern side at the intersection with Telegraph Road.

Transport modelling for the Pymble Town Centre was undertaken by ARUP consultants<sup>172</sup> and updated to reflect the then draft revised *Ku-ring-gai Local*

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<sup>172</sup> ARUP Consultants: Ku-ring-gai Council Pymble Town Centre – Extension to Traffic and Parking Study dated September 2008

*Environmental Plan (Town Centres) 2008* exhibited at the end of 2008 by the Ku-ring-gai Planning Panel.

The analysis supported the need for a one-way connecting road from the end of Post Office Lane to Park Crescent. This road is regarded as critical to the functionality of the town centre into the future and, accordingly, the required land is zoned SP2 Infrastructure under the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* which was gazetted on 25 May 2010.

Additionally, the Roads and Traffic Authority supports provision of a new road connecting Beechworth Road and Avon Road.<sup>173</sup>

### 5.3.5 Pymble Business Park

Council has analysed the impact on the existing Pymble Business Park of the additional growth potential incorporated in *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* which includes a significant proportion of the Pymble Business Park plus additional development potential in the remainder of the Business Park. This additional development potential was foreshadowed in the *Ku-ring-gai and Hornsby Sub-regional Employment Lands Study*. The draft *Pymble Business Park – Traffic and Transport Study*<sup>174</sup> identified the following objectives and challenges. The strategies below are the result of further feedback from the Roads and Traffic Authority (RTA):

#### **Pedestrian Access and Circulation: Objectives and Challenges**

- The Business Park is located 650m (minimum) walking distance from Pymble Station or approximately ten minutes walking time and is relatively direct;
- The Business Park is located 900m (minimum) walking distance from Gordon Station or approximately fifteen minutes walking time however entries are limited to Bridge Street or West Street which significantly increases walking distances and times; and
- The topography of Bridge Street results in relatively steep pedestrian grades.

#### **Pedestrian Access and Circulation: Strategies**

- Improved pedestrian linkages between Pymble Station and Pymble Business Park;
- Provision of a pedestrian through-site link between Bridge Street and Ryde Road;
- Improve bicycle access by widening footpaths to accommodate dual pedestrian/bicycle paths; and
- Modification of the intersection of Pacific Highway and Bridge Street to include pedestrian provision across the Pacific Highway.

#### **Integrated transport: Objectives and Challenges**

- There are regular buses travelling past the site on Ryde Road and linking to West Pymble and Macquarie Park and Mona Vale via Gordon with bus-stops on or near the Ryde Road/Pacific Highway intersection ramps; and
- There are no regular bus services between Pymble Station and Pymble Business Park.

#### **Integrated transport: Strategies**

- Improve bus stop provision servicing the Business Park.

<sup>173</sup> Roads and Traffic Authority of NSW: Draft LEP – Section 62 Notification and Pymble and Gordon Town Centres Traffic Changes, letter dated 24 October 2008.

<sup>174</sup> It should be noted that, at the time of preparing the draft Contributions Plan, this document was an internal working draft based on preliminary analysis. Following preliminary consultation with the Roads and Traffic Authority (RTA), further analysis and traffic network modelling is now being undertaken. This process is expected to be completed in 2010 concurrent with the Principal LEP for Ku-ring-gai. As such the proposed strategies may be modified as part of the process of formally negotiating RTA concurrence.

#### **Vehicle Access, Circulation and Parking: Objectives and Challenges**

- Additional development is likely to significantly reduce the level of service at the intersection of Pacific Highway and Bridge Street especially in the afternoon peak;
- Afternoon peak congestion will also be exacerbated in West Street;
- There are limited egress options from the Business Park compared to ingress contributing to afternoon peak congestion;

#### **Vehicle Access, Circulation and Parking: Strategies**

- Improve access into and out of West Street by the installation of new traffic signals at the intersection of the Ryde Road off-ramp and West Street whereby only northbound vehicles on Ryde Road and vehicles turning out of West Street would be stopped; and
- Provision for dual left turn lanes out of West Street into Ryde Road.

### **5.3.6 St Ives Town Centre**

Extensive background studies for St Ives culminating in *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010*, identified the following objectives and challenges arising from the process of transforming a small suburban centre into an urban centre with increased vehicular and pedestrian demands - and strategies to meet those challenges.

#### **Pedestrian Access and Circulation: Objectives and Challenges**

- To improve north-south pedestrian connections across Mona Vale Road to the Village Green;
- To improve connections from Cowan Road to Memorial Avenue via Village Green Parade;
- To provide continuous pedestrian access around the Village Green;
- To improve connections from Stanley Street to Porters Lane via Stanley Lane and the old school precinct; and
- To improve connections from Collins Drive on the eastern edge of the town centre, to Link Road.

#### **Pedestrian Access and Circulation: Strategies**

- Create a clearly defined and safe pathway system along both sides of Mona Vale Road between Link Road and Cowan Road;
- Establish new pedestrian arcade through the St Ives Shopping Village (as part of the redevelopment process) from Mona Vale Road to the Village Green.;
- Provide new pedestrian access way from Collins Road to Link Road as part of the redevelopment process;
- Upgrade the footpaths on Denley Lane between Mona Vale Road and the Village Green;
- Open up the area around the old school to allow public access all around the building;
- Maintain and upgrade existing Council access way between Gillot Way and Mona Vale Road;
- Maintain and upgrade existing Council access way between Killeaton Street and Myrtle Place;
- Maintain and upgrade existing Council access way between Link Road and Newhaven Place;
- Provide a continuous footpath connection between Stanley Street and Porters Lane via the old school area; and
- Upgrade and widen footpaths along all streets connecting to the surrounding residential areas.

**Integrated transport: Objectives and Challenges**

- To support implementation of the Mona Vale to Macquarie Strategic Bus Corridor;
- To support implementation of the Hornsby to Chatswood Strategic Bus Corridor; and
- To provide bicycle parking facilities at key destination points.

**Integrated transport: Strategies**

- Continue negotiation with the Ministry of Transport and local bus companies to secure preferred bus route for the Hornsby to Chatswood Strategic Bus Corridor via Memorial Avenue and Stanley Street;
- Provide a new well-designed bus stops, bus shelters, information boards and secure bicycle parking at Rotary Park and on Mona Vale Road near the entry to the St Ives Shopping Village to cater for the Strategic Bus Corridor;
- Provide new taxi ranks on Denley Lane in close proximity to the retail core precinct;
- Provide secure bicycle parking facilities for commuters at the transport interchange including lock up facilities;
- Provide new local cycle way (on-road marked) along Stanley Street and Yarrabung Road towards Mona Vale;
- Provide a new children's recreational cycle track in the Village Green to cater for younger children and families;
- Provide a new shared pedestrian/cycle way (off-road) from the Village Green via Collins Road to Killeaton Street then west bound (links with existing shared way on Link Road heading south);
- Provide bicycle parking facilities at key destination points such as the town square, Village Green, Old School Building precinct and Stanley Street shops; and
- Upgrade existing bus stops along Mona Vale Road, Killeaton Street and Link Road.

**Vehicle Access, Circulation and Parking: Objectives and Challenges**

- To improve vehicle access to the St Ives Shopping Village for cars and service vehicles;
- Improve vehicle circulation around the St Ives Shopping Village;
- To reduce the dominance of at-grade car parking on the public areas of St Ives;
- To reduce pedestrian conflicts;
- To reduce traffic movements at the Mona Vale Road intersections; and
- To facilitate pedestrian access across the road adjacent to the shopping centre pedestrian entry plaza.

**Vehicle Access, Circulation and Parking: Strategies**

- Modify existing traffic signals along Mona Vale Road to reduce the number of vehicle movements and improve operation of the network;
- Modify existing traffic signals at the intersection of Mona Vale Road and Memorial Avenue/Rosedale Road to reduce the number of vehicle movements and improve operation of the network;
- Provide new traffic signals on Mona Vale Road mid-way between the existing signals at Cowan Road and Memorial Avenue, for direct access to the retail centre.
- Modify the Village Green Parade to be a narrow low-speed one-way street with on-street parking. Exits via Denley Lane or Memorial Avenue;
- Streets around Memorial Park to be modified to one-way traffic flow;
- Relocate public car parking along the Village Green Parade to basement parking areas generally. Retain the area of public parking adjoining Memorial Avenue;
- Limit the traffic accessing the retail core from Memorial Avenue by modifying the intersection with Village Green Parade;
- Provide setbacks on the southern side of Stanley Street to allow for road widening and other improvements at the intersection of Mona Vale Road and Stanley Street;

- Provide setbacks to allow for future road widening and intersection improvements at Link Road and Mona Vale Road;
- Provide new traffic signals at the intersection of Cowan and Killeaton Streets to replace the existing pedestrian activated signals near Collins Road; and
- Widen Stanley Lane as part of site redevelopment to include on-street parking.

Transport modelling for the St Ives Town Centre was undertaken by Transport and Urban Planning consultants<sup>175</sup> and updated to reflect the then draft revised *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* exhibited at the end of 2008 by the Ku-ring-gai Planning Panel.

### 5.3.7 Roseville Town Centre

Extensive background studies for Roseville culminating in the *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010*, identified the following objectives and challenges arising from the process of transforming a small suburban centre into an urban centre with increased vehicular and pedestrian demands - and strategies to meet those challenges.

#### **Pedestrian Access and Circulation: Objectives and Challenges**

- To improve pedestrian connections between Larkin Lane and the Pacific Highway;
- To increase the number of pedestrian connections in the block between Bancroft Avenue and Roseville Avenue and Hill Street;
- To improve the safety and amenity of pedestrian paths in the retail core; and
- To improve connections across the railway between east and west sides of Roseville.

#### **Pedestrian Access and Circulation: Strategies**

- Create a new through-block pedestrian links between Bancroft Lane to Hill Street (as part of site redevelopment);
- Create a new through-block pedestrian links between Roseville Lane to Hill Street (as part of site redevelopment);
- Expand the entry forecourt to the station entry from the western precinct to improve public access to the station and connection to the eastern side of the railway;
- Upgrade and widen (as part of site redevelopment) the existing Council owned pedestrian access lanes - Sixth Mile Lane and the Rifleway; and
- Continue to work with Rail Corp to achieve an access upgrade of Roseville station with a wider pedestrian bridge.

#### **Integrated Transport: Objectives and Challenges**

- To support the provision of additional bus services to Roseville Station from surrounding residential areas;
- To provide a continuous cycleway link along the eastern side of the rail line;
- To upgrade access to Roseville station in cooperation with Rail Corp;
- To provide integrated transport facilities within close proximity to the station including upgraded bus stops, kiss-and-ride, taxi ranks and accessible parking in cooperation with the Ministry of Transport and local bus companies; and
- To provide bicycle parking facilities at key destination points.

#### **Integrated Transport: Strategies**

- Upgrade the existing bus stop in Hill Street to meet contemporary standards and include bus shelters and information boards;

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<sup>175</sup> Transport and Urban Planning: Extension to St Ives Town Centre Traffic and Parking Study dated July 2008

- Continue to liaise with the Ministry of Transport regarding future requirements in relation to buses in Roseville;
- Provide new 'kiss and ride' bays on Hill Street and Larkin Lane;
- Upgrade taxi ranks on Hill Street with additional lighting in consultation with the Taxi Council;
- Continue to work with Rail Corp regarding Easy Access upgrade of Roseville Station including the provision of lifts;
- Provide a new on-road marked cycleway from Boundary Road to Clanville Road via Hill Street and along Lord Street;
- Provide bicycle parking facilities at key destination points such as Robert Pymble Park and the railway station; and
- Upgrade the existing bus stop in Hill Street.

#### **Vehicle Access, Circulation and Parking: Objectives and Challenges**

- To increase the number of on-street and off-street car parking areas on the western side of the Pacific Highway to support local businesses;
- To introduce new lanes to the rear of the retail buildings on the eastern side of Roseville to improve vehicle access and circulation around the retail core; and
- To make modifications to existing streets and lanes to improve local vehicle access.

#### **Vehicle Access, Circulation and Parking: Strategies**

- Realign and widen Larkin Lane to provide direct access off MacLaurin Parade and increase the potential number of car spaces (additional land to be provided as part of redevelopment of adjoining site);
- Roseville Lane is to be realigned at Lord Street end to provide a straight road way (additional land to be provided as part of redevelopment of adjoining site);
- Bancroft Lane is to be extended through to meet Lord Street (additional land to be provided as part of redevelopment of adjoining site);
- Facilitate the widening of the Pacific Highway between Corona Avenue and the retail precinct to increase number of lanes and traffic flow; and
- Alter the traffic signals at MacLaurin Parade to incorporate dedicated right-turn signal from Pacific Highway to MacLaurin Parade and to accommodate a 3<sup>rd</sup> northbound lane on the Pacific Highway.

Transport modelling for the Roseville Town Centre was undertaken by Arup Consultants<sup>176</sup> and updated to reflect the then draft revised *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* exhibited at the end of 2008 by the Ku-ring-gai Planning Panel. The study confirmed the need for a number of changes including, in particular, road alignment changes and signal changes to intersection on the Pacific Highway as well as widening to accommodate three northbound lanes and a dedicated right-turn lane into MacLaurin Parade from the Pacific Highway.

## **5.4 Local Roads: Local Area Traffic Management and Intersections**

Occupants of anticipated development in Ku-ring-gai will utilise a transport network comprising:

- facilities for private vehicles, including roads and intersections;
- facilities for public transport, including rail infrastructure and services, bus infrastructure services and other transport services; and
- facilities for walking and cycling.

<sup>176</sup> ARUP Consultants: Ku-ring-gai Council Roseville Town Centre – Extension to Traffic and Parking Study dated September 2008 dated September 2008

The existing transport network has generally been planned and developed to serve existing development in the area, and, in many cases, cannot absorb traffic movements arising from the additional anticipated development without additional facilities.

There are deficiencies in the performance or level of service of the road network serving the town and village centres. Expected development will create additional trips that will, in turn, have a cumulative adverse effect on the performance of components of the network, whether those components' are currently performing satisfactorily or unsatisfactorily.

This is particularly the case with intersections serving the key town centres around which the majority of new development will be concentrated. With the exception of St Ives, all of the key town centres rely heavily on the Pacific Highway for access. In the case of St Ives, access is heavily reliant on the performance of Mona Vale Road. Some of these intersections are currently performing poorly at peak demand times.

As part of the master planning process for the new development that will be concentrated around the town centres, strategies to facilitate the extra trips arising from new development include a package of measures including the upgrading of key intersections, the provision of new streets and alternative access routes around centres, and facilitating multiple occupancy of vehicles and non-private vehicle modes of travel.

The access and transport strategies for the Ku-ring-gai town centres<sup>177</sup> have identified a number of transport infrastructure upgrades that will be essential to mitigate the impacts of the expected development in and around the key town centres just to maintain current levels of service. The classes of improvements include the following:

- Upgrading of existing intersections, including new or relocated traffic and pedestrian signals and new or augmented turning lanes;
- Widening and/or realignment of existing roads and streets;
- Local area traffic management facilities and strategies, such as redirection of traffic flows, roundabouts, kerb blisters and the like;
- New streets, primarily to facilitate intra-centre vehicle access as well providing a release valve to better distribute the additional vehicular traffic generated by developments concentrated in and around the town centre developments. New streets and extensions/widening of existing streets also have a broader role in improving pedestrian permeability and streetscape amenity in the town centres;
- New cycleways (both on and off road) and cycle parking/storage facilities;
- New or upgraded public transport facilities, including kiss and ride, taxi and bus passenger facilities;
- New public car parking facilities, both as a response to the additional parking demands generated by development concentrated in and around key town centres or required as a consequence of existing car parking facilities proposed to be displaced by centre development;<sup>178</sup>

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<sup>177</sup> Refer to Part D: Dictionary and References for a full list of studies and strategies used to determine the demand for access and transport facilities included in this Contributions Plan.

<sup>178</sup> Non-integrated car parking facilities giving rise to a separate car parking contribution rate were deleted from the *Ku-ring-gai Town Centres Development Contributions Plan 2008* following exhibition. This principle has been carried into the consolidated Contributions Plan. Accordingly, to the extent these works are required they will not be funded from contributions under this Contributions Plan.

Technical details demonstrating the need for the local road access and transport facilities attributable to the expected development in and around the Ku-ring-gai town centres are contained in both the transport strategies and assessments for each centre<sup>179</sup> and the Development Control Plan.

## 5.5 Apportionment for Local Roads: Intersection Treatments

The design of intersection treatments has been determined with regard to the traffic modelling and assessment carried out for each of the Ku-ring-gai Town Centres.

The majority of intersection works have been planned and specified to achieve a performance goal for all turning movements at all intersections of Level of Service D or better.<sup>180</sup> However, where, either because of excessive cost and/or State Government responsibility, this standard cannot be assured, facilities that allow existing conditions to be maintained at current performance levels (that is, at Level of Service E or F) have been specified and included in this Plan. Such works are essential so that future development does not further worsen existing conditions. Accordingly, where such works merely maintain the present Level of Service and do not generate any improvement, they are 100% apportioned to new development. However, where an improvement is achieved which will, to some extent, benefit all users, the works have been apportioned between new and existing development. In these cases, each apportionment has been separately determined based on the specific improvements arising from that intersection. The apportionment for each particular intersection is specified in the works programme.

## 5.6 Development of New Roads: Land and Construction Costs

There are two key financial mechanisms for the delivery of new roads under the planning schemes for the development of the six Town Centres. This Contributions Plan is one mechanism. The other mechanism is transferable floor space and supporting controls in the *Ku-ring-gai Development Control Plan (Town Centres) 2010*.

In some cases, both mechanisms are active with respect to a single new road demarcated such that the land is to be dedicated in return for transferable floor space but the construction of the road is valued by this Contributions Plan.

Where land is zoned SP2 Infrastructure under *Ku-ring-gai Local Environmental Plan (Town Centres) 2010*, there is no capacity for transferable floor space, accordingly, Ku-ring-gai Council will be required to purchase the affected site at full market value within the life of this Contributions Plan. In these cases, both the land values and the construction costs are included in this Contributions Plan.

Ku-ring-gai Council has been innovative in its approach by limiting the scope of new roads wholly identified in this Contributions Plan to those which are considered absolutely essential to traffic and pedestrian flow around the town centres and which are supported by the Roads and Traffic Authority. By minimising land acquisition costs, the resultant contribution rate has been significantly reduced. The amount of

<sup>179</sup> Refer to Part D: Dictionary and References for a full list of studies and strategies used to determine the demand for access and transport facilities included in this Contributions Plan.

<sup>180</sup> Refer to Table 4.2 of Guide to Traffic Generating Developments, Roads and Traffic Authority of NSW, Version 2.2, October 2002 for more information on intersection performance and planning criteria.

land for new roads targeted for acquisition represents only 53% of the total that council seeks to achieve.

### 5.6.1 Properties to be zoned SP2 for Future Local Road Acquisition

A total of 7,372m<sup>2</sup> worth of land located on properties totalling 9,920.8m<sup>2</sup> have been designated with a SP2 Infrastructure zoning for acquisition for new roads under *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* approved by the Ku-ring-gai Planning Panel on 27 May 2009 and gazetted on 25 May 2010.

**Figure 5.1: Sites with Land Zoned Infrastructure SP2 under the Town Centres LEP**

Suburb	Address	Purpose	Area (m <sup>2</sup> )	SP2 Area (m <sup>2</sup> )	Other Area (m <sup>2</sup> )
Gordon	33 Moree St	New public road between Moree Street & Dumaresq Street	1,472	1,065	407.0
Gordon	32 Dumaresq St		1,448	1,050	398.0
Gordon	36 McIntyre St	New public road between McIntyre Street & Dumaresq Street	1,043	1,000	43.0
Gordon	41 Dumaresq St		1,000	1,000	0.0
Gordon	23 St Johns Ave	New public road between St Johns Avenue & Moree Street	866.3	488	378.3
Gordon	4A Moree St		500	450	50.0
Lindfield	12 Bent St	New public road between Beaconsfield Pde & Bent St	1,075	550	525.0
Pymble	12A Park Cres	New public lane between Post Office Ln & Park Cres	462.3	180	282.3
Pymble	4 Station St	New public lane between Alma Street & Station Street	537.4	344	193.4
Turrumurra	15 Gilroy Rd	New public road between Gilroy Road & Turrumurra Avenue	723.4	1245	271.8
Turrumurra	12 Turrumurra Ave		793.4		
<b>Totals</b>			<b>9,920.8</b>	<b>7,372</b>	<b>2,548.8</b>

In total, eleven properties are targeted for acquisition for the provision of new roads and are zoned as such under *Ku-ring-gai Local Environmental Plan (Town Centres) 2010* which was formally endorsed by the Ku-ring-gai Planning Panel and gazetted on 25 May 2010.

The largest amount of new road infrastructure (and the greatest associated cost) is concentrated in Gordon. In this context it should be noted that Gordon is the only designated town centre in the Draft North Subregional Strategy<sup>181</sup> in the Ku-ring-gai Local Government Area sub-ordinate to Hornsby which is a major centre. Gordon is the administrative centre of Ku-ring-gai and features higher order land uses such as being the centre for Local Government. It also features higher order retail such as a Harvey Norman and Bunnings Department Stores in addition to supermarkets, professional consulting rooms and smaller retail.

<sup>181</sup> Gordon is designated a Town Centre under the Draft North Subregional Strategy being the only such centre in Ku-ring-gai.

Ku-ring-gai Council has not valued these eleven sites individually at this point in time partly because that valuation will be long outdated by the time acquisition actually occurs and partly because this would require access to what is presently private property. This is unreasonable and may cause unwarranted concern to owners who have no immediate plans to relocate.

For the purposes of this Contributions Plan it is sufficient and reasonable to use generic valuations for the local area for residential and for commercial land respectively to derive an estimated total acquisition cost with a percentage for contingencies.

These estimates have not been provided individually for each property in the table as they do not take into account the individual characteristics of these properties which may result in the real value being greater or less than the generic estimate. This may give rise to false expectations or unnecessary concern. As such, and until site-specific valuations are carried out, generic valuations by suburb should be regarded as indicative only for the purposes of deriving a reasonable contribution rate and must not be taken as a valuation of any individual property.

The estimated land value of these properties totals \$25,062,710 based on known areas and generic land valuations.<sup>182</sup>

## 5.6.2 Other properties targeted for New Roads and Linkages

Further an additional amount of land totalling 9,837m<sup>2</sup> is targeted within the Development Control Plan for the Town Centres and is to be acquired by alternate mechanisms by negotiation as part of the site development. Where reasonable, construction costs are included within this Contributions Plan.

**Figure 5.2: Sites with Land Targeted under the Ku-ring-gai Town Centres DCP**

Suburb	Address	Purpose	Area (m <sup>2</sup> ) <sup>183</sup>
Gordon	6 Dumaresq Street	New public road between Dumaresq Street and Moree Street	1,080
Gordon	7 Moree Street		
Gordon	880-916 Pacific Hwy	Widening of Fitzsimmons Lane	760
Gordon	737-795 Pacific Hwy	Wade Lane road widening	830
Lindfield	321-329 Pacific Hwy and 1-5 Tryon Road	New laneway	240
Lindfield	358-374 Pacific Hwy	Bent Street widening	180
Lindfield	302-356 Pacific Hwy	Woodford Lane widening	680
Lindfield	23-25 Lindfield Avenue & 2 Kochia Lane	Kochia Lane widening	190
Lindfield	2 Kochia Lane, 27-31 Lindfield Avenue & 9 Havilah Lane	Havilah Lane widening	120
Pymble	67-81 Grandview Street	Alma Street road widening	114
Pymble	85-89 Grandview Street	Alma Street road widening	54
Pymble	939-985 Pacific Hwy	Widening of Pacific Hwy	650

<sup>182</sup> For further information on the generic land values utilised in this Contributions Plan, please refer to 3.8 Land Values for the Acquisition of New Open Space noting the targeted roads generally have the same proximity to the town centres as the targeted open space.

<sup>183</sup> These roads and streets are expected to be developed as works in kind on a larger development site with the result that there is no imperative for the Contributions Plan to consider the possibility of residual land.

Suburb	Address	Purpose	Area (m <sup>2</sup> ) <sup>183</sup>
Roseville	37-41 Hill Street	Extension of existing lane	96
Roseville	25-35 Hill Street & 1,3,5 Lord Street	Extension of existing lane	210
Roseville	19-23 Hill Street	Extension of existing lane	102
St Ives	213-237 Mona Vale Rd	Widening and extension of existing lane and footpath widening	750
St Ives	166-188 Mona Vale Rd	Widening of Pacific Hwy and footpaths	1,150
St Ives	190-200 Mona Vale Rd	Widening of Pacific Hwy and footpaths	330
St Ives	2 Memorial Avenue	Footpath Widening	40
St Ives	15-17 Stanley Street	Footpath widening	75
Turramurra	1301-1333 Pacific Hwy	New public road with footpaths and on street parking	202
Turramurra	1 Ray Street	New public road with footpaths and on street parking	272
Turramurra	1380-1388 Pacific Hwy	New public road	495
Turramurra	1293-1333 Pacific Hwy	Widening of Pacific Highway	462
Turramurra	17-21 Rohini Street & 1251-1267 Pacific Hwy	Gilroy Lane widening	295
Turramurra	27-39 Rohini Street	Gilroy Road widening	205
Turramurra	1364-1378 & 1390-1396 Pacific Hwy	Widening of Pacific Highway	255
<b>Total</b>			<b>9,837</b>

### 5.6.3 Apportionment for New Streets and Modifications to Existing Streets

New streets are 100% apportioned to all the anticipated additional development in the town centres (both residential and commercial) and based on the anticipated trip generation from each type of development. In this context it is emphasised that none of this work would be required but for the intensity of development around the town centres and the proposed work is essential to the functionality of the town centres. The NSW Roads and Traffic Authority in its commentary on the then draft *Ku-ring-gai Local Environmental Plan (Town Centres) 2008* as exhibited has generally supported these proposed works as noted in the preceding sections.<sup>184</sup>

It is important in supporting developers to undertake works-in-kind and to facilitate a rolling works programme that there is established, within the Contributions Plan, a balance between works which are partly apportioned and works which are wholly apportioned based on site and development characteristics. In this context, the majority of new roads are physically located on anticipated development sites. Artificially apportioning works that are fairly and reasonably wholly attributed to an incoming population can actually inhibit both the timely delivery of the works programme and the capacity for developers to undertake land dedication and works-in-kind because of the fiscal constraints on the council co-contribution. This is unreasonable and impractical - and potentially disadvantages a number of larger developers which, ultimately, would disadvantage the community as a whole.

Modifications to existing streets to facilitate traffic flow are similarly apportioned to both residential and commercial development. Many are 100% apportioned but not all.

<sup>184</sup> Following the completion of the exhibition draft of this Contributions Plan, a consultation draft of new Guidelines for the preparation and administration of development contributions plans was provided by the Department of Planning for comment. In determining the appropriate type of apportionment, five key questions should be asked of which the first is: If the anticipated development did not occur, would this community infrastructure be required? In respect of these new roads, the answer is that they would not.

The degree of apportionment relates directly to the present level of service and whether any additional improvement beyond the maintenance of the present level of service is anticipated. Further detailed on intersection apportionment appears at **5.5 Apportionment for Local Roads: Intersection Treatments** above.

#### 5.6.4 Apportionment by Trip Generation

The apportionment of works to local streets and intersections is related to the expected traffic demand arising from different types of dwellings and from commercial floorspace. This plan utilises the following assumptions with respect to trip generation<sup>185</sup>:

**Figure 5.3: Trip Generation by land use**

Development Type	Trip Generation (peak hour vehicle trips per hour)
Bedsits / studios / single bed dwelling units	0.40
2 bedroom dwelling units	0.50
3+ bedroom dwelling units	0.65
Dwelling Houses (credits)	0.85
Seniors Living dwellings	0.45
Non-Private dwellings <sup>186</sup>	0.00
Retail floorspace (per 100m <sup>2</sup> GLFA)	4.60
Business floorspace (per 100m <sup>2</sup> GFA)	2.00

The relative demands arising from each type of development is used to apportion the specific works which address this demand between each type of development depending on the relative proportion of the demand directly attributable.

#### 5.6.5 Policy for the Treatment of Residual Acquired Land

Unlike land for the provision of additional open space where the entire property is required for the park, in the case of new roads there will, in most cases, be residual land from the property to be acquired that is not an essential component of the road reservation. These areas vary in size averaging around 250m<sup>2</sup> but all are characteristically long and narrow. The options for treatment of this land are as follows:

**On-sale to the adjoining property owner** – in this case there is only one realistic purchaser and that purchaser is likely to be a developer of the adjoining site(s). The possibility of achieving fair market value in the case where there is only one possible purchaser cannot be guaranteed at the time of drafting accordingly Ku-ring-gai Council regards the acquisition of the whole property from development contributions as reasonable in the circumstances.

**Use for another community purpose valued by the Contributions Plan** – it is also possible that this land could become a linear park, rest area or civic space enhancing the public domain and adding to the separation between the new road and the adjoining property.

<sup>185</sup> Source: RTA Guidelines for Traffic Generating Development.

<sup>186</sup> The majority of non-private dwellings in Ku-ring-gai are either accommodation for the frail aged, boarding schools, children's or youth facilities, and/or co-located with places of employment leading to a negligible impact when compared to self contained dwellings and business centres. The majority are also located remote from the town centres and are unlikely to generate a measurable contribution to the peak hour trips around the town centres.

Both options generate legal concerns for the appropriate use of land acquired through the expenditure of contributions levied for the purpose of enhancing local accessibility.

Accordingly, this Contributions Plan stipulates Ku-ring-gai Council's policy with respect to the treatment of this residual land.

In the event a fair market value price *can* be agreed with an adjoining purchaser, then any money paid for the purchase of that land shall be returned to the contributions reserves for this category and directed towards those works which are important but which had to be deleted from the works programme to this Contributions Plan in order to maintain a reasonable contribution rate. A list of these works can be found at **5.13 Facilities not included in this Contributions Plan.**

In the event a fair market value *cannot* be agreed with the adjoining land owner, Council will retain this land for the purposes of a linear park and the reserves for local open space acquisition shall reimburse the reserves for local roads. That income shall, as in the case above, be directed towards those works which are important but which had to be deleted from the works programme to this Contributions Plan in order to maintain a reasonable contribution rate. A list of these works can be found at **5.13 Facilities not included in this Contributions Plan.**

## 5.7 Local Roads: Nexus for Streetscape and the Public Domain

A key aspect of the planning vision for each of the town centres in Ku-ring-gai is the development of higher density housing and commercial premises in a more dense urban form than is characteristic of Ku-ring-gai. This represents a significant change from the large private gardens that predominate in Ku-ring-gai. To mitigate this impact and to create a good quality urban amenity, works are proposed to the public domain within the road reservation (i.e. outside the private property boundaries).

### 5.7.1 Key role of the public domain

Key support for the nexus between intensifying development and works to the public domain is found in the NSW Government's Draft North Subregional Strategy:

"In addition to parks and sports grounds, public places also comprise other aspects of the public domain such as urban civic space such as town squares, widened footpaths and boulevards. Ku-ring-gai Council is working towards developing new civic spaces through the progression of an LEP for six of their centres."<sup>187</sup>

Recent new development has targeted a significant market segment of down-sizing retirees seeking to remain in the area post-retirement but in a smaller, low-maintenance dwelling unit. The key alternate apartment market in Ku-ring-gai is the young to middle adult market with or without children. This demographic also coincides with people who may have grown up in the area but are unable to afford larger free-standing homes in the area yet wish to be close to family and ageing parents. To both these markets, the environment of the development is particularly important.

It must be noted that this Contributions Plan does not include all the public domain improvements works considered desirable for a high quality urban environment but

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<sup>187</sup> North Subregion: Draft Subregional Strategy Page 92

not all works could be included due to the necessity of maintaining a reasonable contribution rate.

Streetscape works in the public domain include paving, street trees, street furniture and lighting. In key town centre areas, the estimated capital cost also includes the undergrounding of the power lines.

The Metropolitan Strategy outlines some key aspects of successful centres as:

- Accessible and pedestrian friendly;
- Providing good public transport options;
- Containing high-level jobs, learning opportunities and cultural activities; and
- Having attractive and safe public domain spaces.<sup>188</sup>

The first and fourth dot points and the facilitation of access to the public transport identified in the second dot point together underline the importance of the quality of the public domain to the successful function and economic life of the town centres.

In this context it should also be noted that the new development is located to take maximum advantage of the location of public transport and core services which, in turn, demands the facilitation of access to these facilities.

The design of the public domain also facilitates outdoor cultural events, festivals and fairs which, in turn, help build a sense of community. The vitality of these centres is essential to support the continued attractiveness and economic sustainability of the higher density development in and around them. Ku-ring-gai Council will be continuing and expanding its commitment to good economic development through its *Draft Economic Development Strategy 2009* currently under preparation and review. Ku-ring-gai Council now takes, and will continue to take, an integrated approach to all strategic planning.

Lastly it must be noted that the total amount of targeted new local open space has been substantially reduced from an average of 4.37m<sup>2</sup>-5.82m<sup>2</sup>/capita in past contributions plans to 2.75m<sup>2</sup>/capita inclusive of new civic spaces. The role of the public domain as an additional urban passive recreation space compensating to some degree the under-provision of local open space, should not be underestimated. The use of the street for passive recreation is well documented in other urban centres in Sydney featuring intensive residential and mixed residential-commercial development such as Green Square and Chatswood.

## 5.7.2 Additional roles of the public domain

Research carried out by Elton Consulting for the *Community Facilities Strategy* also demonstrated support for the design of the public domain in contributing towards the future community needs of the area.

For example, some of the needs of the significant youth population can be met by a well-designed, safe and inclusive public domain which welcomes, rather than discourages, young people to meet and gather in public places such as public squares. As new public spaces are created, it will be important that attention is given to ways in which they can help to meet the social needs of young people. Such provision

mitigates the need to provide more space in buildings, which are generally more costly to provide.<sup>189</sup>

It is not only the needs of youth for recreational and meeting space that can be met by the public domain. It is characteristic of urban centres that the street themselves, become a recreational and leisure resource. The *Metropolitan Strategy for Sydney* notes that walking for exercise is the most popular form of physical activity among people in NSW with some 21% of people participating.<sup>190</sup>

In this context the demarcation between the functions of the lineal works to the public domain that comprise streetscape improvements to the pedestrian area of the street as 'transport' or 'leisure' becomes blurred. In fact, streetscapes in urban centres fulfil both roles. Additionally, the recent post-occupancy surveys undertaken for the Community Facilities Strategy by Elton Consulting noted that there is already an emergent demand for civic improvements within the community emphasising a need for non-commercial spaces for informal meeting and social interaction.<sup>191</sup>

In summary, given concentration of new development around the town centres in an increasingly urban setting, the role of the proposed townscape works in off-setting the significant discounting of the proposed new local parkland acquisition should not be under-estimated. The streetscape and public domain works programme will be critical in mitigating the impact of the reduction in proposed per capita open space.

### 5.7.3 Design principles for the public domain

While the financing package for works to the public domain draws on a combination of methods, and not all works can be the subject of development contributions, the design principles as a whole for each town centre are also important in establishing the vision that is intended to ensure that the intensive development surrounding each centre is accommodated in a public domain that contributes to a vibrant community.

The design approach for the public domain for the Ku-ring-gai town centres is based on developing an urban and landscape design strategy which aims to provide environmental, aesthetic, cultural, social and economic benefits to each of the town centres and the greater community. The design principles aim to recognise, reinforce and enhance the overall character of Ku-ring-gai creating a consistent public domain image which focuses on the creation of stimulating outdoor spaces and successful pedestrian circulation. The design for the public domain needs to be high quality unifying future development and encouraging economic and physical vitality within the centres.

The urban and landscape design principles for the public domain include town centre identity, streetscape and interface design, the rationalisation and treatment of pedestrian spaces, routes and access points, the design of paving, lighting, street furniture and soft landscape and the integration of public artwork and community elements.

The public domain needs to accommodate space for all users, commercial, residential and visitors alike. Design needs to cater for the two dominant stage-of-life cohorts in Ku-ring-gai: young high-school aged people and older people, most particularly as the

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<sup>189</sup> Elton Consulting *Community Facilities Strategy, June 2009*; Page 73

<sup>190</sup> NSW Government: *Metropolitan Strategy for Sydney (2005)*; Page 39

<sup>191</sup> Elton Consulting *Community Facilities Strategy, June 2009*; Page 28

dominance of both age-groups are likely to be sustained directly and indirectly by new development.

*Ku-ring-gai Public Domain Plan 2010* identifies design objectives, strategies, function and quality for each town centre. Subtle differentiations in design elements provide opportunity to give each town centre its own identity and special character. This may be specifically the case around the heritage precincts and conservation areas. Through the selection of design elements and materials a clear hierarchy and street character is created within each centre reflecting the location and function of each street and precinct. Cost estimates allow for streetscape elements including paving, furniture and lighting to be chosen for their quality, durability, sustainability, accessibility and minimal maintenance.

A palette of visually strong urban elements will identify the town centre precincts along the two main roads being the Pacific Highway and Mona Vale Road. High quality large format unit pavers, street furniture, lighting and underground power together with street trees will reflect the scale and character of the main road and commercial/retail precincts.

The town centre streets and civic spaces provide the main areas for cafés and public life adjacent to the retail and commercial developments. The proposed public domain treatment will reflect the smaller scale streets and places with finer smaller scaled elements, seats trees and high quality pavements. Where possible, power will be underground and good pedestrian lighting will encourage outdoor dining and night life. Street trees will include species to identify each town centre precinct and will be selected for solar amenity, seasonal interest, wind amelioration, scale, mature size and maintenance requirements.

Laneways that connect streets, commercial precincts and open spaces will be designed for a more intimate scale. Smaller unit / interlocking pavers will be used and integrated where beneficial with storm water infiltration systems. Street trees will be incorporated where pavement widths allow together with street furniture, lighting and underground power.

#### **5.7.4 Apportionment for Works to the Streetscape and the Public Domain**

In the case of public domain works, these are required directly and specifically as a result of the intensive concentration of development that will materially change the presentation of the six designated town centres.

Ku-ring-gai is set to experience a 33.3% growth in the number of dwellings from 36,177 to 48,246. But for a few large sites elsewhere in the Local Government Area, this new growth will be almost entirely concentrated on just 6% of the land in Ku-ring-gai in six suburban centres and existing medium density zones along the Pacific Highway but outside the designated town centres (totalling less than 10% of the LGA). These town centres currently present a predominantly two-storey urban character that will transition into urban centres of five to nine storeys in height.

This proposal represents a significant change in urban form which justifies the consequential changes to the public domain being wholly attributed to this growth. These existing centres will simply not be economically or physically sustainable without this works programme. For development of this scale to succeed, let alone be done well, public domain works are essential.

These public domain improvements therefore directly arise from this development and chiefly benefit the residents and businesses in these developments which derive a daily direct benefit from improvements quite literally right on their doorsteps. These works not only would not have been provided but for these developments – they could not have been. The integration of this Contributions Plan in its draft form into the Long Term Financial Plan demonstrated that the co-contributions Ku-ring-gai Council is committed to under this Contributions Plan are at maximum financially sustainable capacity. If further co-contribution were required, works programmes would have to be scaled back significantly potentially threatening the on-going economic viability of future quality development.

Ku-ring-gai Council has already been innovative in utilising a range of mechanisms under *Ku-ring-gai Local Environment Plan (Town Centres) 2010* and *Ku-ring-gai Development Control Plan (Town Centres) 2010* for the town centres to provide some works by other mechanisms such as transferable floorspace and design benefits. The scope of these alternative mechanisms has essentially been limited to works on sites that are, at the time of development, in private ownership. The Department of Planning expressed its opinion to Ku-ring-gai Council as part of the finalisation process of then draft *Ku-ring-gai Local Environment Plan (Town Centres) 2008* that works to the public domain should be incorporated within the development contributions system.

## 5.8 Local Roads: Cycleways

It is now increasingly accepted that Australia's urban environment faces a number of transport, health and environmental challenges and there is a consequent need to:

- provide for the safe, affordable and enjoyable movement of people and goods;
- reduce the environmental and health impacts of transport, for instance by reducing motor vehicle greenhouse gas and noise emissions;
- increase physical activity by Australian people; and
- combat rising traffic congestion, which is increasing travel times and industry costs.

In order to meet these needs, as a population, we need to reduce our dependence on the motor vehicle, provide a system that offers attractive choices for travel other than the private vehicle and increase the use of 'active transport' such as walking, cycling and public transport.<sup>192</sup>

Nexus for the provision of cycleways as well as pedestrian routes is further supported by the NSW State Government in acknowledging the relationship between land use and demand as well as the imperative of managing future transport sustainability in the urban context by facilitating alternative modes of accessibility. The Metropolitan Strategy makes particular reference to the role of cycleways and pedestrian facilities:

- ✓ Land use relationships and local infrastructure improvements will need to ensure that opportunities are provided to enable increased use of active transport particularly walking and cycling.<sup>193</sup>

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<sup>192</sup> Paraphrased from The Australian National Cycling Strategy 2005-2010; Page 4.

<sup>193</sup> North Subregion: Draft Subregional Strategy Page 44

- ✓ With better facilities and better alignment of the local walking and cycling networks with public transport routes ... many short trips currently made by car could also be made by walking or cycling.<sup>194</sup>

Cycling facilities are required as part of the range of transport options inherent in developing a balanced transport strategy for intense redevelopment centred on key transport nodes.

The opportunity to cycle is supported by a number of support facilities including line-marking and grade separation for cycle paths, and cycle storage facilities at railway stations and other key destinations.

The opportunity to establish cycling as a viable form of transport for residents of new development in and around the town centres is in the early years of the growth phase. It is challenging to retro-fit cycling facilities into the established urban environment. This challenge can only be met with a coordinated to works in the road environment and in the public domain. The provision of cycle routes, facilities for cyclists and cycle storage at key destinations are all integral parts of the works to the road environment and to the public domain.

## 5.9 Responsibilities of State and Local Government

The provision of infrastructure that facilitates access is a responsibility of both State and Local Governments. Most roads are the responsibility of Local Government to provide and maintain however some roads which serve a higher order traffic function such as 'classified' roads or arterial roads are a shared responsibility between State and Local government. There are also higher order roads where the road environment is the responsibility of State government but where the pedestrian environment along these roads may be the responsibility of the local government authority.

Public transport facilities mainly fall within the province of State Government with Local Government having some role in providing passenger amenities (bus shelters, taxi stands, kiss and ride facilities) which are the interface between the public transport and the pedestrian and, in some case, vehicular, public domain. The State Government has recently foreshadowed responsibility for the provision of transport interchange works at local railways stations, however this has not yet resulted in a firm commitment to Ku-ring-gai.

This Contributions Plan requires contributions towards the provision of local streets: access and transport facilities where these are wholly or partly the responsibility of Council to provide.

The level of contribution (that is, apportionment factor) for individual access and transport facilities included in this Plan has been determined with regard to both:

- whether Council or the State Government has a key responsibility to provide the facility; and
- the level of demand generated by the expected development.

In the interests of clarity: the Pacific Highway, Mona Vale Road, Ryde Road and Boundary Street are all classified roads.

<sup>194</sup> North Subregion: Draft Subregional Strategy Page 70

Ku-ring-gai Council has liaised extensively with the NSW State Government Roads and Traffic Authority concerning the provision of treatments at intersections with State roads such as the Pacific Highway. The RTA has advised:

“It should be noted that the proposed changes were made necessary primarily due to the increase in traffic demand from the proposed redevelopment of the two town centres. It is therefore reasonable to expect these improvements to be funded, fully or partially, by developer contributions including through S94 Contributions.”<sup>195</sup>

It is clear that, in order to achieve these works in a reasonable time commensurate with the increase demand that these works need to be proportionally funded by the cumulative development that generates the demand for the works.

## 5.10 Works required by Conditions of Consent

A range of access and transport works are not appropriately addressed within a Contributions Plan because they have a key direct relationship with one particular development rather than arising from cumulative smaller-scale development. Such works may be required by Ku-ring-gai Council to be undertaken directly by the developer as conditions of consent under section 80A(1)(f) of the *Environmental Planning and Assessment Act*. The type of works, the demand for which is considered to be specifically generated by individual developments in the Ku-ring-gai town centres may include:

- access driveways, local access roads, footpaths and street tree planting not addressed by this Contributions Plan and located within or in immediate proximity to proposed developments; and
- traffic management devices and treatments on local roads not addressed by this Contributions Plan (both temporary and permanent) which are required in order to provide safe, efficient and convenient access to the development.

## 5.11 Formulae: Local roads, Local bus infrastructure and Local drainage

The contributions for the works programme for the category of Key Community Infrastructure that includes local roads, local bus infrastructure and local drainage (in the road reservation) are determined in two different ways depending on whether the demand is generated per capita or as a result of increased traffic generation. While these totals could have been added to derive a total contribution rate for this category, in the interests of clarity they have been calculated and listed separately in the contributions rates schedules at the front of this document.

### 5.11.1 Formulae: Works in the road environment

The total contribution payable is the sum of all these contributions as they apply to the individual development.

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<sup>195</sup> Letter from the Roads and Traffic Authority in relation to the s62 notification for Roseville and Lindfield Town Centres originally dated 23 February 2007 and reiterated 24 October 2008.

<b>Contribution for Works in the Road Environment</b>	=	<b>Contribution for new local roads: calculated as Works Cost / Proportional Contribution to Trip Generation by Centre</b>	+	<b>Contribution for intersection upgrades and road modifications: calculated as Works Cost / Proportional Contribution to Trip Generation by Centre</b>
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The components of this general formula are derived from the land use analysis in the table below. **Note:** Due to the complexity of the calculation which apportions the contribution across all types of development based on the respective proportional contributions towards the total additional traffic generation by centre, contributions for each type of dwelling unit, gross lettable retail area and gross commercial floorspace have been separately calculated in the works programmes by centre. The total contribution rate by type of development by centre is stated in the contributions schedules at the front of this document.

**Figure 5.4: Trip Generation by Land Use by Town Centre**

Area	Town Centre Data	Residential				Commercial	
		1 bedroom & below	2 bedrooms	3+ bedrooms	Seniors Living	Retail	Business
<b>St Ives</b>	3,104	9.23%	45.97%	39.80%	5.00%	70%	30%
St Ives Unit Mix (#) / Floorspace Mix (m <sup>2</sup> )	3,104	286	1427	1236	155	12,533.3	7,161.9
St Ives Trip Generation	2,421	115	713	803	70	577	143
Total %	100%	5%	29%	33%	3%	24%	6%
<b>Turramurra</b>	2,680	9.23%	45.97%	39.80%	5.00%	80%	20%
Turramurra Unit Mix (#) / Floorspace Mix (m <sup>2</sup> )	2,680	247	1232	1067	134	4,932.6	1,644.2
Turramurra Trip Generation	1,728	99	616	693	60	227	33
Total %	100%	6%	36%	40%	3%	13%	2%
<b>Pymble</b>	1,523	9.23%	45.97%	39.80%	5.00%	65%	35%
Pymble Unit Mix (#) / Floorspace Mix (m <sup>2</sup> )	1,523	141	700	606	76	1,169.0	39,282.3
Pymble Trip Generation	1,674	56	350	394	34	54	786
Total %	100%	3%	21%	24%	2%	3%	47%
<b>Gordon</b>	4,226	9.23%	45.97%	39.80%	5.00%	40%	60%
Gordon Unit Mix (#) / Floorspace Mix (m <sup>2</sup> )	4,226	390	1943	1682	211	11,467.5	22,935.0
Gordon Trip Generation	3,302	156	971	1093	95	528	459
Total %	100%	5%	29%	33%	3%	16%	14%
<b>Lindfield</b>	3,194	9.23%	45.97%	39.80%	5.00%	65%	35%
Lindfield Unit Mix (#) / Floorspace Mix (m <sup>2</sup> )	3,194	295	1468	1271	160	5,696.9	4,090.1
Lindfield Trip Generation	2,094	118	734	826	72	262	82
Total %	100%	6%	35%	39%	3%	13%	4%
<b>Roseville</b>	1,481	9.23%	45.97%	39.80%	5.00%	70%	30%
Roseville Unit Mix (#) / Floorspace Mix (m <sup>2</sup> )	1,481	137	681	590	74	893.0	510.3
Roseville Trip Generation	863	55	340	383	33	41	10
Total %	100%	6%	39%	44%	4%	5%	1%

### 5.11.2 Formulae: Works to the pedestrian environment, local transport infrastructure, streetscape and the public domain

The following formulae are used to calculate the contribution rate per person. Rates for various types of dwelling (including subdivision) are based on the occupancy rates in **2.10 Residential Occupancy Rates**. For ease of reference, all the contribution rates are listed in the summary schedules at the front of this document.

The per capita contribution rate is the sum of all individual contribution rates derived from the formula below:

$$\text{Contribution per work per capita} = \frac{\text{Works Item Cost}}{\text{Contributing Population}}$$

The contributing population establishes the apportionment and is specifically listed against each work in the works programmes at the end of this document as follows:

For works attributed to the total 2031 population: 126,151<sup>196</sup>  
For works attributed to new growth in the Ku-ring-gai LGA: 21,048  
For works attributed to new growth in the Northern area: 10,954  
For works attributed to new growth in the Southern area: 10,094  
For works attributed to new development in Gordon: 4,226  
For works attributed to new development in Lindfield: 3,194  
For works attributed to new development in Roseville: 1,481  
For works attributed to new development in St Ives: 3,104  
For works attributed to new development in Turramurra: 2,680  
For works attributed to new development in Pymble: 1,523  
For works attributed to new development in Wahroonga: 1,529

## 5.12 Facilities not included in this Contributions Plan

There are many works which should be provided as part of the new development in Ku-ring-gai which have been excluded from this Contributions Plan in the interests of maintaining a reasonable contribution rate.

It is also recognised that, in the case of works to the transport network, more than any other work, there is opportunity for assistance from the State or Federal Government which may arise without warning after the adoption of this Contributions Plan. A recent example is the offer of State Government funding for transport interchanges at railway stations which resulted in the removal of these works programme items from the future works programme. Additionally, there is scope for some additional works to be funded arising from the essential land acquisition programme detailed in **5.3 Local Roads: New Streets**.

For these reasons, this section details an additional works programme which consists of works which are considered important to the functionality of the town centres and are justifiable under nexus requirements but which cannot be incorporated in this Contributions Plan in the interests of achieving a reasonable contribution rate. These are works which Ku-ring-gai Council aims to fund through general revenue and/or through grant money. Alternatively, in the event that any works that are included within the Local Roads area are funded by an alternate mechanism, or if additional

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<sup>196</sup> This division ensures that there will be a significant deemed contribution payable by Ku-ring-gai Council on behalf of the existing population.

funding is generated as part of the process of managing and implementing the works programmes, then these works will be instigated as a first priority.

The key works deleted from this Contributions Plans in the interests of maintaining a reasonable contribution rate are as follows:

### All Town Centres

- ✂ All works associated with new footpaths and verges beyond the immediate commercial areas into areas of high density residential development;
- ✂ Some higher quality works to the town centres public domain – in particular the replacement of granite pavers with polished concrete;
- ✂ Some street planting beyond the key commercial areas of the town centres;
- ✂ Works associated with relocating overhead powerlines in some streets within the town centres;
- ✂ Aerial bundling of powerlines in commercial streets in the town centres;<sup>197</sup>
- ✂ Aerial bundling of powerlines in residential streets around the town centres; and
- ✂ Undergrounding of car parks for the provision of additional civic spaces.
- ✂ Additionally, the scope and extent of proposed street lighting and the associated undergrounding of powerlines has been truncated in most town centres. Extension as originally proposed and exhibited is also considered prime work for the expenditure of any additional funding.

### Gordon

- ✂ Moree Street works to provide an additional civic area;
- ✂ One new street between Moree Street and Dumaresq Street;
- ✂ One new pedestrian way between Pacific Highway and Fitzsimmon Lane; and
- ✂ Streetscape works involving permeable pavers and stormwater harvesting.

### Lindfield

- ✂ Widening of the railway overpass on Havilah Road, near Pacific Highway, including improved pedestrian provision;
- ✂ Construction of a new pedestrian link from Woodside Road to Havilah Road; and
- ✂ Construction of a new pedestrian lane between Pacific Highway and Woodford Lane.

### Pymble

- ✂ Widening of the Pacific Highway at Pymble railway bridge;
- ✂ Streetscape works involving permeable pavers and stormwater harvesting;
- ✂ Additional civic areas alongside Pymble Town Hall;
- ✂ Pedestrian accessways in the town centre;
- ✂ New off-road cycleway from Telegraph Road to Station Street; and
- ✂ Improved pedestrian facilities linking the Pymble Business Park with Pymble Town Centre.

<sup>197</sup> This line item was deleted from the town centres works programme following exhibition and is considered first priority for expenditure of any additional funding.

### **Roseville**

- ✂ Realignment of Clanville Road with Shirley Road by constructing new bridge over railway and modifying intersection and traffic signals to accommodate new layout;
- ✂ Improvement of pedestrian access over the new bridge by providing widened footpaths; and
- ✂ Widening and upgrading of the existing pedestrian laneway (Sixth Mile).

### **St Ives**

- ✂ Modifications to intersection Mona Vale Road and Link Road to provide dedicated right turn bays from Mona Vale Road (south-westerly) to Link Road (north-easterly);
- ✂ Associated modifications to Killeaton Street between Link Road and Mona Vale Road, to take into account above changes; and
- ✂ Modifications to Cowan Road (at intersection of Mona Vale Road), to provide additional capacity.

### **Turramurra**

- ✂ Provision of a new roundabout at intersection Rohini Street and Eastern Road;
- ✂ Widening of the Pacific Highway bridge over railway line to improve pedestrian and bicycle access and circulation;
- ✂ New lighting in Duff Street; and
- ✂ Construction and embellishment of a pedestrian way between Turramurra Avenue and Turramurra Green.

These works will be given first priority in the event alternative or additional funding is received for any of the works which are listed in the works programmes.

## **5.13 Local Roads and Local Bus Infrastructure - Support**

A budget of 1.25% of the total capital works programme for Local Roads and Local Bus Facilities has been allocated to future studies the primary purpose of which is to support the review and implementation of this Contributions Plan as well as the cost of administering and managing this Contributions Plan through the employment of a specialist coordinator. This cost is shared across each type of Key Community Infrastructure.

Further justification of the need for this inclusion is spelled out in **2.6.6 Management, Studies and Administration**.

## **5.14 Concluding Statement – Statement of Reasonableness**

Ku-ring-gai Council has taken the approach that new development should provide for the improvements that are essential to ensure that the status quo with respect to all aspects of accessibility is not diminished by the fact of intense and concentrated development. This includes works which maintain the current level of service of an existing intersection.

Where these facilities also provide a direct benefit to others these are apportioned to the population as a whole. This apportionment process results in Ku-ring-gai Council

bearing a significant co-contribution on behalf of the existing population. The benefits of intersection works have been assessed individually to ensure that development only pays its fair share in each particular case. In the few cases where the intersections works will deliver a greater benefit than the maintenance of the pre-development phase level of services, those works have been duly discounted.

In the case of public domain works, these are required directly and specifically as a result of the intensive concentration of development that will materially change the presentation of the six designated town centres. Ku-ring-gai is experiencing a 33.3% growth in the number of dwellings from 36,177 at the start of this development phase to a total of 48,246. These new dwellings will be almost entirely concentrated in suburban town centres whose current urban form is that of predominantly two-storey development in the form of late-Victorian and early 20th-century terrace shopping strips. These town centres, comprising less than 10% of the land area in the Ku-ring-gai Local Government Area, will become urban centres featuring development of five to nine storeys. This development represents a significant change in urban form which wholly justifies the consequential changes to the public domain being fully attributed directly to this growth. The existing local centres will simply not be economically or physically sustainable without this proposed works programme.

The proposed public domain improvements directly arise from this development and chiefly benefit the residents and businesses in these developments which derive a daily direct benefit from improvements right on their doorsteps. The role of public domain works (as a passive recreational resource) in mitigating the impact of substantially discounted rates of provision of new local parks should also not be underestimated.

It is emphasised that these works would not have been provided but for these developments. It is emphasised that this scale of redevelopment will not be economically, physically or environmentally sustainable but for these works. It is emphasised that Ku-ring-gai Council cannot subsidise the provision of these works beyond the shortfall arising from development that received consent prior to the 'in force' date of *Ku-ring-gai Town Centres Development Contributions Plan 2008 which was the first plan to levy contributions towards works to the public domain in the six designated town centres.*

Ku-ring-gai Council has liaised with the departmental staff supporting the Contributions Review Panel and the Ku-ring-gai Planning Panel on key aspects of this Contributions Plan in particular on the extent and apportionment of works to the public domain. While opinions have not always wholly coincided, Ku-ring-gai Council has taken all opinions on board and believes it has taken the only approach, in the circumstances of the case, that will achieve the town centre works which it has demonstrated in this Contributions Plan to be essential to support economically sustainable development in each of the town centres – within a reasonable time.