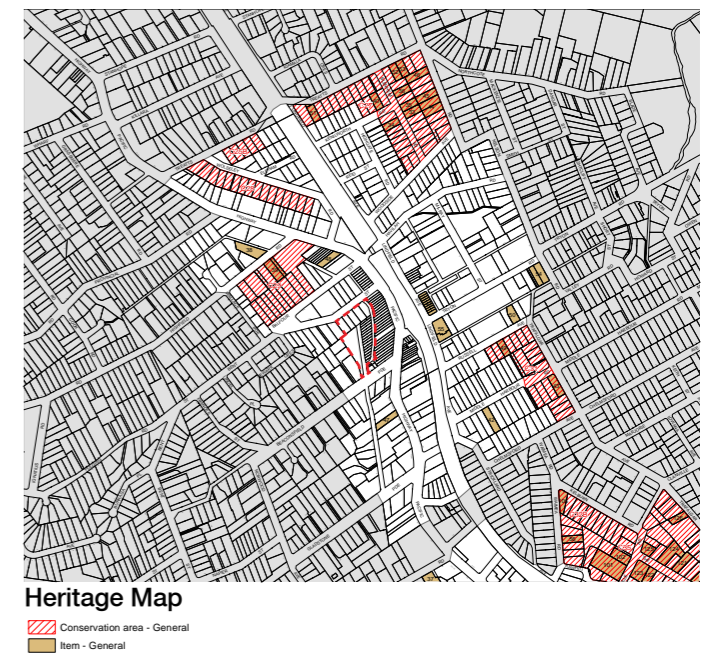
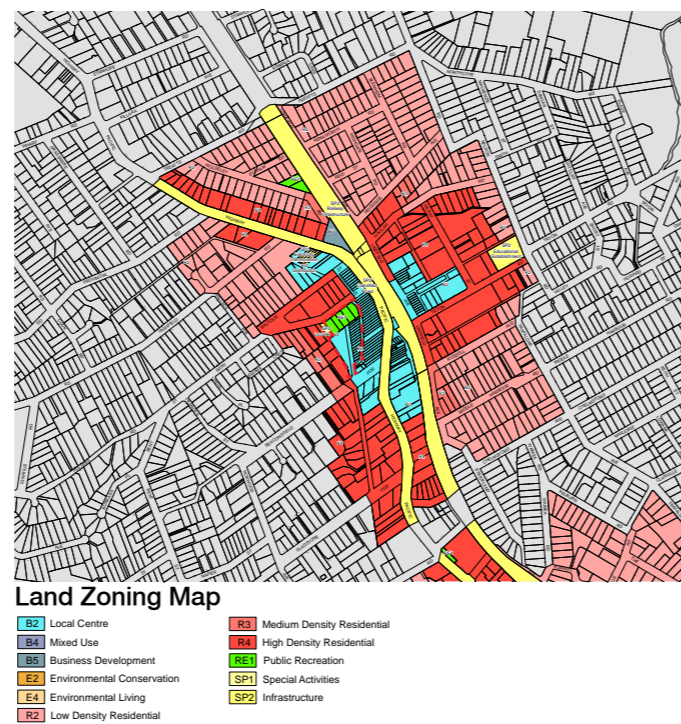
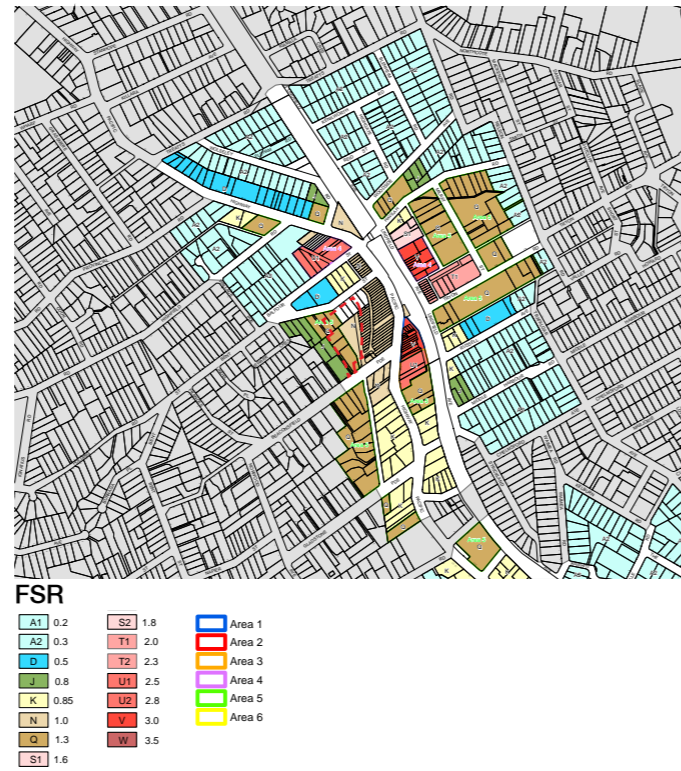


Appendix D: Background Documents Review

10.1 Ku-ring-gai Council Local Environmental Plan, 2012

In accordance with the 2012 LEP, the study site falls under the following controls:

- Floor Space Ratio of 1:1
- The site has areas of biodiversity significance
- Maximum building height of 11.5m
- Does not have any items of heritage or conservation
- Zoned predominantly as a Local Centre with the north of the site zoned as Public Recreation and a section of Infrastructure for a new road.



10.2 Ku-ring-gai Local Centres Development Control Plan, 2013

The Development Control Plan establishes a framework for future development in the Ku-ring-gai local centres and provides more detailed guidance to facilitate the aims and objectives in the KLEP (Local Centres) 2012, in addition to those controls outlined in the LEP. As part of the Baseline Review the following sections have been identified as being relevant to the Lindfield Community Hub:

- Volume A Part 8: Mixed Use Development
- Volume A Part 13: Tree and Vegetation Preservation Controls
- Volume B Part 1E: Lindfield Local Centre
- Volume B Part 6: Biodiversity Controls
- Volume B Part 8: Development Near Road or Rail Noise
- Volume C Part 1: Site Design
- Volume C: Part 2 Access and Parking
- Volume C Part 4: Water Management Controls

A full summary of the DCP is outlined in Appendix 2 of this report.

Volume A:

8A: Mixed Use Development Controls

8A.2 Building Separation:

- The minimum separation between a residential building and any neighbouring building either on the development site or on adjoining sites must comply with the following controls:
 - Buildings up to 4 storeys over the podium:
 - 12m between habitable rooms/balconies;
 - 9m between habitable rooms/balconies and non-habitable rooms;
 - 6m between non-habitable rooms.
 - Buildings of 5 to 8 storeys over the podium
 - 18m between habitable rooms / balconies;
 - 13m between habitable room / balcony and non habitable room;
 - 9m between non-habitable rooms.

8B.1 Vehicle and Service Access and Loading Facilities

Vehicle Access:

- Vehicle access points must not be located along principal active street frontages unless otherwise specified
- All developments must provide a shared vehicle entry/exit point for different uses (eg. retail, commercial and residential).
- Residential parking must be secure and separate from retail/commercial parking.

Service Access:

- On-site service vehicle access must be provided and designed in accordance with the following:
 - the driveway is to be designed such that service vehicle movement is in a forward direction, both when entering and exiting the site;
 - on-site manoeuvrability must be unimpeded for all site users.
- Generally service vehicle access is to be combined with parking access. Separate access may be required in major retail/commercial developments

Loading Facilities:

- On-site internal loading facilities must be provided for all developments with loading and unloading requirements.
- Loading docks are to be:
 - accessed via a rear lane or secondary streets where these are available, and accessible to heavy vehicles;
 - conveniently located in such a way that minimises conflict with pedestrians and other traffic; and
 - screened from the public street.
- Service vehicles turning into or out of a road or driveway must be able to complete their turning manoeuvres without crossing the centre line of the public road.

8B.2 Car Parking Provision

- All car parking areas are to be provided within the basement of a development wherever practicable.
- The basement car park areas must not project above finished ground level along the principal active street frontage.
- Separate and direct lift/stair access must be provided from basement car parks to apartments, commercial units and retail facilities.
- Multi-storey car parking above ground level may be permitted and must be housed within the building, leaving external walls for active uses
- Multi-storey above ground car parks must have a minimum floor to ceiling height of 3m to enable flexibility for a future change in use.
- The following car parking ranges apply to office, business premises and shops, where the development is within 400m of a train station and within a commercial centre:
 - Shops, including restaurants and cafes: 1 space/26m² GFA to 1 space/33m²

- The following car parking ranges apply to the residential component within mixed use developments:
 - Studio: 0-0.5 spaces
 - One bedroom: 0.6-1 space
 - Two bedrooms: 1-1.25 spaces
 - Three or more bedrooms: 2 spaces
- Visitor parking is to be provided within the site at the rate of one space per 6 apartments.

8C.1 Solar Access:

- Buildings must be oriented to optimise the northern aspect.
- At least 70% of apartments must receive a minimum of two hours direct sunlight to living rooms and adjacent private open spaces between 9am and 3pm on 21st June.
- At least 50% of the communal open space for residents' use must receive direct sunlight for at least three hours between 9am and 3pm on 21st June.
- The number of single aspect apartments with a southerly aspect (SW to SE) is limited to 10%
- All developments must allow the retention of at least three hours of sunlight between 9am and 3pm on 21st June to the living areas and the principal portion of the private and communal open space of any residential development on adjoining lots.
- Where existing overshadowing by buildings is greater than this, sunlight is not to be reduced by more than 20%.

8C.2 Natural Ventilation

Residential Component:

- At least 60% of apartments must have natural cross ventilation.

8C.4 Apartment Depth and Width

- Dual aspect apartments are to have a maximum internal plan depth of 18m from glass line to glass line.
- Single aspect apartments are to have a maximum internal plan depth of 8m from glass line to internal face of wall of habitable area.
- The width of dual aspect apartments over 15m deep must be 4m or greater to avoid deep narrow apartment layouts.

8C.5 Apartment Mix and Sizes

- A range of apartment sizes and types must be included within the development.
- Apartments are to be a minimum size (GFA) of:
 - 38.5m² for studios and one bedroom apartments;
 - 70m² for two bedroom apartments;
 - 95m² for three bedroom apartments.

8C.7 Building Entries

- Buildings must address the street with main entrances to lift lobbies directly accessible and visible from the street.
- Entries and lobbies to apartments are to be separated from commercial entries

8C.9 Roof Forms and Podiums

- The upper storeys of mixed use buildings must be articulated with differentiated roof forms
- Roof design must respond to solar access
- The incorporation of green roofs or green podiums is encouraged.

8C.10 Communal Open Space

- A minimum of 10m² of communal open space per dwelling must be provided. This can be provided on the podium or roof area.
- Where mixed use development includes a residential component, the development must provide at least one single parcel of communal open space with the following requirements:
 - a minimum area of 80m²; and
 - a minimum dimension of 8m; and
 - access to direct sunlight for at least two hours between 9am and 3pm on 21st June, to at least 50% of the space.
- The location and design of communal open space must optimise opportunities for social and recreation activities, solar access and orientation, summer shade, outlook and the privacy of residents on adjoining sites.

8C.11 Private Open Space

- Ground and podium level apartments are to have a private outdoor courtyard/terrace with a minimum area (internal dimension) of 25m².
- All apartments that are not at ground or podium level are to include private open space with a minimum area of:
 - 10m² for each one bedroom apartment;
 - 12m² for each two bedroom apartment; and
 - 15m² for each apartment with three or more bedrooms.
- The primary private open space must have a minimum dimension of 2.4m and have direct access from main living areas.

10.2.1 Ku-ring-gai Local Centres Development Control Plan, 2013

8C.12 Building Façades

- In B2 zones mixed use buildings are to establish a consistent street wall facade along the Pacific Highway frontage, especially along retail strips.
- The continuous length of a residential building over the podium facing the street or the public domain must not exceed 36m.

8C.14 Ground Floor Shopfronts

- Buildings on principal active street frontages must:
 - support a mix of activities, including after hour activities;
 - avoid the incorporation of vehicle access points; and
 - not have projecting basements.
- Buildings on supporting active street frontages must:
 - support dispersed pedestrian-oriented activities with well articulated entrances;

8C.16 Colonnades

- All colonnade spaces must be within the property boundary.
- Colonnades are to have a height/width ratio no less than 1.5:1, a minimum width of 2.4m, and a minimum soffit height of 3.6m.

8C.17 Internal Ceiling Heights

- For all new buildings in the B2 Local Centre zone, the minimum ceiling heights, measured from FFL to FCL, are to be:
 - 3.3m for ground floor retail or commercial uses;
 - 3m for first floor commercial or residential uses;
 - 2.7m for residential use or 3m for commercial uses on all other floors

8C.18 Visual Privacy

- Buildings must be designed to ensure privacy for residents of the development and of the neighbouring site.

8C.19 Acoustic Privacy

- In particular, proposed developments are to consider the cumulative impact of the premises on the mix, diversity and possible concentration of late night uses in the locality.

8C.20 Late Night Trading

- Development for late night trading premises must be designed to minimise the impacts of noise production on nearby and adjoining premises.

Volume B

1E Lindfield Local Centre

1E.1 Local Centre Urban Precincts

Precinct L5: Lindfield Community Hub

- This precinct is located on the western side of Lindfield local centre. The area is currently occupied by a large at-grade Council car park.
- This precinct is planned to become a community hub with a range of facilities including a community centre, a new park, restaurants and cafes and a commuter car parking station.
- Major changes are proposed to the local road network to improve vehicle and pedestrian access to the area.

1E.2 Local Centre Key Community Infrastructure

- Development is to be designed to support and to compliment the provision of Key Community Infrastructure.
- A new local park on Bent Street of about 3,000sqm in size.
- A new multi-purpose community building including full internal fit out.
- Car Parking for community facilities in the basement.
- Construction of a new 12 metre wide two-way street (realigned Drovers Way) between Beaconsfield Parade and Bent Street including on-street parking.
- A new kiss-and-ride zone and taxi ranks on Woodford Lane.
- Upgrade and widening of Bent Lane and Woodford Lane including new footpaths
- Construction of a new 240 space commuter car park and a new kiss and ride area

1E.3 Local Centre Setbacks

Precinct L5: Lindfield Community Hub

- 2 metre setback to Woodford Lane, the new street (re-aligned Drovers Way) and the new park.
- The properties 4 and 8 Beaconsfield Parade and A2, 2, 4, 6, 8, 8A and 10 Drovers Way are to provide a 6m setback to Drovers Way.

1E.4 Local Centre Built Form

Precinct L5:

- Provide active street frontages to the new park.
- Provide active frontages to Woodford Lane and the new street (re-aligned Drovers Way) wherever possible.

1E.5 Local Centre Public Domain and Pedestrian Access

- Provide a new pedestrian walkway between Beaconsfield Parade and Bent Street.
- Provide a new pedestrian walkway between the new street and Woodford Lane

1E.6 Local Centre Building Entries, Car Parking and Service Access

- Vehicle and service access is to be via the new street.

6 Biodiversity Controls

This part applies to development that will have an impact on areas identified as the Greenweb in this DCP. The Greenweb identifies lands containing significant strategic biodiversity values considered important in the support of native flora, fauna and ecological processes. The study site falls under Category 3 - Landscape Remnant and Category 5 - Canopy remnant.

6.1 All Greenweb Categories

- The development must be designed and sited to conserve the area of vegetation and/or habitat of the highest ecological value on and adjacent to the site, and to minimise fragmentation and edge effects.

6.4 Category 3 - Landscape Remnant

Category 3: Key vegetation community patches that are less than or equal to 1 ha in size or contain vegetation in key vegetation communities and the mapped area in which they are located.

- Avoid locating development on land identified as Category 3 on the Greenweb map.
- Vegetation retention and rehabilitation on sites that include land identified as Category 3 must be designed to improve connectivity with existing vegetation and habitat.
- Planting within land identified as Category 3 on the Greenweb map is to consist of not less than 50% locally native species.

6.6 Category 5 - Canopy Remnants

Canopy remnants provide habitat for urban and more mobile species, species diversity and ecosystem services including maintenance of air quality, carbon storage and a sense of place. KVC vegetation less than 0.1 ha, and not in good, moderate condition.

- Retain trees identified as Category 5
- Planting within land identified as Category 5 on the

Volume C

1 Site Design

1.2 Earthworks and Slope

- Development must demonstrate consideration of site topography, drainage, soil landscapes, flora, fauna and bushfire hazard.
- Development must be accommodated within the natural slope of the land. Level changes across the site are to be primarily resolved within the building footprint.
- Existing ground level is to be maintained for a distance of 2m from any boundary.

1.3 Landscape Design

- All developments must:
 - be designed to conserve indigenous vegetation, habitat and existing natural features on the site as part of the site planning and the site layout process;
 - retain the most significant, intact and sustainable areas of vegetation;
 - retain trees that contribute to the neighbourhood character;
- Existing ground level must be maintained beneath the canopy spread of trees to be retained.

2 Access and Parking

2.2 Vehicle Access

- Car park entry and egress, for developments other than low density residential, must be provided from secondary streets or lanes where these are available.
- The width and number of vehicle access points are to be limited to minimise potential pedestrian/vehicle conflicts.
- Vehicle access driveways must be set back a minimum of 10m from street intersections
- Vehicle access must be located a minimum of 3m from pedestrian entrances.

2.3 Basement Car Parking

- The minimum height between floor level and an overhead obstruction is to be 2.2m

10.3 Ku-ring-gai Contributions Plan, 2010



Purpose

The purpose of the plan is to enable council to require a direct contribution towards the provision, extension and augmentation of key community infrastructure to support the concentrated development and project population growth around the 6 town centres of Ku-ring-gai.

The plan seeks to:

- Provide framework under which strategies for the provision of community infrastructure may be implemented and coordinated.
- Provide greater housing choices to promote affordability, increase apartments and unit and average home sizes to 3+ bedrooms
- Introduce the concept of urban design benefits to the Ku-ring-gai LEP

In addition the plan draws from the Metropolitan Strategy which outlines successful centres as:

- Accessible and pedestrian friendly
- Providing good public transport options
- Containing high-level jobs, learning opportunities and cultural activities
- Having attractive and safe public domain spaces

The Draft North Subregional Strategy has specified Ku-ring-gai's contribution to Sydney's dwelling infrastructure is to be a minimum of 10,000 dwellings by 2031 and an employment capacity for 4,500 new jobs.

Current key strategic planning issues around community infrastructure are as follows:

- Population growth and demographic change
- Opportunity for development around transport nodes
- Rectify a relatively limited choice of housing and improve housing affordability
- Respond to a significant escape of retail to neighbouring town centres such as Macquarie and Chatswood
- Support the character of Ku-ring-gai by strengthening local heritage provisions and access to parks

A greater variety of housing infrastructure has been identified as a need to allow the ageing population to downsize and for younger adults and families to inhabit larger residences. With current redevelopment plans around the town centres of Ku-ring-gai, this presents an opportunity to increase the density of housing and variety around public transport nodes.

Local Parks

The Contributions Plan seeks to maintain a reasonable proportion of the current per capita provision of local open space and public gardens.

20% of the Ku-ring-gai LGA is covered by Ku-ring-gai Chase National Park, Garigal National Park and Lane Cove National Park, 80% of total greenspace. They do not fulfil the role of local open space nor are they located near town centres.

It has been identified that it is of utmost importance to pay attention to the needs of younger and older people in meeting their needs to create a vibrant town centre which is actively used.

It is projected that there will be a 33.4% increase in dwellings by 2031 within Ku-ring-gai which will create highly urbanised town centres with increased traffic. In order to effectively respond to this issue, the following objectives have been established:

- Facilitate access within and around town centres particularly around public transport nodes and retail
- Facilitate pedestrian and vehicular access in and around Gordon maintaining its retail hierarchy
- Facilitate commuter parking on the outskirts of town centres to support public transport use.
- Spatial priority around railway transport interchanges need to be around pedestrian, buses and cyclists to encourage the utilisation of 'active' transport.

The chief mode of transport to work is by private car with only 19% of the population commuting by public transport. Vehicle demand and its impact on roads and intersections are expected to remain high.

The following are objectives specific to the Lindfield Town Centre:

- To improve north-south pedestrian connections as well as across the Pacific Highway by pedestrian bridge and through block links
- Upgrade access to the station and provide contemporary bus facilities to facilitate additional bus services
- Reduce pedestrian and vehicular conflicts within town centre through a redesign of traffic signal configurations and introduction of new roads to improve access to retail core
- Make modifications to existing streets and lanes to improve local vehicle access

Existing community facilities within Ku-ring-gai are generally old, no longer fit for purpose and are either at or close to capacity. As it stands they are not capable of meeting the demands of the projected population growth and the following have been identified as key needs for the community:

- Expand and upgrade library facilities to meet contemporary standards
- Need for quality, multi purpose space flexible for a range of activities
- Services, leisure and learning opportunities should reflect and support the generally ageing population.

The current Lindfield library is the oldest within the network with limited space and amenities, predominantly used by families with young children and older people. The North Subregional Strategy notes that cultural facilities within the region are limited and exists an opportunity to improve and consolidate facilities which are no longer fit for use.

10.3.1 Town Centres Facilities Plan, 2010 - Lindfield

In accordance with the objectives and strategies in the Kuring-gai Development Contributions Plan, the following vision for the future of Lindfield has been proposed by Council:

- New access road/lane to the west of the site with a kiss and ride zone
- Modifications to Woodford Lane to create a lively and active street
- Increased pedestrian access around the town centre and railway station to allow for accessibility and to strengthen the retail core
- Increase in bicycle parking zones as well as an improvement to bus facilities along Pacific Highway.
- Implementation of new traffic signals on Pacific Highway to better accommodate for an increase in vehicular activity.



TOWN CENTRES FACILITIES PLAN - LINDFIELD

Issued - November 2010

LOCAL ROADS

- NEW ACCESS ROADS / LANES
- MODIFICATIONS TO EXISTING ROADS AND TRAFFIC FLOW
- STREETScape IMPROVEMENTS
PAVING, STREET TREES, UNDERGROUND POWERLINES, STREET FURNITURE, LIGHTING
- NEW ROUNDABOUT
- NEW SIGNALS
- ALTERED SIGNALS
- REMOVAL OF SIGNALS
- NEW PEDESTRIAN ACTIVATED SIGNALS
- STORMWATER TREATMENT SYSTEM
- NEW TAXI RANK
- NEW KISS AND RIDE
- NEW/UPGRADED BUS STOPS
- BICYCLE PARKING AND CYCLEWAY
- PEDESTRIAN CONNECTIONS-IMPROVEMENTS TO EXISTING, OR NEW

LOCAL SOCIAL FACILITIES

- NEW AND/OR IMPROVED COMMUNITY FACILITIES

LOCAL PARKS

- EXISTING PARKS TO BE UPGRADED TO URBAN PARK STANDARD
- NEW CIVIC SPACES
- NEW URBAN PARK

10.4 Town Centres Parking Management Plan, 2010



Land Use	Parking Space Requirement
Office and business, including professional suites	1 space/33m ² GFA to 1 space/45m ² GFA Suggested split: 90% employee parking 10% visitor parking
Retail/shops, including restaurants and cafes	1 space/26m ² GFA to 1 space/33m ² GFA Suggested split: 30% employee parking 70% shopper parking
Residential:	
Studio	0- 0.5
1 bedroom	0.6 - 1.0
2 bedroom	1.0 - 1.25
3 or more bedroom	1.0 - 1.5
Visitor	1 space/6 units

Figure 1: Mixed use development

Land Use	Parking Space Requirement
Office and business, including professional suites	1 space/33m ² GFA to 1 space/45m ² GFA* Plus, 1 space if resident/manager or caretaker Plus, 1 courier space for development in excess of 200m ² GFA Suggested split: 90% employee parking 10% visitor parking
Retail	1 space/26m ² GFA to 1 space/33m ² GFA Suggested split: 30% employee parking 70% shopper parking

Figure 2: Business and office development

	Parking Space Requirement
1 bedroom	1
2 bedroom	1-1.5
3 or more bedroom	1-2
Visitor	1 space/4 units

Figure 3: Multi-dwelling housing development

The objective of the study is to develop a comprehensive plan for long term management and provision of car parking within Ku-ring-gai commercial centres and consider parking strategies in relation to land use.

The following are recommendations provided by ARUP:

- Future car parking be provided in major retail/commercial and mixed use developments
- Parking space rates should be lower in centres with good access to public transport to encourage the use of alternative modes of commuting
- Incorporate the provision of bicycle, motorcycle and scooter parking
- Create more formalised zones of 'kiss-and-ride' around railway stations
- Parking spaces can be shared by more than one user in relation to different peaks of use as shown in Figure 6
- Increase bus services during peak hours to relieve congestion and absorb some on-street parking

The plan specifies parking rate requirements for various land uses shown from Figures 1-5.

Land Use	Parking Space Requirement
Office and business	1 space/200m ² GFA (for employees) 1 space/750m ² over 1000m ² (for visitors)
Retail/shops	1 space/300m ² GFA (for employees) 1 space/500m ² over 1000m ² (for shoppers)
Residential	1 space/5 units (for residents) 1 space/10 units (for visitors)

Figure 4: Bicycle parking rate

Land Use	Minimum Rate of Provision (% of total number of parking spaces)
Retail/Commercial	1-2%
Civic/Community Centres	2-3%
Recreational Facilities	2-3%
Theatres/Entertainment Centres	3-4%
Medical Centres	3%

Figure 5: Bicycle parking rates

Weekday Peaks	Evening Peaks	Weekend Peaks
Retail	Auditoriums	Religious institutions
Medical centres	Bars and dance halls	Parks
Business/Offices	Meeting halls	Retail
Professional services	Restaurants	Restaurants/cafe
Schools	Theatres	
Medical		

Figure 6: Typical peak parking demand periods of various land uses

10.5 Town Centres Public Domain Plan, 2010



The Public Domain Plan will guide the design of streets and public spaces within and around the town centres and aims to support the delivery and implementation of an integrated and consistently high quality public realm.

The urban structure of Lindfield will be defined by two retail hubs on the eastern and western sides which will allow an opportunity for additional retail, offices and new shop top housing.

The following are the visions proposed by Ku-ring-gai Council as seen in Figure 1:

- A large town square at Kochia Lane car park as illustrated in Figure 2
- Co-located library and community facility with a village green on Woodford Lane car park site illustrated in Figure 3
- Expand and improve main strip of shops on Pacific Highway with residential apartments
- New public space on Tryon Place forming an entry forecourt to the railway station

The plan specifies to maintain cultural planting of native and exotic species and should respond to the predominant street tree type. The significant canopy trees on Drovers Way should be incorporated and retained.



KEY

	SECTION LINES
AA	- REFER TO PART 2E.4.1 (p2-206)
BB	- REFER TO PART 2E.4.2 (p2-207)
CC	- REFER TO PART 2E.4.3 (p2-208)
DD	- REFER TO PART 2E.4.4 (p2-209)
EE	- REFER TO PART 2E.4.1 (p2-210)
FF	- REFER TO PART 2E.4.2 (p2-211)
GG	- REFER TO PART 2E.4.3 (p2-212)
	STREET TREES REFER TO PART 2E.2.3 (p2-184)
	PARKS AND PUBLIC OPEN SPACE
	CIVIC AND URBAN PUBLIC DOMAIN

Figure 1: Lindfield town centre concept plan

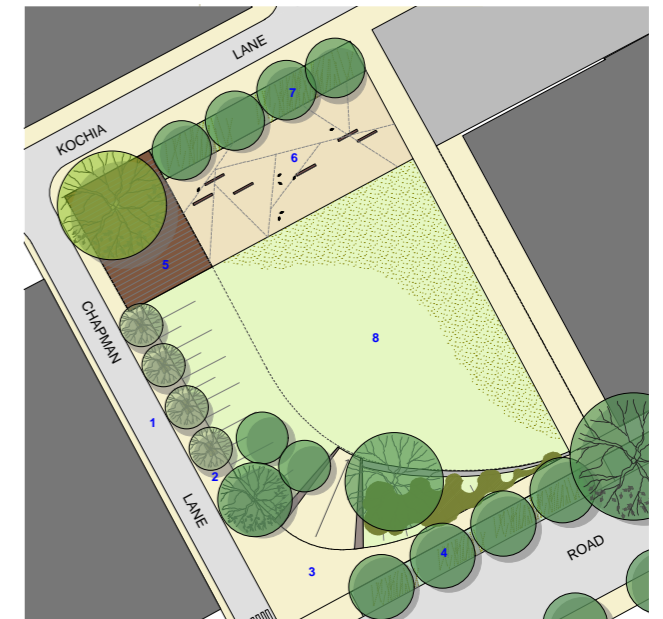


Figure 2: Tryon Road town square concept plan

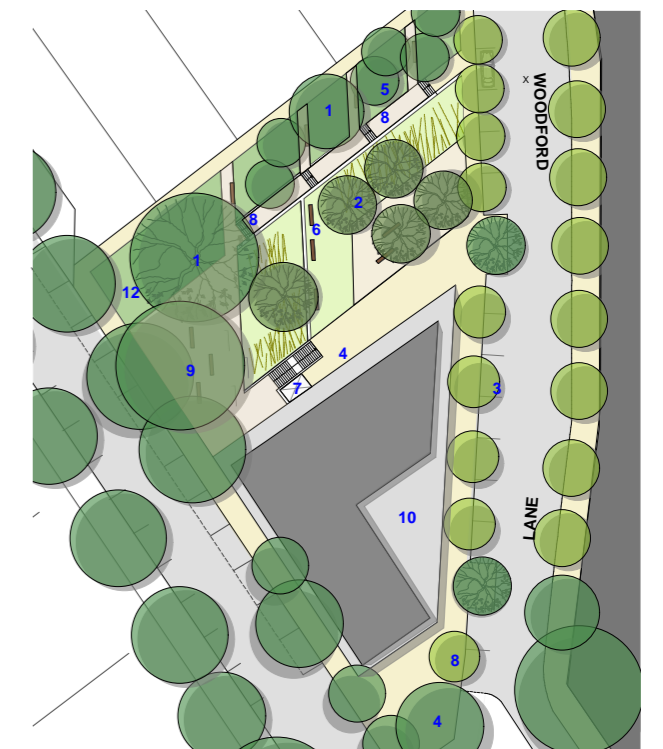


Figure 3: Drovers Way village green concept plan

10.6 Town Centres Public Domain Plan, 2010

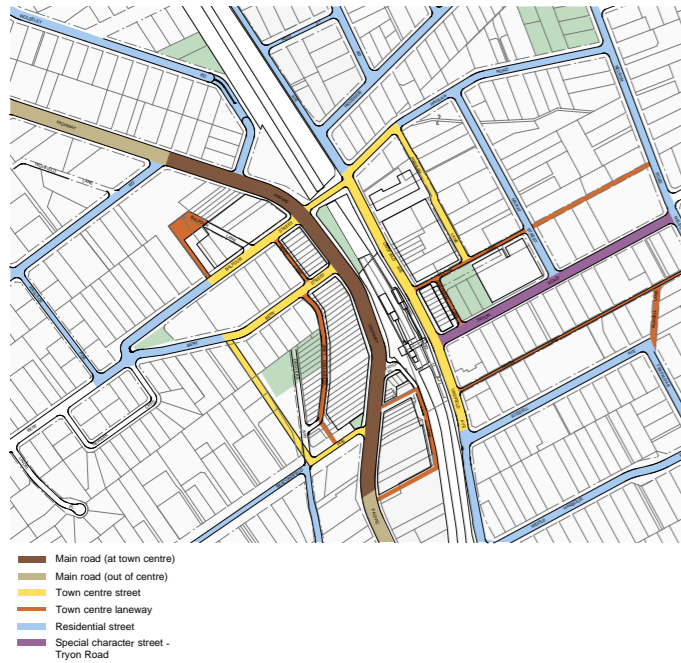


Figure 4: Lindfield town centre street character

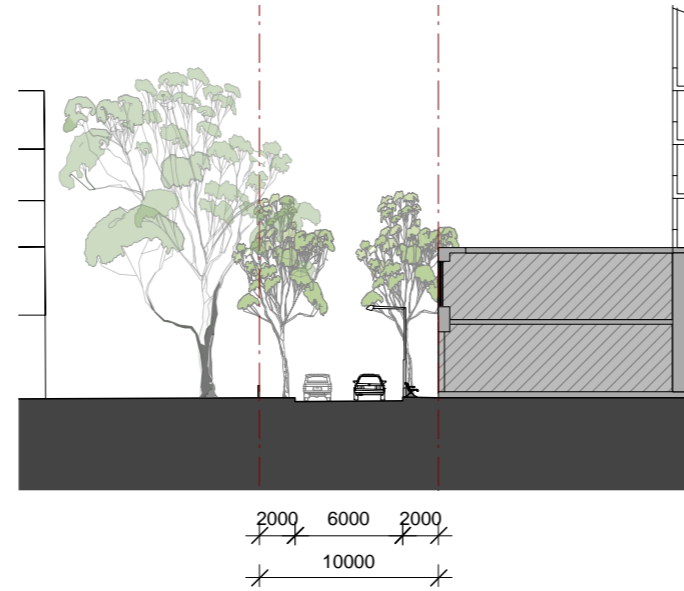


Figure 5: Kochia Lane street section

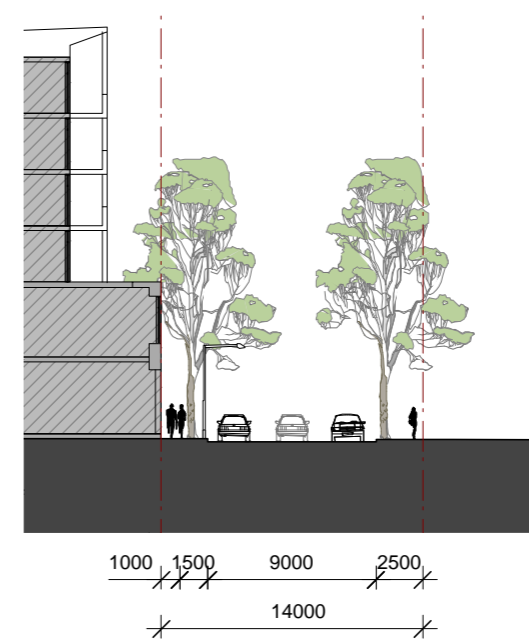


Figure 6: Havilah Lane street section

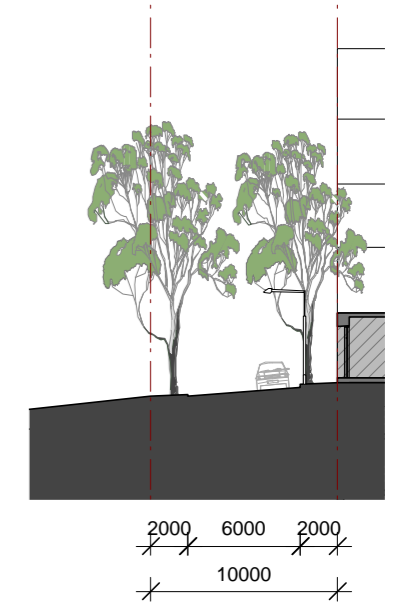


Figure 7: Bent Lane street section



Figure 8: Balfour Lane re-alignment street section



Figure 9: Woodford Lane street section



Figure 10: Drovers Way street section

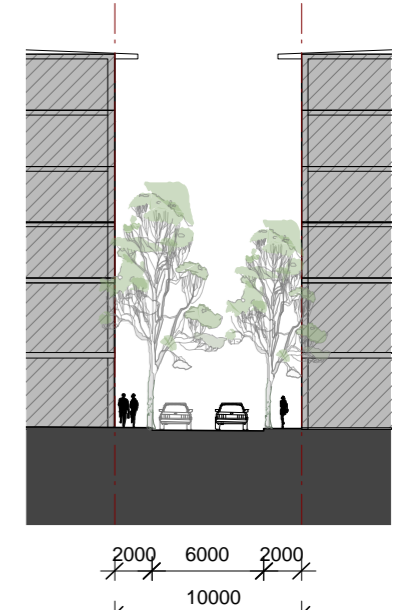


Figure 11: Tryon Place street section

10.7 Ku-ring-gai Integrated Water Cycle Management Policy, 2008

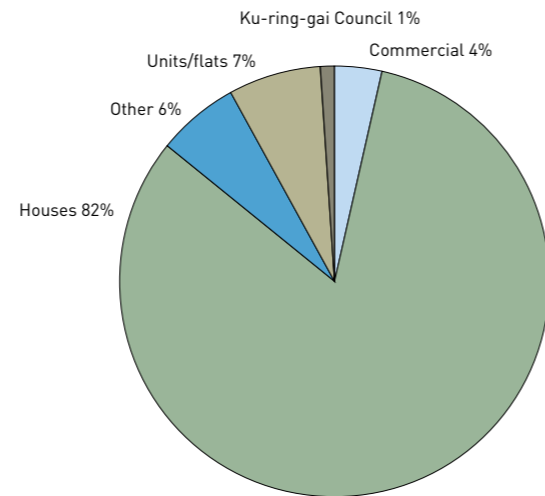


Figure 1: Potable water use

This strategy has been prepared in response to concerns surrounding effective water management within Ku-ring-gai as projected developments will inevitably put pressure on the water system.

Waterways through the LGA flows through Hawkesbury Sandstone landscape and its urban stream water quality is considered poor according to ANZECC guidelines. Potable water inflow through Ku-ring-gai sits at 10,622 millilitres per year, 89% of which is used by the residential sector as shown in Figure 1. The average annual rainfall is 1,118 millilitres and average runoff or stormwater flow is 36,635 millilitres.

An action plan shown in Figure 3 has been put in place by Council with the following key objectives:

- Decrease the use of potable water and increase the amount of public and private water reuse and recycling
- Ensure water sensitive urban design elements are incorporated within public infrastructure and private development
- Improve planning procedures to promote the sustainable use of water

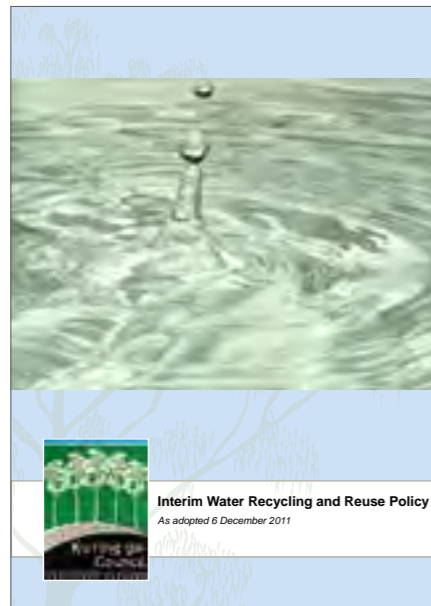
To address these issues the following targets have been set:

- Decrease potable water consumption by 30% over five years with a 6% each year
- Increase the use of non-potable water used by Council by 25% with an increase of 5% each year through stormwater reuse and recycled sewage.



Objective	Target	Programs/actions	Funding source	Responsibility
Decrease the use of potable water	Reduce Council's potable water consumption by six per cent per year based on 2000 levels	Develop annual water conservation program targeting highest water using sites and those with highest rates of return	General programs	Strategy Operations Finance
		Implement high priority actions each year against energy and water performance plan	Revolving energy fund, Internal loans	Strategy Operations Finance
	Implement all water saving projects with a seven per cent or greater return on investment	Award staged contracts to achieve progressive investment returns as per target with annual reporting on outcomes	Revolving Environmental Levy Fund, Internal loans	Strategy Finance
	Reduce community potable water consumption by six per cent per year based on 2000 levels	Promote Sydney Water programs: Tank rebate; Water fix; Love your garden; Washing machine rebate, etc.	Sydney Water	Strategy Community
		Provide technical assistance to residential and business sector to achieve savings	Grants, Sydney Water	Strategy
Increase the amount of public and private water reuse and recycling	Increase Council's non potable water consumption by five per cent per year based on 2000	On average one stormwater harvesting project completed per year	Environmental Levy, Grants and other capital funding	Strategy Operations
		Identify and implement strategic sewer mining projects with forward capital works and landscape master plans	Grants, capital works	Strategy
	Increase community non-potable water use	Promote and reduce barriers to community uptake of rainwater tanks and grey water reuse	Sydney Water, Grants, Environmental Levy	Strategy Development and Regulation
Ensure water sensitive urban design elements are incorporated within public infrastructure and private property	100 per cent of town centre redevelopments incorporate WSUD features	90 per cent of WSUD program completed per year	Developer contributions, Grants, Environmental levy, general revenue	Strategy Operations Development and Regulation
		90 per cent of IWMS program completed per year	Environmental Levy, Grants	Strategy Operations
Improve planning procedures to promote the sustainable use of water	Increase number of developments that integrate sustainable water management in their design, construction and operation	Establish data management systems to capture developments that demonstrate leading WSUD practice	General revenue	Strategy Development and Regulation
		Enable development approval systems to facilitate water re-use projects	General revenue	Strategy Development and Regulation Operations
		Incorporate planning controls for sustainable water use within LEP and DCPs	General revenue	Strategy
		Update onsite detention and retention within DCPs to reflect best practice	General revenue	Strategy Development and Regulation Operations
		Update Riparian Policy to best practice and include in LEP/DCP	General revenue	Strategy Development and Regulation
Develop and implement programs that ensure infrastructure is properly designed and maintained	Optimal maintenance of WSUD infrastructure	90 per cent of stormwater pollution control maintenance program completed per year (Appendix 6)	Stormwater charge, Environmental levy, General revenue	Operations
		Incorporate potential climate change impacts as part of infrastructure design standards and specifications	General revenue, Stormwater charge	Strategy
Improve the condition of natural waterways to increase native biodiversity	Stable, diverse waterway environments	Three creek rehabilitation projects completed per year	Environmental Levy and Grants	Strategy Operations
Continue to build knowledge on Ku-ring-gai's water cycle	Improved understanding of environmental mechanisms	Undertake detailed water quality and macroinvertebrate monitoring to ascertain effects of programs	Environmental Levy and Grants	Strategy
		Undertaken hydraulic monitoring to assess changes in catchment characteristics	Environmental Levy and Grants	Strategy Operations
		Undertaken modelling to assess impacts of climate change	General revenue and grants	Strategy
		Create one major sub catchment water plan every two years	General revenue	Strategy Operations

10.8 Interim Water Recycling and Reuse Policy, 2011



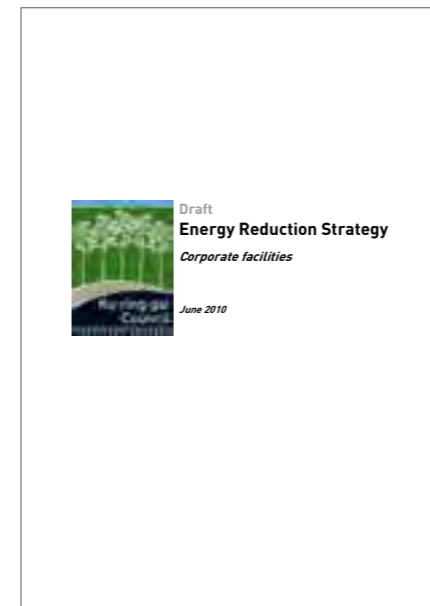
This policy has been developed in response to the drought, water restrictions and climate change within Ku-ring-gai. Access to potable water has reduced as a consequence of water restrictions and increasing demands on potable water supplies. Council wishes to decrease its use of potable water and increase the amount of water reuse and recycling. This policy therefore seeks to:

- Secure alternate sustainable water supplies which can be utilised in a responsible manner
- Raise council and community awareness of water recycling and reuse
- Reduce the cost of water supply to council

This will be implemented through:

- Development management plans for each water recycling and reuse site
- Application of the latest water reuse guidelines in planning recycling and reuse systems
- Application of the latest water guidelines for the ongoing management of recycled and reused water
- Regular auditing of water recycling systems

10.9 Ku-ring-gai Draft Energy Reduction Strategy, 2010



This strategy identifies potential capital works projects which will assist in achieving Council's climate change mitigation target and reduce its financial viability to increasing operation costs associated with rising energy prices.

Council energy consumptions will inevitably increase as a result of an expanding population which will consequently add more demand on Council services and facilities. In accordance to the Climate Change Mitigation Study conducted in 2009, it is of importance for Council to lead by example in its energy efficiency which can be implemented through the following:

- Solar hot water
- Photovoltaic (PV) panels
- Small wind turbines
- On-demand street lighting

By undertaking this strategy, Council should see a reduction of 4% in its total corporate greenhouse emissions and a potential savings of \$2.28 million over ten years based on studies conducted in 2000 shown in Figure 1 for the town centre projects listed for St Ives, Gordon and Turramurra.

The Environmental Levy has been put in place with an allocated \$1,090,000 to fund water and energy efficiency projects within town centres to assist Council in achieving its targets.

The funding for the projects are divided into three categories as shown in Figure 2 with co-related amount of funding.

Capital Cost	\$1,047,763
CO2 emissions pa	981
kWh savings pa	952,282
Financial saving over 10 years	\$2,283,979
Overall payback period	5.2 years
Reduction from 2000	4%

Figure 1: Summary of savings through projects in report

	Environmental Levy	Operational budget	Total
Iconic	\$903,994	\$17,354	\$921,348
Capital Works	\$31,989	\$6,876	\$38,865
Operational	\$66,018	\$21,532	\$87,550
Total	\$1,002,001	\$45,762	\$1,047,763

Figure 2: Funding categorisation

10.10 Ku-ring-gai Climate Change Adaptation Strategy



The purpose of this strategy is to reinforce the advice that climate change is progressing rapidly and an adaptation action is required to reduce the impacts of extreme weather and enhance sustainability.

Ku-ring-gai is likely to experience a warmer climate with fewer extreme cold days and increasing number and duration of heat days. Winter will be drier with spring and summer featuring increased rainfall and storms. Bushfire weather will also be intensified with an increase in drought periods and water shortages.

Climate change modelling for Ku-ring-gai shows no new risks are likely to emerge however existing weather related risks will likely intensify. The following are significant risks for Ku-ring-gai:

- Bush fires
- Storms
- Droughts
- Extreme heat

Council has outlined an adaptation strategy which lists the vulnerabilities, resilience and adaptation options for each of these risks. There is a level of acceptance with associated risks, however increasing frequencies will see a decline in these levels.

Bush fire					
Option	Primary Responsibility	Secondary Responsibility	Score	Priority	Comments
Increase percentage of existing and new homes compliant with AS3959	Council	NW RFS	20	High	Improves resilience of existing housing stock
Conduct community and agency education program	Council	NW RFS	19	High	Raises awareness of bush fire safety
Invest in R&D Projects, eg. selective weeding, identification of sections of corridor that can be cleared in an emergency, fast decomposing bacteria to reduce fuel - carbon sequestration, or mechanical removal, pre-curing process prior to hazard reduction burns in RFS for better burns support native plants	Council	NW National Parks	19	High	Research into more efficient and effective means of bush fire management
SMS warning system	Council		18	High	Provides warnings to allow for early response
Build and operate new RFS	NW RFS	Council	18	High	Provides greater number of emergency volunteers
Planning private land e.g. increase minimum lot sizes and/or setbacks to bushland in bushfire prone areas, extending area of Level 1 construction, restrict type of development	Council	State Government	17	High	Improves resilience of new housing
Identify and support residents requiring property maintenance assistance in high risk areas	Council	Residents	14	High	Assists vulnerable community members
Develop new community fire units	NSWFB	Council	15	High	Improve community self sufficiency and awareness
Discount or rebate on fire resilient installations in homes	Council	NW RFS	14	High	Provision of an incentive to improve resilience of existing housing stock
Utilise water sensitive urban design	Council	State Government	9	Medium	Reduces weeds along the interface, therefore reducing fuel loads
Provision of safe refuge areas for people and pets	Council	NW RFS	8	Medium	Provides a refuge in the case where evacuation is not an option
Wildlife Protection - animal evacuation, notification of wildlife carers to post burn work, veterinary care capacity identified, habitat boxes to be made out of non-combustible material	Council	WIRES, NSW National Parks	8	Medium	Provides protection to fauna
Map areas of non fire tolerant vegetation communities, phytophore locations, wildlife refuges	Council	NW National Parks	7	Medium	Protects vulnerable plant communities
Increase static water supply volume e.g. tanks	Council	Residents	6	Medium	Provides additional water sources for emergency services
Zone land to restrict development in high risk area	Council	State Government	6	Medium	Reduce the increase in dwellings within high risk areas
Enforce fire retardant landscape design	Council	State Government	5	Medium	Improves resilience of new housing
Fire danger signs	NW RFS	Council	3	Low	Provides the community with continuous updates regarding

Bush fires

Bush fires presents a serious threat to the LGA as it is surrounded by three national parks. Council has in place a Bushfire Risk Management Plan and focus is placed on life safety and evacuation out of bush fire prone areas. The following are Council and community adaptation options devised from current LGA vulnerabilities:

- Increase percentage of existing and new homes compliant with AS3959
- Conduct community and agency education program
- Invest in Research and Development projects such as identifying sections of corridor that can be cleared in an emergency
- Build and operate new Rural Fire Services
- Planning private land such as increasing minimum lot sizes and/or setbacks to bushland in bushfire prone areas
- Identify and support residents requiring property maintenance assistance in high risk areas
- Develop new community fire units
- Discount or rebate on fire resilient installations in homes
- Utilise water sensitive urban design
- Community members to install and maintain privately owned fire fighting equipment and to monitor fire warning protocols and be aware of appropriate action

Storms					
Option	Primary Responsibility	Secondary Responsibility	Score	Priority	Comments
Relocate power and phone lines underground	Council	Energy Australia	25	High	Protects power lines from falling trees and debris. Assists to maintain continuous power supply during storm events
Conduct community education program	Council	Emergency Services	20	High	Improves community self reliance
Discount or rebates provided for storm resilient installations (eg. window shutters, corrugated roofing)	Council	Supplier	20	High	Provides greater protection to the internal environment of a building and reduces rain inundation
SMS warning system	Council		18	High	Provides warnings to allow for early response
Undertake disaster risk assessments of key infrastructure	Council	Consultant	17	High	Provides greater protection to the internal environment of a building and reduces rain inundation
Stabilisation works of known high erosion areas	Council	Contractor	16	High	Protects infrastructure and property in high erosion areas
Replace roofing with storm resilient materials	Council	Contractor	16	High	Provides greater protection to the internal environment of a building and reduces rain inundation
Revise and regulate planning controls which increase resilience of the built environment in storm events	Council	State Government	14	High	Provides greater protection to the internal environment of a building and reduces rain inundation
Train staff in disaster management (ie. chainsaw operation)	Council	Education	14	High	Improves clean up response by Council
Identify and manage vulnerable trees	Council	Contractor	12	High	Reduces the incidence of damage caused by falling trees
Replace canopy trees with appropriate trees to withstand high velocity winds	Council	Contractor	8	High	Reduces the incidence of damage caused by falling trees
Maintain Local Emergency Operation Centre for the provision of logistical support	Council	Emergency Services	8	High	Allows for greater coordination at a storm event
Install uninterrupted power supply (co-generation) at key Council facilities (ie. Chambers, Dept, Community centres/meals on wheels)	Council	Contractor	7	High	Allows for continued operation of key Council facilities throughout power failure events
Provide welfare and resource information to residents and businesses affected by storms	Council	SES	7	High	Assists affected community members to access available services
Review, update and increase awareness of the DISPLAN	Council	Emergency Services	5	High	Provides relevant and up to date procedures in managing the logistics of emergency events
Assess and reinforce vulnerable infrastructure (ie. bridges)	Council	Consultant	5	High	Protects infrastructure in high risk areas
Upgrade road structure and materials to improve resilience	Council	Contractor	5	High	Protects road surfaces to withstand greater water velocities
Increase capacity of stormwater infrastructure	Council	Contractor	5	High	Reduces flooding of downstream properties
Provide mobile welfare support (eg. Meals on Wheels)	Council	State Government	4	High	Provides food and other services to vulnerable and less mobile community members

Storms

Residents within the LGA are also vulnerable to impacts from storm events with the extensive tree canopy and intensifying stormwater flows causing costly damage to homes, businesses and infrastructure. The following are Council and community adaptation options devised from current LGA vulnerabilities:

- Relocate power and phone lines underground
- Conduct community education program
- Discount or rebate provided for storm resilient installations
- SMS warning system
- Undertake disaster risk assessments of key infrastructure
- Stabilisation works of known high erosion areas
- Replace roofing with storm resilient materials
- Revise and regulate planning controls which increase resilience of the built environment in storm events
- Train staff in disaster management
- Replace canopy trees with appropriate trees to withstand high velocity winds
- Maintain Local Emergency Operation Centre for the provision of logistical support
- Volunteering in community programs (SES, RFS)

Drought					
Option	Primary Responsibility	Secondary Responsibility	Score	Priority	Comments
Undertake community education campaigns	Sydney Water	Council	18	High	Increase education and awareness on actions to reduce water consumption
Stormwater harvesting for Council facilities	Council	Supplier	17	High	Provides additional water source for Council facilities and improves resilience of turf sites
Monitor water consumption for leaks and anomalies	Council	Sydney Water	15	High	Water wastage is detected early
Install sewer mining/stormwater harvesting for communal use	Council	Developers	14	High	Provides additional water source for communal use
Use flexible materials for paths	Council	Contractor	13	High	Reduces damage to infrastructure through soil shrinking during drought
Fix leaking taps	Council	Contractor	12	High	Water wastage is reduced
Install synthetic play surfaces	Council	Sports groups	12	High	No water required to maintain them, and greater use of the sites can be employed
Install sealed toilet cisterns to prevent leakage	Council	Contractor	11	High	Water wastage is reduced
Install drought tolerant landscaping at Council facilities	Council	Contractor	11	High	Reduces drought stress of plants through better plant selection
Install shade structures for pools	Council	Contractor	10	High	Reduces evaporation
Install subsurface irrigation where required	Council	Contractor	10	High	Provides a watering system which reduces evaporation
Rainwater tanks on all facilities	Council	Contractor	9	High	Provides alternate water source to facilities
Install dual flush toilets	Council	Contractor	9	High	Water wastage is reduced
Promote and provide rebates for water saving installations	Council	Sydney Water	9	High	Provide incentives to residents to improve their drought resilience
Use generous paving materials	Council	Contractor	9	High	Assists in ground water recharging
Install aerators / flow restrictors on taps	Council	Contractor	8	High	Water wastage is reduced
Waterless printing and paper products	Council	Suppliers	7	High	Water wastage is reduced
Sewer / leachate mining for Council facilities	Council	Contractor	4	High	Provides additional water source for Council facilities and improves resilience of turf sites
Install backwash recycling at pools	Council	Contractor	5	High	Water wastage is reduced
Soiler city support with rural drought affected communities	Council	Residents	5	High	Provide support to a rural town affected by drought
Enhance planning controls for water efficiency	Council	State Government	0	High	Water wastage is reduced in new developments

Droughts and Extreme Heat

Vulnerability to water shortages is a pressing concern due to the high level consumption of water per person within the LGA. Pressure will continue to intensify with the projected population increase. Further more, extreme heat is another concern particularly as the probability of energy infrastructure failing to meet peak demand is very likely. The following are Council and community adaptation options devised from current LGA vulnerabilities:

- Undertake community education campaigns
- Stormwater harvesting for Council facilities
- Monitor water consumption for leaks and anomalies
- Install sewer mining/stormwater harvesting for communal use
- Residents should install a rainwater tank and connect to toilet and laundry
- Ensure that OH&S addresses working outdoor in extreme heat conditions
- Install and operate co-generation systems to feed power to the grid in times of peak demand
- Invest in low energy technology to offset Price increases of fossil fuel derived power
- Discounts and rebates for passive solar design principles to reduce dependence on mechanical heating and cooling
- Plant more trees in streets, parks and public domain areas
- Develop a 'House Buddy' program to assist neighbourhoods to monitor vulnerable residents in time of extreme risks

10.11 Ku-ring-gai Community Facilities Strategy, 2014



The Ku-ring-gai Community Facilities Strategy provides a framework for the future provision of community facilities that deliver to a network and meets the needs of the community.

A principle objective of the strategy is to maintain a network hierarchy with:

- Sub regional facilities serving a larger LGA
- District facilities serving a catchment
- Local facilities serving a neighbourhood

Studies undertaken show a trend in multi purpose spaces and community hubs where several facilities are co-located which promotes an active social engagement. This presents an opportunity for a consolidation of facilities within the LGA which are no longer fit for use as seen in Figure 3.

By 2031, Ku-ring-gai will see a population increase from 109,146 according to the 2011 census to 136,900 by 2031 as seen in Figure 4. To cater for this increase the following has been proposed:

- Community facilities: 1 sub regional (Gordon) and 3 district (Turramurra, St Ives, Lindfield) as seen in Figure 1
- Library facilities: 1 central library (Gordon) and 3 branches (Turramurra, St Ives, Lindfield) as seen in Figure 2



Figure 1: Proposed sub-regional and district facilities and catchments



Figure 2: Proposed library facilities and catchments



Figure 3: Proposed community facilities consolidation

Level	Source	2031 population
Low	Ku-ring-gai Council 2010 Contributions Plan	126,151
Medium	Mid-point between low and high	136,900
High	Department of Planning and Infrastructure (2013), NSW in the Future: Preliminary 2013 Population Projections	147,650

Figure 4: LGA population projections

Hierarchy level	Population served
Sub-regional	100,000 and over
District	20,000-50,000
Local	10,000-20,000
Neighbourhood	2,000-10,000

Figure 5: Proposed facility hierarchy

10.12 Lindfield Community Facilities Study Report, 2014

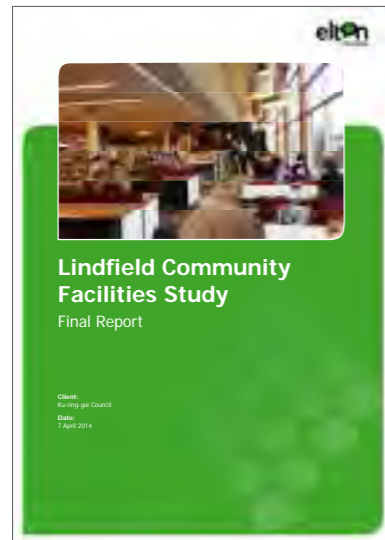


Figure 1: Option 1 - Library on Tryon Road and community centre on Woodford Lane



Figure 2: Option 2 (preferred) - Library and community centre co-located on Woodford Lane site



Figure 3: Visualisation of Option 1



Figure 4: Visualisation of Option 2 (Courtesy: Support Lindfield)

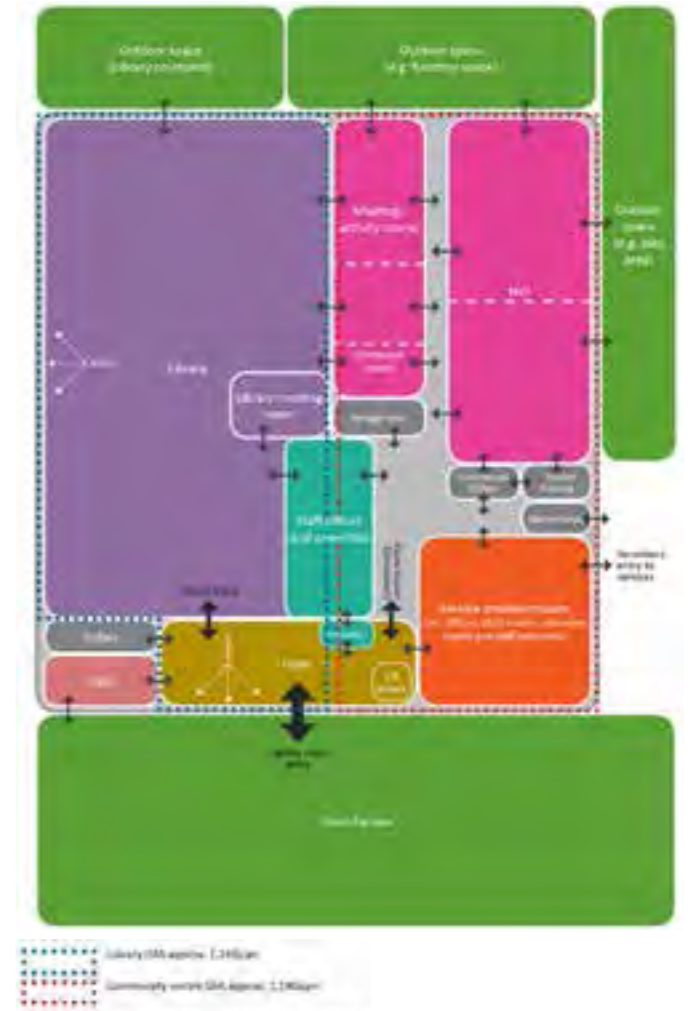


Figure 5: Proposed library layout

The report aims to provide a vision and recommendations to guide Council in the planning, design and delivery of new community facilities in Lindfield. Design principles to consider for the community centre include:

- Central to catchment and transport and equitable access
- Location of facility to promote visibility and accessibility
- Clustering and co-location
- Flexible with multiple uses serving identified social needs
- Financial and environmental sustainability
- Contribute to the public domain and sense of place
- Be near open space for activities and events

Lindfield will provide the following facilities:

- A community centre serving Lindfield, East Lindfield, Roseville, Roseville Chase, Gordon, Killara and East Killara
- A district library serving Lindfield, East Lindfield, Roseville and Roseville Chase

The report undertook an options analysis on two development sites shown in Figures 1-4 with Option 2 being the preferred option as the facilities are co-located.

Figure 8 shows the 2031 projected facility catchment to be at 50,786m² with a proposed 60m² rate of provision. This equates to a required floor area of 3,047m² for the catchment. In deducting the floor areas of existing facilities, the recommended floor area for the community facility is 1,190m². The library according to standards set by the State Library of NSW in accordance to catchment population, should be at 1,265m² with a 39m² rate of provision per 1000 people.

Level	2031 projected LGA population	2031 projected community centre catchment population*
Low	126,151	46,798
Medium	136,900	50,786
High	147,650	54,773

Figure 6: Community centre catchment population

Level	2031 projected LGA population	2031 projected library catchment population*
Low	126,151	24,867
Medium	136,900	26,986
High	147,650	29,105

Figure 7: Library catchment population

	Floor area (square metres)
2031 projected catchment population	50,786
Proposed rate of provision for community centre (square metres per 1,000 people)	60
Required community centre floor area for catchment	3,047

Figure 8: Required floor area for community centre

10.13 Feasibility Report: Lindfield Pedestrian Bridge, 2014



The purpose of the report is to determine the feasibility of constructing a pedestrian bridge over Pacific Highway adjacent to Lindfield Station. With consideration into engineering, planning and heritage aspects, Robert Bird Group have determined that there is enough justification to proceed to the concept design stage.

There is a potential to link the bridge to Woodford Lane parking site if land acquisition of 316, 318, 320-322 Pacific Highway as shown in Figure 1 is successful.

Studies conducted show that 3000 pedestrians use the crossing per day on weekdays with 260 pedestrians per hour during peak hours which occur between 7.45am - 8.45am and 5.15pm - 6.15pm.

A total of 1250 pedestrians use the crossing on weekends with approximately 150 pedestrians per hour during its peak use which is between 9.30am-10.30am and 10.45am-11.45pm.



Figure 1: Potential pedestrian bridge link location

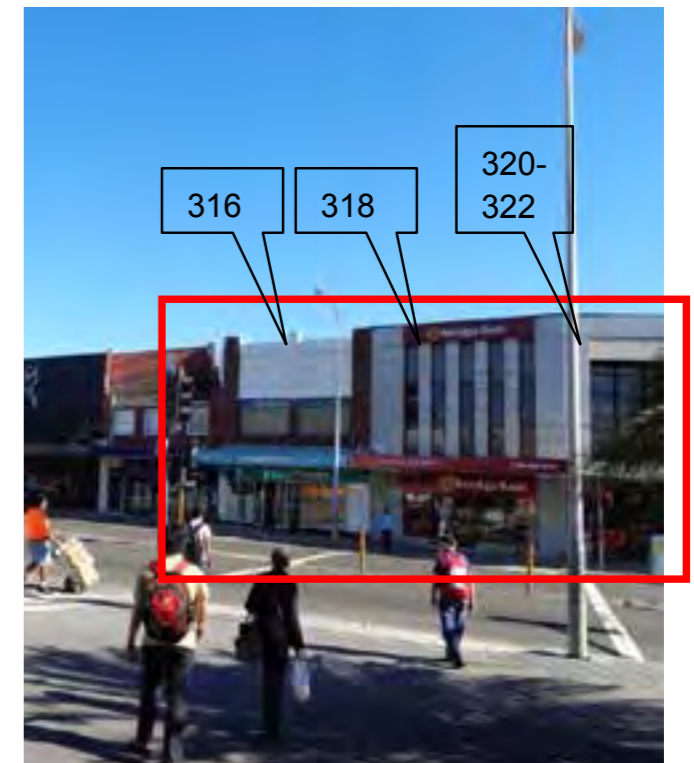


Figure 2: Potential pedestrian bridge link location



Figure 3: Proposed pedestrian bridge link



Figure 4: Proposed pedestrian bridge link



Figure 5: Proposed pedestrian bridge link

10.14 Transport Network Model Study: Lindfield Local Centre, 2013-14



Initial discussions to provide 240 commuter car parking spaces has resulted in a decision to undertake a master planning study for the site to allow Council to consolidate its existing community facilities and to provide a central development/community hub which would provide social and economic benefits. The objectives of the study is to:

- Determine an appropriate land use scale and mix for the development site
- Determine where best to locate the proposed commuter parking

The following opportunities and constraints have been identified for Lindfield:

- An adequate public transport infrastructure with up to 20 train services city bound during peak hour.
- High volumes of pedestrian activity during PM peak hour with long waiting periods which results in dangerous pedestrian activity
- Road intersections on Pacific Highway are operating at capacity as seen in Figure 1 and 2

PeopleTrans have undertaken studies into the feasibility of a traffic signal at Beaconsfield Parade and have specified TMM1C in Figure 4 to be the preferred option and illustrated in Figure 3. Additionally, Tryon Lane will be utilised as a 'kiss and ride' zone and Bent Street will be closed to traffic.

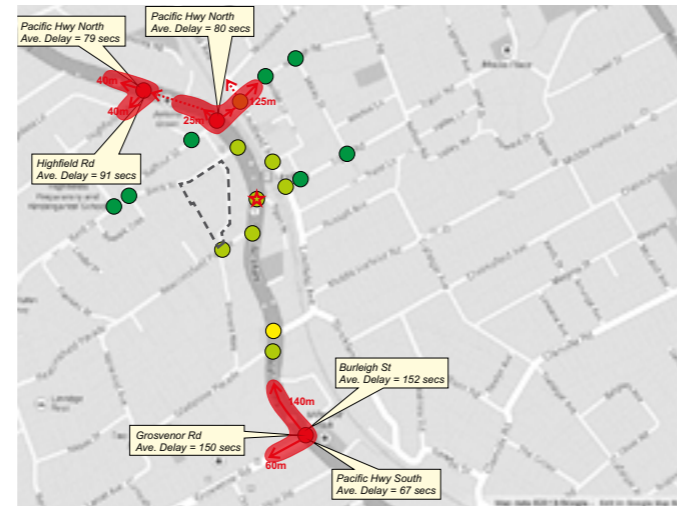


Figure 1: Weekday AM peak traffic level of service

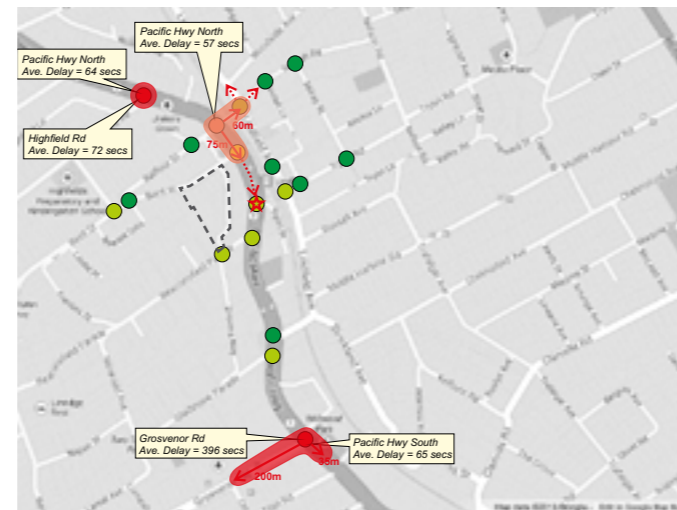


Figure 2: Weekday PM peak traffic level of service

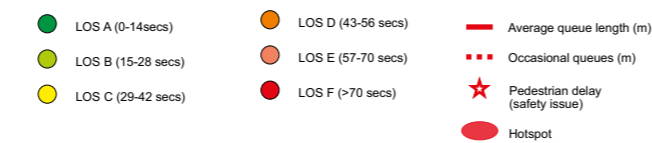


Figure 3: Beaconsfield Parade preferred option

Traffic Management Option No.	Description/Key Element
TMM1	As described in Section 8.4
TMM1A	Traffic Signals at Beaconsfield Parade (No right turn in from Pacific Highway) Right turn achieved via G-Turn through Tryon Place
TMM1B	Traffic Signals at Beaconsfield Parade (No right turn in from Pacific Highway/No left out of Beaconsfield Parade onto Pacific Highway)/Bent Lane & Woodford Lane one way/Access to Pacific Highway maintained via Bent Street between Bent Lane & Pacific Highway
TMM1C	Traffic Signals at Beaconsfield Parade (No right turn in from Pacific Highway)/Bent Lane & Woodford Lane one way/Bent Street closed between Bent Lane & Pacific Highway
TMM1D	TMM1C with minor changes to the location of the pedestrian crossings of the Pacific Highway at Tryon Place and Beaconsfield Parade as a result of a pedestrian overbridge.

Figure 4: Beaconsfield Parade traffic options

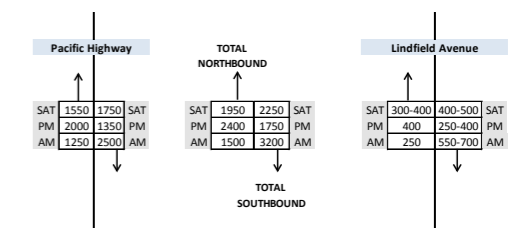


Figure 5: Vehicular survey

Source: Lindfield Local Centre: Transport Network Model Study, 2013-14, PeopleTrans

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