

GREENFIELD
release area

Ingleside



Discussion Paper

February 2014



Planning &
Infrastructure



PITTWATER
COUNCIL



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1 Introduction

1.1 The Planning Process

Precinct planning for Ingleside is an investigation process into the potential to deliver new controls and mechanisms that facilitates development of a new sustainable community. The process analyses the development potential and then guides delivery of the land to market as quickly and sustainably as possible.

Precinct planning for Ingleside is a partnership between the Department of Planning and Infrastructure, Pittwater Council and Urban Growth NSW (the “Project Partners”). The overall Project Team includes the Project Partners and a team of technical consultants and designers. The process will be guided by a probity plan to address any perceived/potential probity issues.

The first major deliverable for the project is the Structure Plan for Ingleside (also known as a Release Area Delivery Plan (RADP)), and will:

- define the land use structure and development potential of the precinct, may include different outcomes for South Ingleside, North Ingleside and Wirreanda Valley;
- include a development staging and sequencing plan which shows how the precinct will develop and change over time; and
- define overall infrastructure requirements and an infrastructure delivery schedule.

The structure plan will in turn be presented at the second round of workshops. The structure plan informs the development of a detailed layout plan and planning controls for the precinct.

1.2 Purpose of the Discussion Paper

The Discussion Paper summarises the preliminary findings of the consultant studies and master planners on the opportunities and constraints that exist in Ingleside. This Paper informs landowners and stakeholders of issues identified so far, in preparation for the first round of workshops with landowners and community representatives.

The aim of the workshops is to develop a vision including the planning direction for the future Ingleside.

1.3 Working with the community

In-line with the new planning system, community engagement will play an important role in the process of investigating the new planning controls for the Ingleside precinct. Along with traditional communication methods (e.g. Newsletters), the Project Partners have established a website www.inglesideplanning.com.au to inform and actively engage with the broader community on the precinct planning for Ingleside.

The Project Partners launched the “Your ideas today, your community tomorrow” campaign as the first step in engaging with the broader Pittwater community in late December 2013. A range of interactive tools on the website facilitates opportunity for ideas and comments from the community, and is the basis for future discussion within the community, via the website tools and workshops. The ideas and comments received, in turn, guide the project partners and their master planners on the emerging issues.

A Community Reference Group has been appointed from nominees in the broader Pittwater community and landowner groups in the precinct. This group meets to provide input to the planning issues in the area, how they are being analysed and progressed towards future planning options for development in the precinct. The group also acts as a conduit between the Project Partners and the broader community, enabling this group to articulate the issues emerging from the interest groups they represent.

Design workshops are to be conducted in two rounds, will allow the community to better understand the opportunities and constraints, and participate in planning the future of Ingleside. The first round of these workshops will be held in March 2014, to enable community input to the identification of development and sustainability outcomes for the precinct. The outcomes of the first round of workshops along with ongoing investigations by the Project Team will inform the RADP preparation.

The second round of design workshops will be held approximately three months after the first round to give participants opportunity to consider the RADP and how it will evolve into more detailed planning options for development at Ingleside that, in turn, is presented in a draft Indicative Layout Plan.

The draft Indicative Layout Plan for the precinct will identify where homes, roads, infrastructure and public areas and services are to be located. The scale and height of buildings will also be known. This draft Indicative Layout Plan including the planning controls, statutory planning documents, and indicative infrastructure needs report and delivery mechanism will then be placed on public exhibition.

1.4 Next Steps

The planning direction for Ingleside will continue to be developed for some time.

The outcomes of the March workshop sessions will be presented on the website. This will be supplemented by the outcomes from the commentary received through the interactive tools on the website.

Discussion on the outcomes from this visioning phase will continue between the Project Partners and the Ingleside Community Reference Group to facilitate further discussion towards an agreed planning direction for Ingleside. This includes clear definition of planning outcomes combined with detailed findings from technical studies that then informs finalisation of the Indicative Layout Plan.

2 Planning Context

2.1 Metropolitan Sydney

Sydney's population is expected to grow by 1.3 million to almost 6 million by 2031. State and Local Governments are working together to plan for and manage this growth in an efficient and sustainable manner.

At Ingleside, the NSW Government and Pittwater Council are planning a community that is liveable, sustainable and supports economic development opportunities, reflecting the constraints and opportunities of the local landscape and infrastructure.

2.2 Location

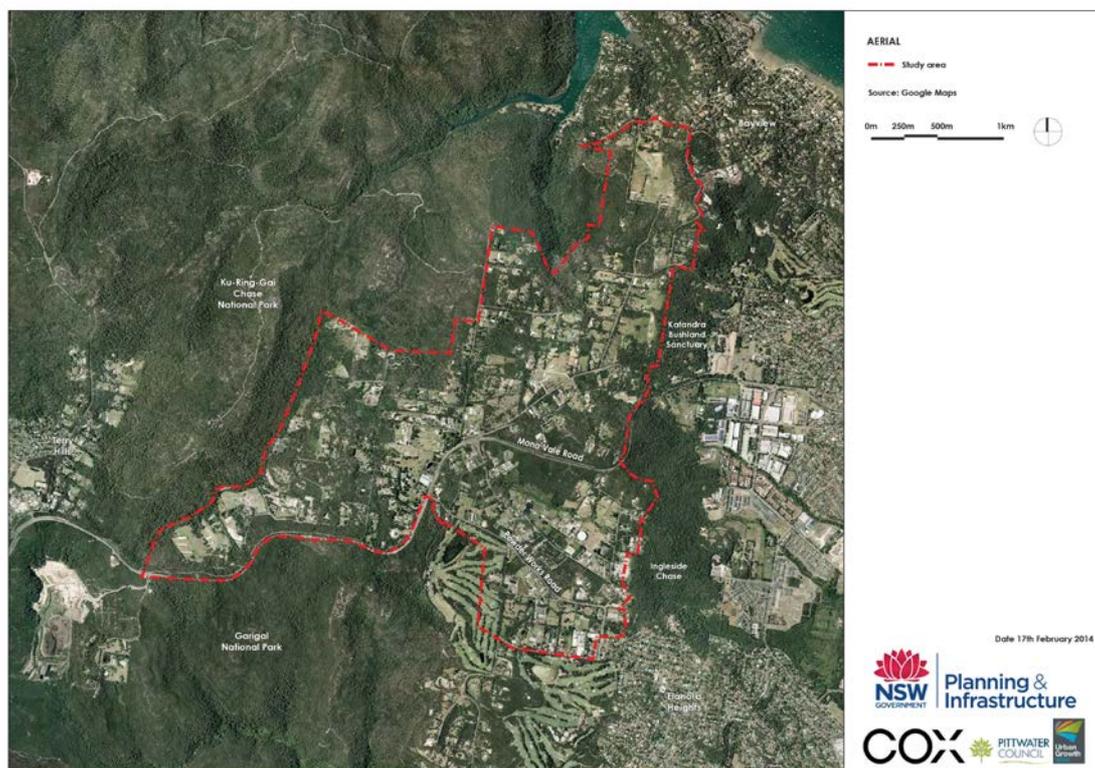
Ingleside precinct is in the Pittwater Local Government Area (LGA), which is part of the North Subregion of metropolitan Sydney (as identified within the Draft Metropolitan Strategy for Sydney 2031). Figure 1 shows the precinct boundaries and surrounding areas of Ingleside.

The precinct is approximately 636 hectares and development is currently a non-urban zone under Pittwater Local Environment Plan (LEP) 1993 and is proposed to be zoned RU2 Rural Landscape under the draft Local Environmental Plan 2013 (adopted by Council 20 December 2013). The range of permissible activities is inevitably restricted by the lack of services, in particular utilities, that are available in nearby urban areas.

Ingleside has the potential to supply some of the additional 19,000 homes by 2021 and 37,000 homes by 2031 that will be needed in the North Subregion under the *Draft Metropolitan Strategy for Sydney to 2031* (March 2013). It can also contribute to some of the 39,000 new jobs projected to be needed in this sub-region.

The delivery of additional homes within Pittwater LGA has the potential to relieve upward pressure on the local property market, increase housing choice and make housing more accessible for a range of household incomes.

Figure 1: INGLESIDE PRECINCT BOUNDARY



3 Existing Conditions

Knowledge of existing conditions from investigations to date indicates there may be three distinct sub-precincts within the Ingleside precinct. This section of the Discussion Paper highlights some issues that are emerging as key determinants of development outcomes in different parts of the precinct. This is explored in more detail in the Master Planning and technical assessments that follow.

The existing conditions analysis indicates that outcomes may be different in three broad areas of Ingleside: South Ingleside; North Ingleside; and Wirreanda Valley, as shown on Figure 2.

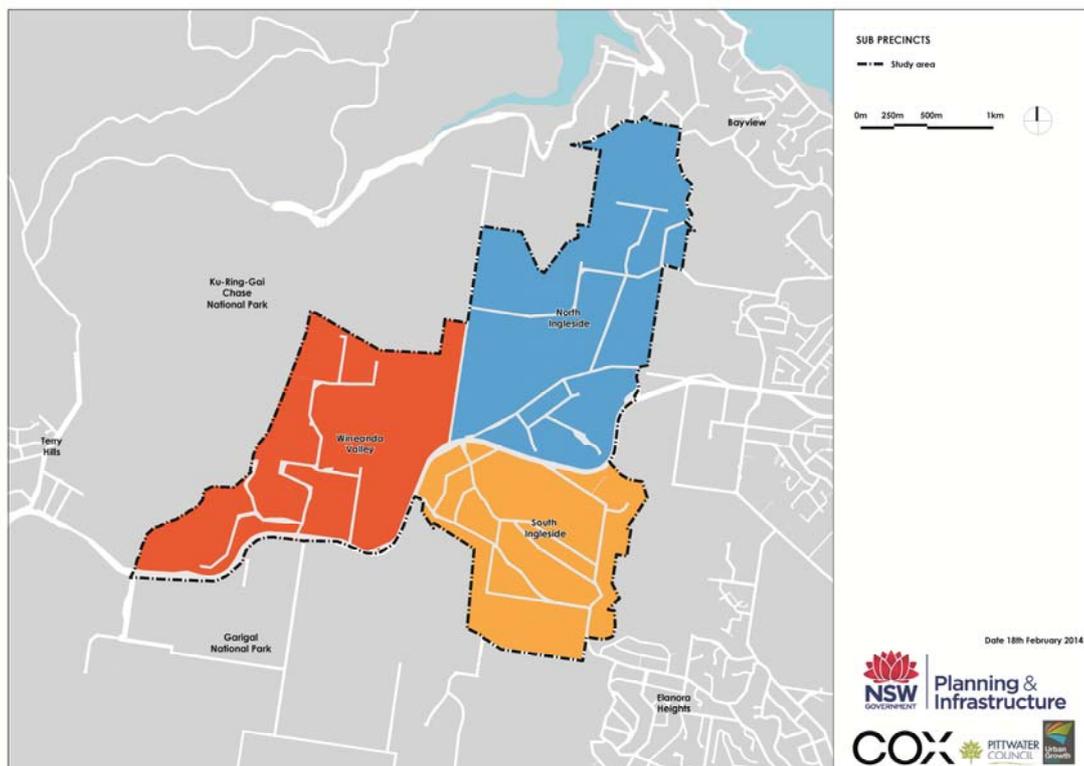
3.1 Topography, vegetation and drainage

Ingleside is located on a plateau with steep inclines to the east and north. The area abuts two National Parks to the north-west and south-west, and a bushland reserve to the east. Open forests are confined largely to the ridgelines, creeks and gullies with the remainder of the precinct comprising low woodland and open scrub. The precinct feeds three significant catchments, which channel water from the site to the National Parks and Narrabeen Lagoon in the south, and the Pittwater waterway in the north. This is covered in more detail in the section on Master Planning – Key Issues (4.1)

The topography and drainage patterns have significant implications for development potential in different parts of the precinct. While detailed investigations are continuing, previous studies indicate that the costs of providing essential infrastructure to North Ingleside and Wirreanda Valley may be a significant constraint to development, or require development yields (including higher densities) that may not be achievable in the local housing market, environmentally sustainable or acceptable to the Pittwater community.

Land slope and vegetation also contribute to bushfire risk and impact on ecological sustainability outcomes, and these are particularly important issues for Ingleside. In some areas these constraints are likely to have a significant impact on determining land that can be developed or not, and in some cases the cost of constructing development or the types of land uses that are permitted.

Figure 2: INDICATIVE SUB-PRECINCTS



3.2 Ownership and existing land uses

A mix of public and private land ownership exists in the precinct. It is characterised by a variety of rural lot sizes which encompass a range of uses including detached residential, cottage industries and hobby farms as well as a number of smaller subdivisions which have been retained in single ownerships and not developed to their permissible densities. Approximately one third of the area is in State Government ownership. The precinct includes a number of locally and regionally significant attractions including Camp Kedron, the Baha'i Temple, Monash Golf Club, Elanora Country Club and the Sydney Conference Centre.

The size and value of improvements (including homes, stables, businesses, private recreational facilities and the like) to many properties mean that the underlying value of some land in Ingleside may be a constraint to urban development. The value of "raw" land is a significant contributor to the viability of urban development in new release areas. The relationship between infrastructure and land development costs, acceptable development yields and the underlying value of the land may be a key determinant of whether or to what extent some parts of Ingleside will develop.

As more work is done on the precinct, this relationship will be further examined and be a key input to the RADP and eventually the planning controls.

3.3 Major arterial roads

Access to Ingleside is constrained to two major routes, Mona Vale Road and Powderworks Road. Both of these routes carry significant traffic loads.

Mona Vale Road tends to separate North Ingleside from South Ingleside. The area to the west, Wirreanda Valley has limited access restricted to Mona Vale Road.

Traffic and transport implications are being assessed by a specific technical study (see section 5.6 of the Discussion Paper).

4 Master Planning

Baseline data on planning issues in Ingleside has been previously prepared by Council dating back to the early 1990's and more recently as part of the *Pittwater Local Planning Strategy – Planning for Pittwater towards 2031* (adopted 15 August 2011), and other agencies. The initial stages of precinct planning will review this work to confirm the scope of new technical investigations. This data will be validated, updated and augmented as necessary with new information from the various technical studies which commenced in November 2013. The preliminary data suggests that the precinct is particularly sensitive from an environmental, landscape and visual point of view, given its prominent location as the western gateway into the Peninsula, topography and sensitive vegetation.

The aim of the Ingleside precinct master planning study is to confirm the development potential of the precinct and establish planning controls to enable sustainable development consistent with that potential.

The master planning will lead an iterative process that brings together the findings and recommendations from technical studies, State agencies and project partners in conjunction with the community's ideas and comments to deliver the Indicative Layout Plan (ILP) and landscape strategy for the precinct.

Key elements in this iterative process are:

- identification of site opportunities and constraints including visual and landscape analysis, analysis of infrastructure costs and development yield to determine financial viability;
- developing a vision for Ingleside in collaboration with the project partners, landowners and the broader community through a range of engagement tools/ methods including but not limited to design workshops;
- to develop and prepare the structure plan based on the vision and incorporates findings from consultant studies, best practice and master planning principles;
- to consider and test Indicative Layout Plan options; and
- developing a landscape strategy.

The master planners are undertaking the visual and landscape analysis for the overall precinct. Detailed below are the key issues affecting the master planning study.

Chapter five informs on progress of the technical studies in identifying opportunities and constraints including analysis of infrastructure costs and financial viability.

4.1 Key Issues

Key issues that will affect the master planning of Ingleside include:

4.1.1 *Best Practice Principles towards Sustainability*

Consider how sustainable development outcomes for the Ingleside precinct can be achieved through:

- designing places for people;
- respecting the environment;
- creating a prosperous community;
- good leadership and strong governance; and
- enhancing liveability.

The basis of the above criterion was developed with the Ingleside Community Reference Group, and is the subject of further discussion with the broader community through the website and at the upcoming workshop sessions.

It is recognized that there is significant data that identifies climate change leading to extreme weather events as a future issue. Ingleside may be susceptible to extreme weather events such as bushfire and flooding. As such, climate change will be taken into consideration as part of the consultants future investigations.

Currently the project partners are investigating a number of sustainability tools for applicability to the precinct planning process and legislative framework.

4.1.2 *Topography*

Ingleside is located on a plateau, approximately 160m above sea level and characterised by north-south ridgelines which extend from Garigal National Park to the south through to McCarrs Creek and Ku-Ring-Gai National Park to the north. The immediate area to the east of the precinct is the Ingleside Chase Escarpment, a steep incline that distinguishes Ingleside from the urban areas of Warriewood Valley and Mona Vale. There are three main drainage catchments which are likely to influence potential development outcomes.

4.1.3 Drainage

As ridgelines fall away from the precinct, it feeds three significant catchments which channel water from the area to the National Parks and Narrabeen Lagoon in the south and the Pittwater waterway in the north. Development controls for the precinct will need to ensure that no stormwater runoff leaves site without being properly treated first, suitable for discharge into these sensitive ecological areas, and that there are no adverse flooding impacts on downstream areas. Improving environmental flows in creek systems is also a relevant consideration.

4.1.4 Sensitive vegetation

The vegetation cover varies throughout the precinct. Open forests are confined largely to the ridgelines, creeks and gullies while the remaining area comprises of low woodland and open scrub. This presents an issue surrounding the mitigation of bushfire risk. There are also endangered ecological communities that will need to be protected, preserved and where possible, restored due to their biodiversity significance and contributes to the attractiveness and leafy character of Ingleside. For example, an area of special landscape value is the bushland in the precinct, see the photograph at Figure 3.

As far as practicable, the following are to be considered:

- Retain significant vegetation particularly highly scenic areas along the eastern escarpment, ridgelines and gullies, and the Mona Vale Road corridor;
- Preserve and enhance riparian corridors and integrate these with the overall public open space and passive recreation framework;
- Where appropriate, reinforce and enhance existing open rural/residential landscape character;
- Areas of natural vegetation exist inside the precinct as both riparian areas and significant remnant stands of vegetation that is in both private and public ownership; and
- Opportunity to identify and set aside areas of high/significant ecological value for future consideration by seeking to obtain statutory approval at/immediately after rezoning to minimise delay at the development application stage (known as biodiversity certification).

Figure 3: BUSHLAND AT INGLESIDE

4.1.5 Scenic values

At approximately 160m above sea level at its highest point, Ingleside presents an opportunity to capitalise on views across the north-eastern suburbs of Sydney. Once above the tree canopy, spectacular 360 degree views are revealed which extend from Terrey Hills and Chatswood in the west, through to the Sydney CBD in the south, the Tasman Sea and the Northern Beaches to the east, and the Pittwater waterway and Ku-Ring-Gai National Park to the north. The Baha'i Temple can be seen from Palm Beach to Seaforth and is one of the defining landmarks of Ingleside and the Northern Beaches. Given the elevation and prominence of Ingleside in the context of the surrounding area, care will need to be taken to ensure development is sensitive to this prominent visual location.

The scenic and natural value of Ingleside Chase and its high exposure to views from the coastal plain may constrain development on or adjacent to the escarpment. The precinct is exposed to views and has complex interfaces with the natural landscapes to the north-west, west and south-west. Existing low density development has low visual exposure.

4.1.6 Infrastructure

Topography and distance from existing urban services will have an impact on the costs and ability to service different parts of the precinct. Existing infrastructure within the area is inadequate for existing residents and workers, let alone any future population. A large proportion of Ingleside premises are still on septic systems. The upgrade of the Sewage Treatment Plant at Warriewood facilitated the development of the Warriewood Valley release area and has capacity to service some development at Ingleside. The precinct's natural features create challenges in providing power, water, gas and sewer infrastructure necessary to support any increases in working or residential population on the plateau. Servicing costs and constraints, combined with other factors, are likely to be a limiting factor on the viability of development in North Ingleside and Wirreanda Valley.

4.1.7 Traffic

Access to Ingleside is constrained to two major routes; Mona Vale Road and Powderworks Road. Mona Vale Road is an arterial single lane road in each direction dissecting the precinct to north and south areas, characterised by numerous crests, blind corners, narrow stretches through sandstone cuttings, lack of street lights, steep ascents and descents exacerbated by insufficient passing opportunities and is well utilised by heavy vehicle traffic accessing the northern beaches and Kimbriki Tip. Powderworks Road has evolved from a local road to a regional road, single lane in each direction running in an east-west direction from Elanora Heights (between Garden Street and Mona Vale Road) to Ingleside at Mona Vale Road.

Powderworks Road is identified by the *Mona Vale to Macquarie Park Corridor Strategy* (RMS 2009) as the only parallel route to Mona Vale Road that can act as an alternative route to Mona Vale Road. In this regard, Powderworks Road currently accommodates a proportion of through traffic. The Corridor Strategy goes on to state that Powderworks Road is capable of accommodating Mona Vale Road through traffic when Mona Vale Road is congested. Within Ingleside, Powderworks Road is relatively unconstrained, has minimal property accesses and few traffic calming measures or pedestrian infrastructure. However within Elanora Heights, Powderworks Road is constrained by topography, has a high number of property accesses, and significant traffic calming and pedestrian islands.

4.1.8 Other key issues

As far as practicable:

- identify and enhance culturally significant non-indigenous landscape character in key areas;
- the necessity for providing protection from bushfire hazards both at the margins and inside the precinct may cause visual impacts on existing character and constrain the location and density of future development;
- the developed areas have a highly variable internal character and contain significant contrasts between the likely future character as an overall residential precinct and the existing rural/rural residential and small holding farm character of Ingleside;
- sustainability of development in social, economic and environmental terms and maintenance of such over time, and
- consider land use, siting and built form implications of alternate technologies for waste water management.

5 Technical Studies

5.1 Land Capability, Salinity and Potential Contamination

5.1.1 Key issues so far

In terms of geotechnical characteristics, the Ingleside precinct contains a number of soil landscape types but is mostly comprised of the Lambert (erosional), Somersby (residual) and Oxford Falls (fluvial) groups. Generally, the characteristics of these landscapes are as follows:

- situated on the Hawkesbury sandstone plateau with minor shale;
- highly permeable soil with low fertility; and
- a landscape consisting of low eucalypt woodland and scrubland.

Both previous and existing land uses are important to understand when addressing potential contamination issues. The Ingleside precinct contains a number of existing land uses that may contribute to potential sources of contamination. These include agricultural activities, rural-residential use which may cater for on-site effluent treatment and potentially unauthorised landfill and waste management facilities.

From a preliminary assessment, there is potentially a low to nil probability of acid sulphate soil risk occurring on the site. It is also anticipated that the areas of environmental concerns with respect to contamination are agricultural and waste management uses, as well as where any on-site effluent treatment may occur.

Salinity risk is unlikely to be a significant issue given the sandstone environment of the northern beaches area, which differs from the shales of north-west and south-west Sydney. This will be investigated further during the precinct planning process.

5.1.2 Next steps

The next tasks are as follows:

- review of information including geotechnical and soil characteristics of the area and analyse the potential for issues to affect urban development;
- undertake a site inspection and commence limited geotechnical testing (i.e. drilling) of approximately 3 boreholes per square kilometre of the Ingleside precinct; and
- undertake laboratory testing of collected soils for contamination, groundwater and salinity purposes.

5.2 Biodiversity, Riparian and Bushfire.

5.2.1 Key issues so far

Known ecological issues include:

- the known presence of Duffys Forest Endangered Ecological Community;
- the known presence of threatened plant species: *Grevillea caleyi* (Caley's Grevillea); *Microtis angusii* (Angus's Onion Orchid); and *Tetratheca glandulosa* (Glandular Pink-bell);
- the known presence of threatened animal species: *Heleioporus australiacus* (Giant Burrowing Frog); *Pseudophryne australis* (Red-crowned Toadlet); *Cercartetus nanus* (Eastern Pygmy Possum); *Ninox connivens* (Barking Owl); *Ninox strenua* (Powerful Owl); and foraging habitat for *Chalinolobus dwyeri* (Large-eared Pied Bat) and *Miniopterus schreibersii* subsp. *schreibersii* (Eastern Bent-wing Bat);
- Swamp Sclerophyll Forest;
- the opportunity for wildlife corridors to allow movement of fauna within the precinct, in and out of the precinct and across roads, given that the precinct is surrounded by Garigal and Ku-ring-gai National Parks and Ingleside Chase Escarpment and Katandra Nature Reserve will be considered. A map showing Vegetation Communities is at Figure 4;
- consider conservation outcomes alongside other factors including development costs, viability and yield to determine a viable conservation outcome that achieves appropriate conservation standards, but does not constrain development;
- the precinct is at the headwaters of a number of creeklines, with Cicada Glen Creek running through the centre of the site and flowing to the north, and Mullet Creek in the south east flowing to the east. A map showing Drainage is shown at Figure 5; and

- Ingleside is currently mapped as 'bushfire prone'. The level of bushfire risk will depend on the vegetation retained and the development outcomes.

Figure 4 – MAP OF VEGETATION COMMUNITIES

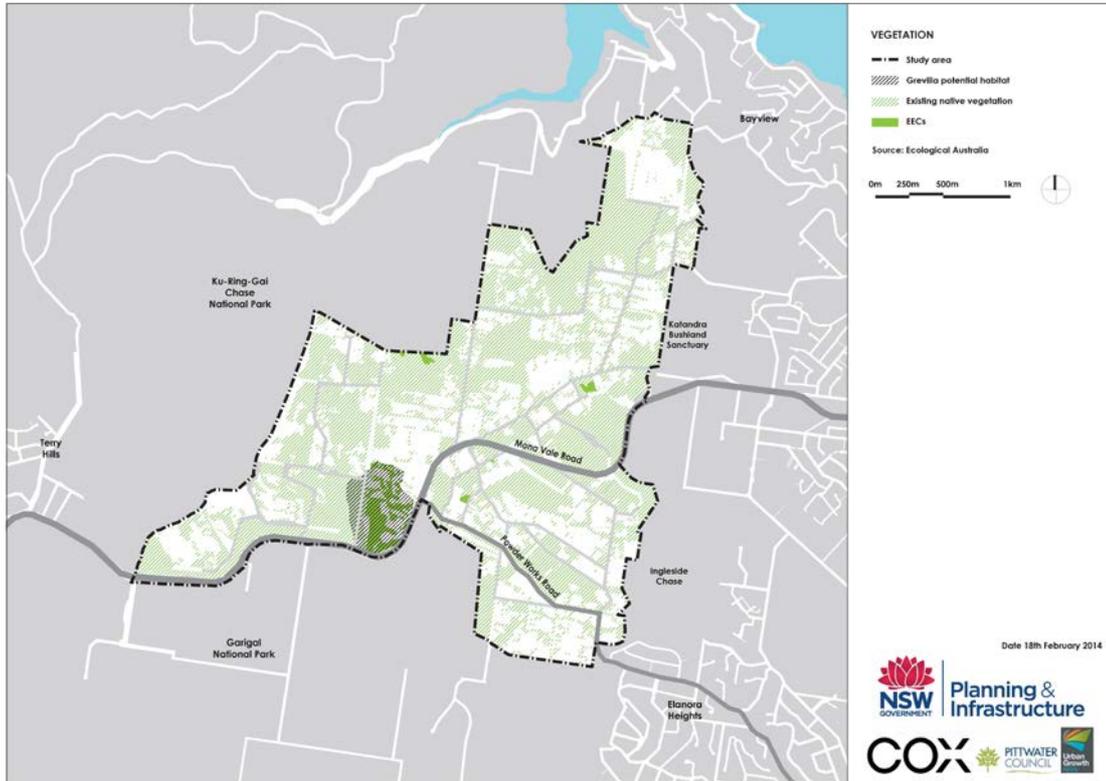
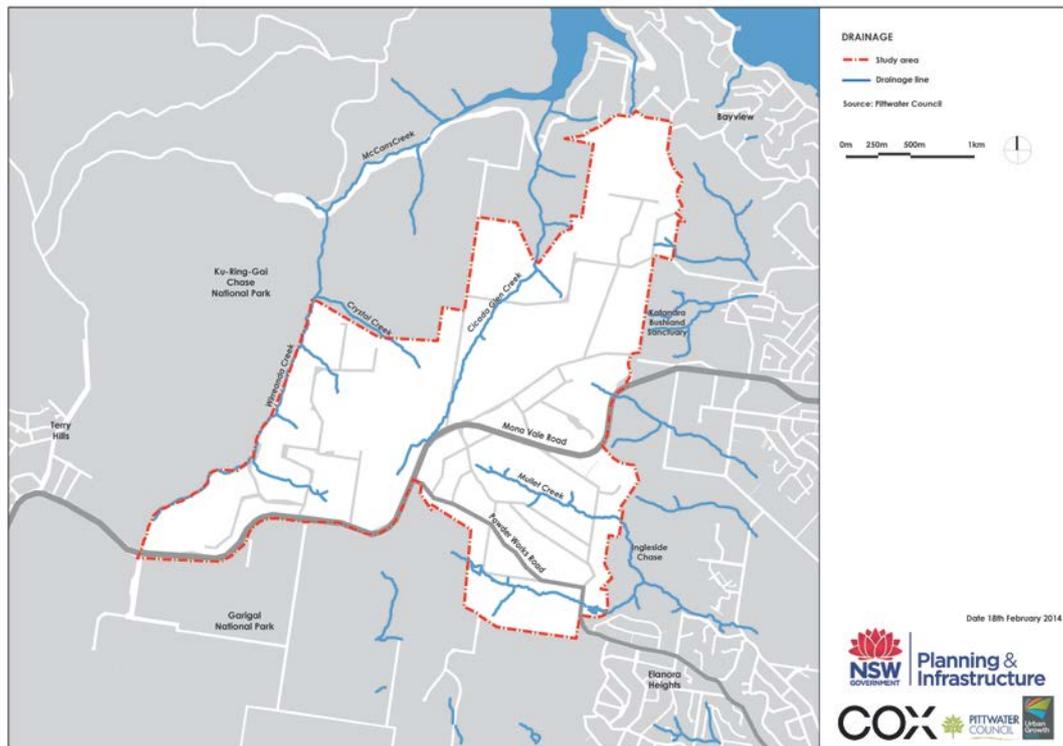


Figure 5 – DRAINAGE LINES

5.2.2 Next steps

There are a range of other ecological values that may emerge following further considerations. Detailed field work will inform this assessment.

5.3 Water Cycle Management and Flooding

5.3.1 Key issues so far

- The precinct has three catchment areas being the McCarrs Creek, Mona Vale – Bayview and Narrabeen Lagoon (includes Mullet Creek) catchments;
- The eastern side of the ridge drains to Warriewood Wetlands/Narrabeen Lagoon and the western side drains to McCarrs Creek/Pittwater;
- The receiving waterways are recognised for their environmental and recreational values that have been actively protected and rehabilitated by Pittwater Council. Future urban development should include appropriate controls to ensure that the receiving waterway health is conserved;
- Increasing the intensity of urban land use would replace the vegetation with more impervious surfaces. The surface discharge would increase and is likely to require detention to avoid adverse flood affectation to downstream properties. This is considered to be of particular concern to residents of North Narrabeen and Warriewood; and
- Trunk drainage, local or regional basins and major water quality measures will need to be conceptually sized.

5.3.2 Next steps

Work has commenced on analysing the background information to inform the development of the Water Cycle Management Strategy.

5.4 Visual and Landscape Analysis

5.4.1 Key issues so far

Key steps in developing a landscape strategy will include identification and assessment of:

- precinct specific landscape character;
- internal precinct landscape character zones;
- significant, ecologically sensitive, and threatened vegetation communities and subsequent recommendations for appropriate conservation, preservation and / or restoration;
- constraints and opportunities in respect of the existing landscape character zones with special emphasis on bushfire mitigation; green corridors; riparian zones; ridgelines and gullies; and landscape functional and visual buffer zones;
- landscape strategy / landscape structure plan to support the various ILP options;
- an appropriate landscape hierarchy appropriate to evolving development options including strategic framework for the public domain including streetscape definition, public open-space network, active and passive recreation areas and Water Sensitive Urban Design (WSUD) initiatives;
- the landscape structure plan in association with infrastructure planning to service the landscape zones, so that parks and open spaces will be accessible to public transport, parking, pedestrians and cycleways; and
- harnessing and enhancing the landscape character zones to relate to the proposed development particularly as it relates to the evolution of green spaces within the urban / civic core and communal open space, such as community gardens.

5.4.2 Next steps

Work in collaboration with master planner and other consultants towards development of the landscape strategy.

5.5 Indigenous Heritage

5.5.1 Key issues so far

Preliminary results from the OEH Aboriginal Heritage Information Management System (AHIMS) sites database revealed 67 listed Aboriginal sites within the precinct and immediate surrounds.

The adjacent Ku-ring-gai Chase National Park, along with Lion, Long and Spectacle Island Nature Reserves, is a listed place on the National Heritage List. The listing recognises the natural heritage values of the place and notes the extensive evidence of past Aboriginal use and occupation of the place, mostly as shell middens along the foreshore but also rock engravings and paintings, grinding grooves, stone arrangements, burials and occupation sites.

Rock engravings are the most common recorded site type in the area, generally occurring on exposed sandstone platforms in ridge crest and slope contexts. Shelter sites also occur in the

area. Natural shelter formations occur in Hawkesbury Sandstone where overhangs have formed on ridge slopes, or beneath large exposed rock outcrops in ridge crest contexts. Archaeological investigations have demonstrated that shelters were utilised for a variety of purposes. Remaining evidence of those activities might include stone artefacts, shell midden material, pigment art, stencils and engravings.

Recorded open artefact scatter sites are less common in the region. Often the steeper terrain associated with ridge lines would prevent frequent or lengthy activities that would result in the accumulation of large numbers of stone artefacts. In addition, archaeological deposit does not tend to survive as well in steep, sandy contexts as in shelter floor deposits or across wide, gently sloping or flat ridge crests.

Aboriginal community consultation is a key factor in verifying sites and developing suitable management practices.

The assessment will consider potential impact on Aboriginal cultural heritage values, sites, items or listed places. A method for addressing any impact would be developed as part of the precinct planning process.

Archaeological sensitivity of the precinct will be strongly linked to the geology. A number of Aboriginal rock engravings, grinding grooves and rock shelters with art and deposits are known to occur in the area, associated with sandstone outcrops and overhangs. Open scatters of artefacts are less prevalent in sandstone geology, and none have been recorded previously in the precinct. The precinct planning process will allow for conservation of discrete Aboriginal sites.

It is noted that there is a Land Title Claim currently lodged with the Federal Court, which could apply to Crown Land in this precinct.

5.5.2 *Next steps*

The next steps include:

- consult with Stakeholder Aboriginal Communities;
- gather and analyse existing documentation;
- field work to identify Aboriginal cultural heritage sites and values within the precinct;
- assess the significance of Aboriginal cultural heritage sites and values;
- develop appropriate land use and management options;
- reporting and mapping; and
- consideration of ongoing recognition of Aboriginal heritage.

5.6 **Non-Indigenous Heritage**

5.6.1 *Key issues so far*

The Ingleside precinct is in the vicinity of Ku-ring-gai Chase National Park and Garigal National Park. Both National Parks possess natural and Aboriginal heritage values, and are identified as having Non-Indigenous heritage value.

Preliminary historical research indicates that land in the precinct was first granted as farm lots between 1867 and 1886. Given the limited development throughout the history of this area, there is the potential that structures or landscapes from this period may still remain.

Research has also revealed that periods of subdivision and development occurred during the 1920's and again in the 1950's and 1960's. Twentieth century buildings or cultural landscapes of heritage value may be present that have not been previously identified.

Heritage items that are listed either nationally, state or locally will need to be integrated in the Precinct Plan.

The following listed heritage items of natural, built and historical archaeological value have been identified. These items are located within or in the vicinity of the Ingleside precinct:

- Baha'i House of Worship, 173 Mona Vale Road, Ingleside – listed in Schedule 9 of the Pittwater LEP 1993 and Schedule 5 of the Draft Pittwater LEP 2013;
- group of Monterey Pines, 169,169A and 169B Mona Vale Road, Ingleside – listed in Schedule 9 of Pittwater LEP 1993 and Schedule 5 of the Draft Pittwater LEP 2013;
- Ingleside House and Curtilage, 1 Manor Road and 12 King Road, Ingleside – listed in Schedule 9 of Pittwater LEP 1993, Schedule 5 of Draft Pittwater LEP 2013, the RNE and National Trust Register;
- Klerk's Garden, 1 Chiltern Road Ingleside – listed in Schedule 9 of Pittwater LEP 1993 and Schedule 5 of the Draft Pittwater LEP 2013;
- ruins of Powderworks, 2 and 10 Manor Road, Ingleside – listed in Schedule 9 of Pittwater LEP 1993 and Schedule 5 of the Draft Pittwater LEP 2013;
- Tumbledown Dick Road Cutting, Mona Vale Road, Ingleside – listed on the Register of the National Estate; and
- Ku-ring-gai Chase National Park, Lion, Long and Spectacle Island Nature Reserves, Ku-ring-gai Chase Road, Bobbin Head – listed on the National Heritage List and the RNE.

Pittwater Council is currently preparing a Community Based (Non-Indigenous) Heritage Study of Pittwater LGA. Several items have been nominated within Ingleside. Although this information is not yet publicly available, Council is advising on the proposed items when nomination list is finalised (May 2014). It is anticipated when the information is available, those proposed items will be addressed.

5.6.2 Next steps

Verification of identified sites will involve field work and physical analysis. This may require access to private landholdings in the precinct.

5.7 Traffic and Transport

5.7.1 Key issues so far

AECOM's *Assessment of Powderworks Road Corridor Preliminary Transport Study* (Feb 2013) identified a number of challenges for developing the Ingleside precinct. It concluded that upgrades would be required to the majority of intersections in the study area to meet the required level of service and that the east/west road corridors (Powderworks Road and Mona Vale Road) had insufficient lane capacity to accommodate the assessed level of development traffic. These preliminary observations highlighted that unlocking the constraints on the road network is critical to the development potential of the precinct.

KEY ISSUES	OPPORTUNITIES
<p>The existing mode share indicates that the proposed development could likely suffer from high levels of demand for travel by private car.</p>	<p>Opportunity to improve bus priority infrastructure and increase bus service level and coverage at the initial stages of development. This would facilitate public transport uptake from the beginning.</p>
<p>The design of the precinct's road network is constrained by existing strategic road network and topography meaning that current strategic roads will bear the majority of traffic impacts.</p>	<p>Reliance on the existing road network will require associated improvements to existing infrastructure, including walking and bicycle paths, potentially improving local transport efficiency and people movement.</p>
<p>Intersection capacity may not meet the required levels of service in their current layouts due to the addition of development traffic of the precinct.</p>	<p>Intersection upgrades throughout the study area, with the incorporation of bus priority infrastructure to cater for the increased demand and also encourage mode shift away from private vehicles.</p>
<p>Powderworks Road currently provides an alternative route for through traffic. With future growth this would result in congestion along this corridor. Another rat run is also possible through Lane Cove Road and Cabbage Tree Road.</p>	<p>Potential widening of Mona Vale Road to two lanes in each direction in combination with traffic calming along Powderworks Road will encourage the through traffic to remain on the arterial road network - Mona Vale Road.</p>
<p>Mona Vale Road will require upgrading to two lanes in each direction to accommodate existing traffic and other committed development in the surrounding area.</p>	<p>Improved safety, reduction in accidents, potential for overtaking, reduced pressure on Powderworks Road, and the ability to develop the precinct to a greater extent. Funding and timing of this upgrade is not yet confirmed, but may be better defined as a result of the precinct planning for Ingleside.</p>
<p>External traffic generators such as the Northern Beaches Hospital and Macquarie Park Developments may impact on the volume of through traffic on Mona Vale Road.</p>	<p>Increasing demand for travel through the precinct can be managed through the master planning stage that may potentially result in enhanced bus services.</p>
<p>The number of intersections to the precinct from Mona Vale Road is likely to be restricted to four locations.</p>	<p>Intersections will be upgraded to improve capacity and safety, including full access on and off ramps at Tumburra Street.</p>
<p>Noise and vibration</p>	<p>Appropriate development can mitigate noise impacts.</p>

5.7.2 Next steps

The first step in the Ingleside Transport Study is collecting additional traffic data and identifying background noise levels, where data is unavailable. Feedback from the Ingleside Community Reference Group meeting in December 2013 has assisted in gaining a better understanding of issues facing the proposed development.

The primary focus of this initial work will be to identify the feasibility of varying levels of development based on the capacity of the local transport network, and will inform potential scope of development in the precinct.

5.8 Demographic and Social Infrastructure Assessment

5.8.1 Key issues so far

There is currently no significant public social infrastructure in the precinct.

Any significant increase in the Ingleside population will create a need for additional local facilities and services within the precinct, or augmentation of existing facilities and services in the surrounding area. Facilities most likely to be required, depending on the planned increase in population, include:

- sporting facilities, particularly playing fields;
- a primary school and childcare centres;
- meeting and activity spaces, provided by a multi-purpose community centre;
- local parks, and walking and bicycle accessible paths;
- shops and local commercial services, to help create a focal point for the community; and
- facilities that account for cultural diversity.

Other key issues include:

- whether population growth is sufficient to reach the thresholds that will justify the provision of additional local facilities and services;
- how the distribution and density of development will influence facility requirements and siting arrangements, given the site's topography and other constraints;
- assessing how existing facilities and services in the surrounding area or wider LGA might be expanded, should population growth not be sufficient to trigger demand for new facilities within the precinct, and providing those facilities are accessible to the Ingleside population;
- developing strategies for off-site regional facilities, such as indoor recreation space, mental health services for young people (Headspace) and recreational program for young people (PCYC);
- providing adequate public transport services to enable future residents with improved access to district and regional facilities in other parts of Pittwater and the northern beaches;
- slow rates of development might also inhibit the timely provision of facilities and services; and
- investigate mixed housing opportunities to consider the appropriateness and viability of providing opportunities for more affordable housing/social housing providers.

5.8.2 Next steps

The first part of this study will review existing social infrastructure including review of policies and strategies at the local and regional level to inform the broader social planning matters for the precinct.

Determining the likely development yield and housing mix for the precinct will be resolved when the Structure Plan for Ingleside is nearing completion. This will enable Elton Consulting to finalise their demographic forecasting for the precinct as well as finalise list the of social infrastructure and options for delivery arrangements.

5.9 Employment and Retail Assessment and Economic Viability Assessment

5.9.1 Key issues so far

Employment in the region is relatively self-contained, partly as the precinct is geographically isolated and underserved by public transport. This is also reflected in the proportionately higher number of home businesses in the Pittwater LGA. To maintain the self-containment of the subregion, employment lands should take into account the skills base, the existence of medical and sports/recreation specialised precincts in the Pittwater LGA, and opportunity to address the issue that a relatively high proportion of residents have to travel to work to areas outside of Pittwater.

Retail and commercial land use requirements, including floor space that may support or generate employment activity within the precinct needs to be defined. Initial criteria for such land uses are:

- any employment lands must be close to existing public transport, arterial and sub-arterial roads, and other employment lands;
- proximity to skilled labour force;
- retail and commercial activity needs to have regard to a centralised location for greater accessibility to the majority of residents, proximity to major intersections for exposure and public transport routes, accessibility to existing commercial and industrial areas, and proximity to social and community facilities/services;
- any proposed retail-commercial activity centre must have regard to the Centres Hierarchy including proposed floor space in the centre;
- Warriewood Square and Mona Vale Town Centre will continue to cater for needs of incoming residents in the Ingleside precinct;
- Proximity to Elanora Heights centre at Kalang Road; and
- where the planning process identifies housing opportunities to support a resident population of 8,000 people or greater, a neighbourhood centre (of around 1,500m²) including a small supermarket (such as an IGA of 1,000m²) would be necessary.

A key factor in the planning consideration understands how the development scenarios, infrastructure requirements and its total cost determine the likelihood of development in Ingleside. These costs will be influenced by constraints to development in the area, namely:

- the need to manage flooding and bushfire risk;
- riparian corridors;
- biodiversity in the area;
- maintain heritage assets in the area;
- infrastructure servicing constraints;
- land-related constraints;
- fragmented land ownership; and

- existing capitalisation of some properties, particularly in North Ingleside.

It is possible that each sub-precinct could have a different underlying land value and this will influence the viability of different housing types such as large detached, medium detached, compact detached, semi-detached/terrace and low rise apartments. This assessment is also likely to identify which areas may develop early based on their viability through to those areas not likely to develop at all in the foreseeable future.

5.9.2 Next steps

Employment and retail opportunities will continue to be investigated supplemented by the master planning and other studies.

The viability assessment will test for the yield and housing mix that triggers desirable residential development. It will be informed by a case study analysis and modelling which considers development costs, such as land, infrastructure and construction costs and available revenues. The viability modelling will show the areas most likely to develop early through a continuum to those areas not likely to develop at all.

The investigation will include research on planning and development factors that affect land values; the effect on such values following rezoning; to review these against possible constraints such as environmental, topography and flooding; and identify sub-precincts where different built form outcomes might be possible. This may mean that some steeper areas are likely to be lower density and some areas may require on-site servicing because of different cost profiles.

5.10 Infrastructure Delivery

5.10.1 Key issues so far

- Determine appropriate load estimates for the land uses proposed within the Ingleside precinct;
- consider new technologies including NBN and sustainable initiatives for infrastructure delivery e.g. solar, grey water re-use, etc.;
- consider potential sustainability rating of infrastructure eg. “SMART” streets and Water Sensitive Urban Design, amongst others;
- establish potential connection points to existing trunk infrastructure for sewer, potable water, electricity, gas and telecommunications;
- identify appropriate and cost effective routes for the installation of trunk infrastructure to minimise the potential environmental impacts;
- establish confirmed approval pathways with utility providers for the provision of trunk infrastructure to the Ingleside precinct; and
- document timeframes for obtaining approvals and installing trunk infrastructure.

5.10.2 Next steps

The proposed methodology for completing the Infrastructure Delivery Plan will require extensive consultation with utility service providers including Sydney Water, Ausgrid, Telstra, NBN Co. and Jemena.

The purpose of the consultation will be to develop a series of options that can be refined by the project team into feasible, cost effective and environmentally sensitive servicing strategies that align with the staged release of land within the Ingleside precinct. As part of the consultation with utility service providers, written confirmation of staged servicing strategies would be sought and realistic timeframes for delivery confirmed. It is to be identified that

funding of infrastructure at the local level must be done with minimal financial risk to Pittwater Council and have a sound, justifiable and cost effective Development Contributions Plan. This plan must be developed and applied consistently over the life of the development roll out.

6 Conclusion

Key issues presented at this early stage of the precinct planning process include:

- land fragmentation issues combined with some areas displaying high capital investment, land capability attributes in terms of topography, native vegetation and interface with sensitive areas such as National Parks, bushland reserves and the Ingleside Chase Escarpment provide its challenges across the precinct;
- finding the “balance” that achieves the best outcome for all stakeholders from the opportunities and constraints unique to this precinct. This “balance” must deliver environmental, social and financial sustainability in the future development of Ingleside. This will come from the Master Planning and work undertaken to prepare the Technical Reports;
- any future development in the precinct will need to be staged. This will be influenced by the costs of new urban infrastructure in different parts of the precinct and the likely take-up rates for new development; and
- achieving infrastructure provision commensurate with development.