

## Part C: Site Analysis



## 4.0 Site Analysis

### 4.1 Site Analysis

This section of the report provides an analysis of how the UTS site integrates with the existing urban and natural context. The key defining characteristics of the UTS site are identified and discussed.



**Figure 7** – Aerial photograph of the site

#### Existing Land Use

The site is currently used as UTS Kuring-gai campus. Faculties at the Kuring-gai campus include business, law, sports, leisure and tourism, nursing and education (incorporating science and art). Approximately 300 fulltime employees work on campus with a student capacity of some 3,500.

The aerial photograph in **Figure 7** depicts the current development of the site, including roads, buildings, car parks and associated facilities within the residential and bushland setting.

#### Physical Context

To the north of the site large single lot residential dwellings with extensive gardens typify the existing built form context. To the east, south and west of the site lies the Lane Cove National Park. The park separates the Kuring-gai campus from the nearby suburbs of Roseville and Chatswood to the east and south and North Ryde to the west. **Figure 8** describes the physical context.

Film Australia is located on the land owned by the Commonwealth and which generally forms the northern boundary of the site. Single lot dwellings adjoin the site at the north east and north western corners.



Figure 8 – Physical context

#### 4.1.1 Landform and topography

The buildings of the Kuring-gai campus are located on a plateau of a sandstone ridge at the end of the spur that extends to the Pacific Highway ridge line. The flatter levels of the plateau have generally been developed for university associated uses including car parks, roads and recreation areas. The development of the campus incorporated the natural land contours with minor cut and filling in the east for the car park with levelling at the sports oval.

The plateau is surrounded by moderate and steep slopes that fall away from the plateau to form creeks at the base of the plateau. Most notably, the land to the west of the site falls steeply to College Creek.

The east, west and south of the site contains areas of both disturbed and undisturbed bushland vegetation which are contiguous with the Lane Cove National Park.

The campus buildings and facilities are well integrated with the bushland, although there has been clearing of native plants adjacent to the buildings, car parks and oval.

The site forms a sandstone plateau at the end of a ridgeline that extends from Lane Cove National Park to the Pacific Highway. Topography falls steeply away on all sides except the north. **Figure 9** shows the site topography.



Figure 9 - Landform and Topography (Source DEM)

### 4.1.2 Geological conditions

The site is underlain with Hawkesbury Sandstone. Patterson Britton & Partners has prepared an Urban Infrastructure Management Strategy which is included at **Appendix E**. This reviewed geological conditions and the potential impact of tunnelling associated with the Epping to Chatswood rail Line (ECL).

The railway line associated with the former alignment of the ECL passes directly under the site in a tunnel at a depth of at least 25m. Patterson Britton & Partners have identified from its review of the Environmental Impact Statement prepared for the ECL that the prevailing geological conditions mean that surface settlement arising from the excavation of the tunnel void will have minimal impact on surface buildings or underground service utilities proposed as part of the Concept Plan or the continued amenity of the site.

### 4.1.3 Hydrogeology

Groundwater bore data indicates that there are 5 registered groundwater bores located within a 2.5km radius of the site.

Groundwater on the site is anticipated at depths greater than 20m below ground level in sandstone with economic supplies (aquifers) at approximately 100m below ground level. The hydrological sensitivity classification of the site is considered to be low. Site activities are highly unlikely to impact on registered bores located within 2.5km radius of the site.



#### 4.1.4 Drainage & flooding

The nearest water bodies to the site are:

- College Creek which is on the south west part of the site;
- Blue Gum Creek around 100m south of the site in the Lane Cove National Park; and
- Sugarbag Creek around 100m to the east, which drains to the Lane Cove River and Sydney Harbour.

There are numerous small sub-catchments draining from the site to the surrounding area. Stormwater exiting the site is discharged via 22 outlets into the adjacent bushland that in turn drain to a number of tributary creeks and ultimately the Lane Cove River.

Further stormwater drainage details are provided in the Urban Infrastructure Management Strategy prepared by Patterson Britton & Partners (**Appendix E**).

#### 4.1.5 Site contamination

WSP Environmental has undertaken a Phase 1 contamination audit of the site. This is included at **Appendix F**.

The report identifies that the site has not been grossly contaminated by its current or historic uses. There may be some isolated areas of minor contamination, resulting from building materials, migration from off-site sources or the use of pesticide and weedicide on the sports oval.

The contamination audit concludes that there are no contamination issues preventing the site from being rezoned for residential use.

#### 4.1.6 Ecology

An ecology report prepared by ERM (August 2007) examines the flora and fauna characteristics of the site and its surrounds. The report is included at **Appendix C** and its main findings are summarised below.

##### Vegetation

Native vegetation within the site consists of remnant woodland, heathland and forests on ridges and slopes. This vegetation forms a contiguous corridor from the Lane Cove National Park.

Some of the ridge top vegetation on the site and in areas to the north has been impacted by urban development and replaced with buildings, hard surface areas or introduced landscaping. A Tree Asset Report, prepared by BioDesign & Associates Pty Ltd is also included at **Appendix G**

As previously mentioned, native vegetation is located mainly around the periphery of the site and is relatively undisturbed. Weeds are restricted to the edges and along drainage lines where stormwater outlets discharge.

None is listed as an endangered community under the Threatened Species Conservation Act or Commonwealth Environment Protection and Biodiversity Conservation Act. These communities are considered relatively well conserved in the Lane Cove National Park and the Sydney Region.

The bushland supports small areas of the threatened plant species *Darwinia biflora* which is listed as vulnerable under the EPBC Act. This shrub occurs in restricted and scattered patches within the upper hillside areas, near the north-western and eastern car parking areas. The location is described in **Figure 10**.

## Fauna

The native vegetation and other habitat features, such as rock outcrops, drainage lines and soil types, provide potential habitat for a range of fauna that are typical of Sydney Sandstone vegetation. This includes birds, mammals, reptiles and amphibians.

The majority of fauna is well conserved in the Sydney region, including the adjacent National Park.

The Red-crowned Toadlet is the only threatened fauna species likely to inhabit the site. Details of their listing under the Threatened Species and Environment Protection and Conservation Acts, as well as their distribution and abundance at the site are provided in the report by ERM (refer **Appendix C**).



Figure 10 – Flora and Fauna (Source DEM)

### 4.1.7 Bushfire management

The site is designated as bush fire prone land, as identified on the Kuring-gai Council's Bush Fire Prone land Map and as approved by the Commissioner of the NSW Rural Fire Services. It was affected by bushfire in 1994 and although there was fire damage to lamp posts and roof gardens, most buildings were robust enough to withstand the fire and the site was largely unaffected.

The existing buildings and land uses pre-date the introduction of legislation which affects the location of buildings and high risk uses in bushfire prone areas.

While the existing uses may legally continue in their current location, new assessment requirements to ensure appropriate asset management and bushfire hazard reduction have been introduced. A Bushfire Hazard Assessment, prepared by Barry Eadie Consulting Pty Ltd relating to the proposed uses is included at **Appendix H**.

### 4.1.8 Utility services

Patterson Britton & Partners has undertaken an assessment of existing utility services within and available to the site.

All main services (water, sewer, electricity, gas, and telecommunications) are currently available and can be augmented as necessary. Further details are provided in the Urban Infrastructure Management Strategy (refer **Appendix E**).

### 4.1.9 Visual character and views

The main building is a very strong visual element and along with the bushland visually dominates views to and from the site.

Panoramic views are available from the campus buildings and elevated parts of the site. Long views extend over the Lane Cove National Park to the south and distant views to residential areas, Chatswood CBD, Riverside Corporate Park, and CSIRO Bradfield Park in other directions.

There are mid-distance views of the residential areas of Roseville and West Chatswood to the east. Views are described in **Figure 11**.

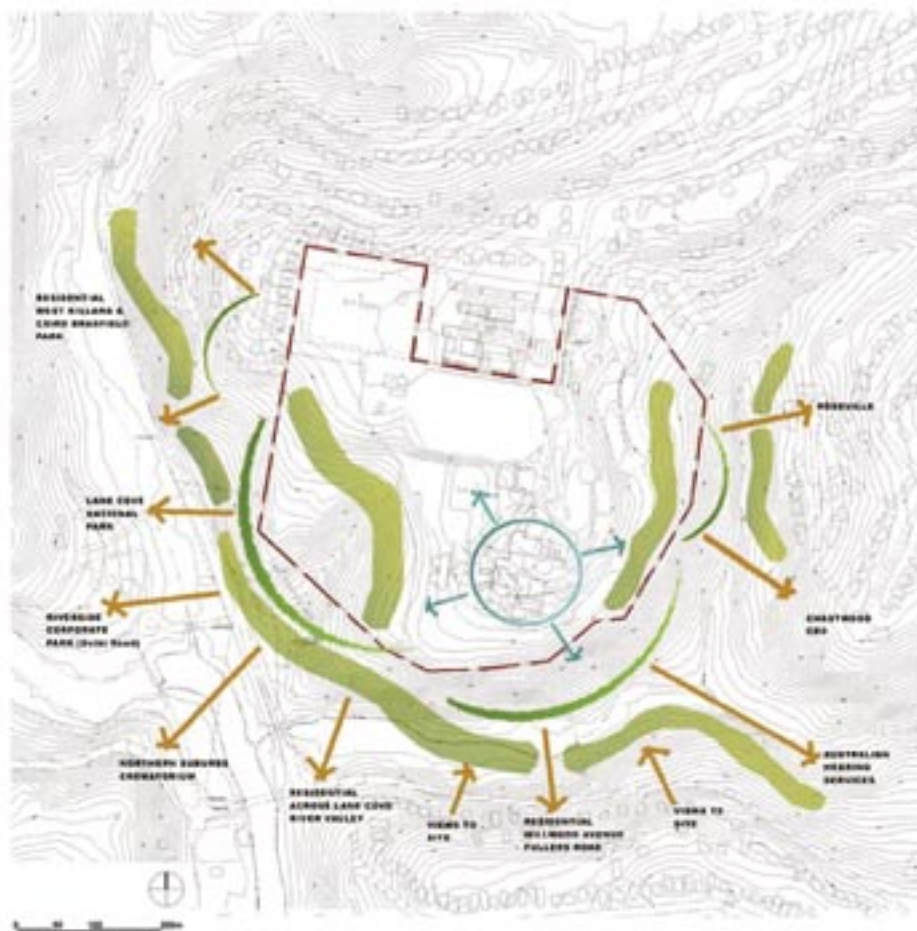


Figure 11 – Views (Source DEM)



## 4.1.10 Land Use

The site provides a mix of developed area and bushland as indicated in **Table 6**.

**Table 6** – Summary of developed area

Existing use	Area (m <sup>2</sup> )	Cover
Undeveloped area (bushland)	91,792	44%
Developed area	116,218	56%
- Roads, parking, hard surface	86,765	32%
- Sports oval	15,535	7%
- Building footprint	13,918	7%
Site Area	208,010	100%

(Source: DEM and ERM, 2004)

The site is currently used by UTS as a tertiary educational campus and accommodates the faculties of nursing, midwifery and health; teacher education; and business.

The site also provides a number of ancillary support services including:

- Indoor recreational facilities (gymnasium, dance studio, basketball court and squash courts);
- Sports oval and tennis courts;
- Theatre (Greenhalgh auditorium);
- Library; and
- Childcare centre.

These facilities are provided for UTS students and staff and are available for hire by the wider community, clubs and organisations.

### 4.1.11 Buildings and landscaping

Bushland vegetation exists in a horseshoe shape around the east, south and western parts of the site. This provides vegetation links into the adjoining Lane Cove National Park.

#### Existing Buildings and Facilities

Buildings and facilities are located within the bushland ring, on the Northern and central parts of the site as shown in **Figure 12**.

The sports oval is located in the central northern part of the site and to its south are 5 hard-surfaced tennis courts. A child care centre and surface parking area are located north-west of the oval. Additional surface car parking is provided in terraces on the sloping eastern part of the site.

The main campus building is generally stepped and staggered over 5 levels, with terraces interspersed reducing building mass.

Facilities are integrated within the bushland and there has been limited clearing of native vegetation.



Figure 12 – Existing Developed Areas (Source DEM)

#### Specific Land Use

The campus buildings include a large auditorium, several lecture theatres and practical teaching class rooms and laboratories, administrative and faculty offices, cafeteria, library, conference facilities, gymnasium, sporting oval and tennis courts and child care facility as well as auxiliary buildings including maintenance work shop and car parking areas.

Faculties at the Kuring-gai Campus include business, law, sports, leisure and tourism, nursing and education (incorporating science and art). Approximately 300 fulltime employees work on campus, which has a student capacity of some 3,500.

## 4.1.12 Natural and Cultural Heritage

### European Heritage

As mentioned previously, the existing buildings date from the late 1960's onwards.

The college building was awarded an architectural Merit Award in 1972, and in 1978 after completion of Stage 2 was awarded the Sulman Award.

The site is listed on the Royal Australian Institute of Architects (RAIA) Register of 20<sup>th</sup> Century Buildings of Significance.

At its meeting on the 24 August 2004, Kuring-gai Council resolved to prepare a Draft (Heritage Conservation) Local Environmental Plan (LEP) for the UTS Kuring-gai Campus Site.

A draft (Heritage Conservation) LEP was prepared and subsequently exhibited from 27 October 2004 to 26 November 2004. On 26 April 2005, the Council endorsed the Draft (Heritage Conservation) LEP 30 and referred it to the Department of Planning for gazettal.

Heritage issues have formed a central theme of the rezoning investigations and have been the basis of the extensive consultation with the original architects. A Heritage Assessment and Conservation Strategy, prepared by Graham Brooks and Associates is included at **Appendix I**.

A number of important strategies have emerged for the conservation and adaptive re-use of the main building complex, namely:

- The external architectural integrity, composition and massing of the main building complex, and the existing primary external materials should be retained and conserved as part of an on-going use or future re-use programme.
- The internal architectural integrity, composition and massing of the main public areas within the building complex, and the existing materials, shall be retained and conserved, to the extent that they are compatible with appropriate alternate uses.
- Alteration or adaption of the spaces that are accessed directly from the main circulation spine, shall utilise the existing patterns of black anodised glazing.
- Adaption and alteration of the enclosed "working" spaces within the building shall be permissible, including removal of internal dividing walls.
- Installation of new services and code compliance requirements shall continue to be undertaken in a manner that respects the architectural character and integrity of the building complex and its materials.
- Original light fittings should be retained and upgraded in the public areas, where possible.
- The original landscape planting to the planter boxes on the roof terraces should be recovered and then maintained, where possible.

## Indigenous heritage

A survey and assessment of Indigenous heritage issues undertaken by Jo McDonald Indigenous Heritage Management Pty Ltd is included at **Appendix J**.

This survey concluded that the site has limited (low to no) archaeological sensitivity in terms of Indigenous heritage. In particular the existing bushland areas are steeply sloping with few likely opportunities for Indigenous habitation.

No new or previously unrecorded Aboriginal sites were located during the survey. However, there are several previously recorded sites in the Lane Cove National Park, within a relatively short distance of the site.

### 4.1.13 Existing Transport Network

#### Access and circulation

Vehicular access to the site is from Eton Road to the north. Eton Road links to the Pacific Highway some 2km east of the site and provides access to Lindfield and Roseville.

An internal circulation network provides vehicular access to service buildings and car parking areas.

A Traffic and Transport Report has been prepared by Arup and is included at **Appendix K**. The report analyses historical and current traffic count data. The report identifies that the current uses generate about 400 peak hour vehicle movements in recent years (related to the gradual decline in student numbers) but identifies historical vehicle movements ranging from between 350 to 550 vehicle movements per peak hour. Traffic generally enters in the AM peak and departs in the PM peak.

#### Surrounding road network

Arup has undertaken an assessment of existing traffic and transport conditions. The local road network comprises:

- Abingdon Road – local road
- Austral Avenue – local/collector road
- Eton Road – local road/collector road
- Grosvenor Road – collector road
- Lady Game Drive – sub-arterial road
- Millwood Avenue – arterial road
- Fullers Road – arterial road

The roads most commonly used to access the site are Grosvenor Road and Eton Road. Austral Avenue is used to travel between Grosvenor Road and Eton Road. Abingdon Road is used to access the site to a lesser extent.

The site is directly accessible via Eton and Abingdon Roads, which also serve the surrounding residential area (See **Figure 13**). These roads link directly to Grosvenor Road, which connects to the Pacific Highway to the east and more closely to Lady Game Drive to the west. In addition to serving the adjoining residential communities, Lady Game Drive also provides a bypass to the Pacific Highway during peak times, when the Pacific Highway is congested.





Figure 13 – Main Site entry (Source DEM)

### Existing traffic flows and capacity

The traffic and transport report by Arup indicates that current use generates 280 vehicle movements at morning peak and 243 vehicle movements at evening peak into and out of the site, averaging about 350 vehicles per hour during peak hours. This however, does not include on street parking by students which is estimated to be around 50 vehicles per hour, and an identified issue of concern for local residents. Average flows that can be attributed to the existing campus is therefore estimated to be about 400 vehicles per peak hour.

The Arup report also considers the capacity of surrounding roads, including Abingdon, Eton and Grosvenor Roads, and Lady Game Drive.

It reports that:

- Traffic volumes along Lady Game Drive are 15,192 vehicles per day and are less than the desirable maximum for the sub-arterial (20,000 vehicles per day) function that the road performs;
- Traffic volumes on Grosvenor Road are currently around 7,385 vehicles per day, which is less than the desirable maximum for a collector road (10,000 vehicles per day); and

- Traffic volumes along Eton Road and Austral Avenue are above the desirable maximum for a local road (2,000 vehicles per day). The higher flows reflect the collector road function that these roads currently perform. However, the report notes that this is expected since the road services UTS and Film Australia as well as local residences. The desirable maximum of 2,000 vehicles per day for a local road assumes that it services residential area only which is clearly not the case for this locality.

The report also identifies significant delays during peak hours on the approach to Millwood Avenue/Delhi Road on Lady Game Drive as a result of traffic from Lindfield associated with feeding from Grosvenor, Highfield and Fiddens Wharf Roads. This is attributed to residents tending to use Lady Game Drive as a bypass route to avoid congestion on the Pacific Highway. This is an established route for residents of Killara and East Lindfield to access the western and northern suburbs.

### Buses

Shorelink (Route 565) provides regular services between the site and Lindfield, Roseville and Chatswood train stations. This service operates every half hour from 6.30am to 9.35pm during weekdays, and hourly on weekends. The University also provides a regular Inter-campus service, linking the site directly to the UTS Broadway campus.

### Trains

The site is located approximately 20-25 minutes walking distance from Lindfield and Roseville train stations. These stations are on the North Shore rail line, and provide links to regional centres at Hornsby, Chatswood, North Sydney and Sydney.

### Pedestrians and Cyclists

Footpaths are provided on at least one side of all local streets providing access to the campus. Within the campus, extensive pedestrian links are provided throughout the campus.

Cycling on the access road system is in a shared road arrangement with traffic volumes and local road cycling conditions considered adequate.

## 4.1.14 Community infrastructure and facilities

The site has good access to a range of community services and facilities. These are described below and location illustrated in **Figure 14**.

### Tertiary Education

Macquarie University has around 29,000 enrolled students and provides higher education opportunities approximately 5 km from the site.

## Primary and Secondary Schools

The public schools in the vicinity of UTS Kuring-gai, and their respective capacity are set out in **Table 7**.

**Table 7**– School capacity

<b>Primary Schools</b>	<b>Capacity</b>
Lindfield Public School	540
Lindfield East Public School	681
Roseville Public School	446
Chatswood Public School	564
Beaumont Road Public School	282
Killara Public School	70
<b>Secondary Schools</b>	<b>Capacity</b>
Chatswood High School	1,050
Killara High School	1,160

Following discussions with the Department of Education and Training it is understood that within the Lindfield area public primary schools are generally running at or over capacity, while there is some spare capacity in the secondary schools to accommodate additional students.

There has also been a significant increase in enrolments for government primary schools since 1995. Areas that have experienced the greatest increase in primary school enrolment include Roseville, Lindfield, Killara, Gordon, Pymble, Turramurra and St Ives.

In addition to the abovementioned public schools, there are several other private schools nearby which offer primary and/or secondary schooling.

## Child care services

Kuring-gai LGA has a range of child care facilities, including long day care centres, pre-schools and family day care centres.

The UTS Kuring-gai campus provides a childcare centre with a licence to accommodate a maximum of 68 children. It is understood that approximately 30% of existing use is by children of UTS staff and students. The remaining 70% are children from the local community or Film Australia employees.

Other childcare centres in the area include:

- Thomas Carlyle Children's Centre;
- Lady Game Community Kindergarten;
- Montessori Pre-School (The Children's House);
- Holy Family After School Care Centre;
- Lindfield Activity Centre;
- Bradfield Park Pre-School & Child Care Centre;
- Kids Campus Children's Centre;
- Roseville Kids Care;
- Killara Kids;
- Lindfield East Before and After School Care; and
- Beaumont Rd. Public School After School Care.

Informal discussions have been held with the management of these centres to determine current licence arrangements and capacity. For those centres that were willing to disclose information it appears the majority are at or near capacity.

In 1999 the Commonwealth Department of Family and Community Services undertook a review of the demand and supply of childcare facilities on a regional basis. The review found that the Northern Sydney Region, including Kuring-gai LGA, has a shortfall of childcare places. More significantly, it was found that the existing facilities in the Kuring-gai LGA were unable to meet current demands.

The Kuring-gai Council's Section 94 Plan (2004-2009) identifies that the Kuring-gai LGA is currently expected to have a supply equivalent to around 80% of demand, and that approximately 1 in 5 working parent families requiring day care places are unable to find a place in Kuring-gai LGA.

In response, the Section 94 Plan (2004-2009) carries forward the provisions of its previous plan and seeks to provide contributions towards the purchase of a site and development of a new multi-purpose child care centre in Kuring-gai LGA.

### Community centre/facilities

Community centres close to the site provide a range of facilities, including kitchen facilities, stages, children's play areas and the like. Some of the community centres close to the site include:

#### West Lindfield Community Hall

This hall is located at 40 Moore Avenue, West Lindfield, approximately 2 kilometres north of the site. It is available between 7am and 1am daily and has capacity for 100 people.

#### East Lindfield Community Hall

This hall is located at 9 Wellington Road, East Lindfield, approximately 4 kilometres north east of the site. It is available between 7am and midnight, Sunday to Thursday, and 7am to 1am Friday and Saturday. The centre has capacity for around 120-150 people.

#### East Roseville Community Hall

This hall is located at 6 Babbage Road, Roseville, and approximately 4.4 kilometres from the site. It is available between 7am to midnight daily. The hall has capacity for 100 people.

Other community halls and meeting rooms in Kuring-gai LGA identified in the Section 94 Plan (2004-2009), include:

- West Pymble Community Hall;
- Kuring-gai Town Hall (Pymble);
- St Ives Community Hall;
- Kuring-gai Library Meeting Room;
- St Ives Library Meeting Room;
- Kuring-gai Community Groups Centre Meeting Room;
- Hamilton Park Meeting Room; and
- Performing Arts Resource Centre Meeting Room.



## Libraries

Kuring-gai Council's main central library is located at Gordon, with three further branches at Turramurra, St Ives and Lindfield.

The Kuring-gai campus also currently provides a UTS library, primarily for staff and students. The library is also accessible to the local community for a fee.

Kuring-gai Council's Section 94 Plan 2004-2009 identifies that there is a need for the upgrading and expansion of library buildings. A particular need is identified for the upgrade of Lindfield library and consideration of a new public library to serve the southern part of the LGA.

In addition to providing for contributions towards the book stock and computers for existing libraries, the plan proposes a new Multi-purpose Community Centre for the LGA, including a new library on a site yet to be determined.

## Health services

The area is close to a number of health services including:

- Royal North Shore Hospital, St Leonards;
- North Shore Private, St Leonards;
- Macquarie Hospital, North Ryde;
- Greenwich Private Hospital;
- Dalcross Private Hospital, Killara; and
- Gladesville Hospital.

## Employment

Major employment areas close to the site include the Chatswood CBD, Macquarie Park and Riverside Corporate Park at North Ryde. These are all within 2 to 3 kilometres of the site.

## Retail

The Macquarie Centre in North Ryde and Chatswood Shopping Centre provide a wide range of sub-regional/regional shops and services. The closest local shops are located at Roseville and Lindfield approximately 2 kilometres from the site.

## Open space and recreation

Approximately one third of the LGA is open space. The ownership and management responsibilities for this open space are shared between Council, NPWS and private sports clubs.

Lane Cove National Park adjoins the site and provides a range of informal recreational facilities including cycling, canoeing, jogging, etc. It also provides picnic areas, playgrounds, bike tracks and sports fields for more organised sports such as soccer, touch football, athletics and cricket.

Other smaller local parks in the vicinity of the site include Loyal Henry Oval to the east, the Recreation Reserve and Princes Park to the north.

Local sports clubs and facilities include:

- Chatswood and Killara Golf Clubs;
- Rotary Athletics Field;
- the Great North Walk;
- Chatswood, Roseville Park and Roseville Lawn Tennis Clubs; and
- West Lindfield Bowling Club.

There are currently no Council run indoor facilities dedicated to physical recreation. However, the site has good access to a range of parks and sports clubs.

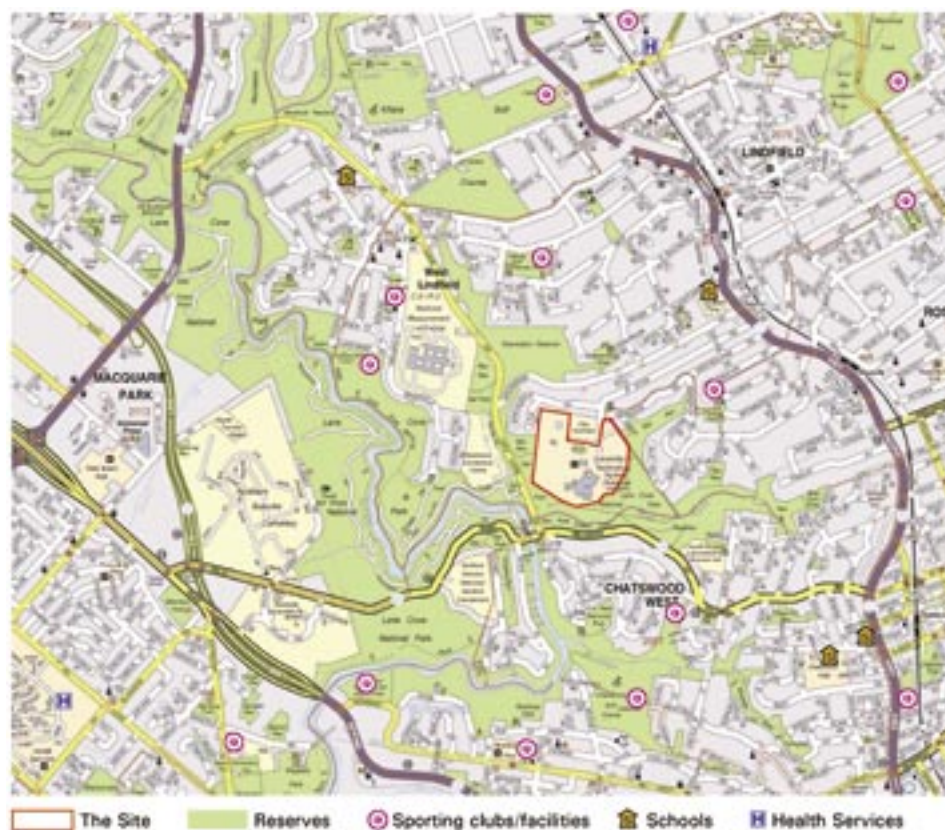


Figure 14 – Community Infrastructure