Brookvale Community Health Centre

Eastern Bentwing-bat Survey
620 Pittwater Road, Brookvale

Health Infrastructure

May 2015

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1 INTRODUCTION

1.1 Background

The proposed Brookvale Community Health Centre (BCHC) is part of the Northern Beaches Health Service Redevelopment project. The BCHC will provide a range of health-related services for the community. Development of the BCHC would broadly involve the construction of a four storey building and a multi-storey car park.

As part of the approvals process under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), Health Infrastructure (HI) requested that the Secretary of the Department of Planning and Environment issue the Secretary's Environmental Assessment Requirements (SEARs) to facilitate preparation of an Environmental Impact Statement (EIS) for the Brookvale Community Health Centre (BCHC). The SEARs were issued to the Health Administration Corporation on 16 April 2015.

With regard to biodiversity, the SEARs require that:

The EIS shall include:

- *Methods and results of targeted survey techniques for roosting Eastern Bentwing-bats within the dilapidated house and sheds located on Lot 1 DP 500541. Targeted surveys must be performed by a qualified Ecologist familiar with the species and carried out at an appropriate time of the year.*
- *An assessment of potential direct and indirect impacts on the Eastern Bentwing-bat by the proposed development; and*
- *Measures proposed to avoid, minimise and manage any identified direct and indirect impacts.*

SMEC was engaged by HI to undertake a survey for the Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*), which is listed as vulnerable under the NSW *Threatened Species Conservation Act 1995* (TSC Act), and to assess potential impacts on this species to comply with SEARs issued for the project.

1.2 Study area

The site of the proposed BCHC is on the eastern side of Pittwater Road, on the corner of William Street, Brookvale. The site comprises three separate but adjoining properties: 612 Pittwater Road, 620 Pittwater Road, and 624 Pittwater Road.

Lot 1 DP 500541, identified in the SEARs, refers to 620 Pittwater Road only. This is referred to as the study area in this report (Figure 1).

Figure 1 Location of the site

The study area contains three structures:

1. An unoccupied brick and tile residence (Figure 1, Photo 1). The brick house is in a poor state with broken windows, missing tiles on the roof and several rooms have been burnt out.
2. An open timber and tin shed (Figure 1, Photo 2). The shed has piles of timber stored in it.
3. An enclosed brick, timber and tin shed (Figure 1, Photo 3). The structure of the shed is in moderate condition with some internal roof sheets falling down. It is currently being used for storing panels of timber.

There is no native vegetation on the site. There is a small grove of mature banana trees (*Musa sp*.) at the eastern corner. A large exotic conifer (*Cupressus sp*.) and cocos palm (*Syagrus romanzoffiana*) are present at the front of building 1. Vegetation across the rest of the site is dominated by the weeds cobbler's pegs (*Bidens pilosa)*, morning glory *(Ipomoea indica*) cassia (*Senna pendula*), fleabane (*Conyza bonariensis*), blackberry nightshade (*Solanum nigrum*), sugar cane (*Saccharum sp.*) and common couch (*Cynodon dactylon*).

The surrounding land use consists of commercial, retail and light industrial. Warringah Mall is located to the west of the site across Pittwater Road. Sydney Buses' Brookvale Depot is located to the northeast of the site and Warringah Gold Course is located to the south of the intersection of Pittwater Road and Condamine Street.

Photo 1 Building 1

Photo 2 Building 2

Photo 3 Building 3

1.3 Habitat and distribution of the Eastern Bentwing-bat

1.3.1 Habitat and ecology

Eastern Bentwing-bats occur along the east and north-west coasts of Australia. They use a broad range of habitats including rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forest and open grasslands (Churchill 1998). Within these habitats they hunt in forested areas, catching moths and other flying insects above the tree tops (DEC 2005).

This species forms discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. At other times of the year, populations disperse within about 300 km range of maternity caves. Maternity caves have very specific temperature and humidity regimes (DEC 2005; Hall 1982).

Caves are their primary roosting habitat, but they also use derelict mines, storm-water tunnels and buildings (DEC 2005). In the Sydney region the Eastern Bentwing-bat roosts in man-made structures including disused railway tunnels, water reservoirs, disused military bunkers, water diversion tunnels and stormwater drains (Ku-ring-gai Bat Conservation Society 2011). Gould's Wattled Bat (*Chalinolobus gouldii*) is the only species that has been regularly recorded roosting in buildings within the Sydney area (Ku-ring-gai Bat Conservation Society 2011).

Significant subterranean roost sites often have a combination of at least two of the following features:

- Mines or caves that are mainly near horizontal tunnels. These may range from several metres long to deep complex mines or caves with interconnecting passageways. Vertical shafts are infrequently used.
- The presence of standing water, or at least a damp floor.
- A domed area where temperature and humidity are elevated, either through a natural accumulation of heat, or by retaining body heat of adult and young bats.
- High humidity which can be provided by the mine containing water, damp soil, or the mine being located within the water table.

Significant subterranean roost sites may also be characterised by the following features:

- Usually deep enough to have a fully dark area where temperatures are constant. However some species may roost close to the entrance of the mine or cave.
- Airflow is often restricted by partial collapse of the entrance or passageways.

Most Eastern Bentwing-bat roosts in metropolitan Sydney are used only during the winter months with individuals usually vacating the roosts by September (Hoye and Spence 2004). Breeding or roosting colonies can number from 100 to 150,000 individuals. However, bats are present in lower numbers throughout the Sydney area during the summer months, these being for the most part males that do not migrate to maternity roosts (Hoye 2009). There are no known maternity colonies in the Sydney Metropolitan Catchment Management Area (DEC 2005).

1.3.2 Local distribution

There are 66 Eastern Bentwing-bat records within Warringah Local Government Area (OEH 2015). The closest records are from a location along William St (approximately 350 metres south east of the study area), a culvert at Warringah Golf Course (approximately 250 metres south west of the study area) and within a culvert between Allenby Park Parade and Old Pittwater Road (approximately 650 metres west of the study area) (Figure 2). There are also records from reserves in the locality including John Fisher Reserve at North Curl Curl and Manly Warringah War Memorial Park (Figure 2).

A survey undertaken by Eco Logical Australia in 2008 recorded the Eastern Bentwing-bat within a culvert between Allenby Park Parade and Old Pittwater Road. The Eastern Bentwing-bat was not recorded in culverts under Warringah Mall, however lack of seasonal surveys make it difficult to determine whether these culverts may be used for roosting at other times of the year (Hoye 2009).

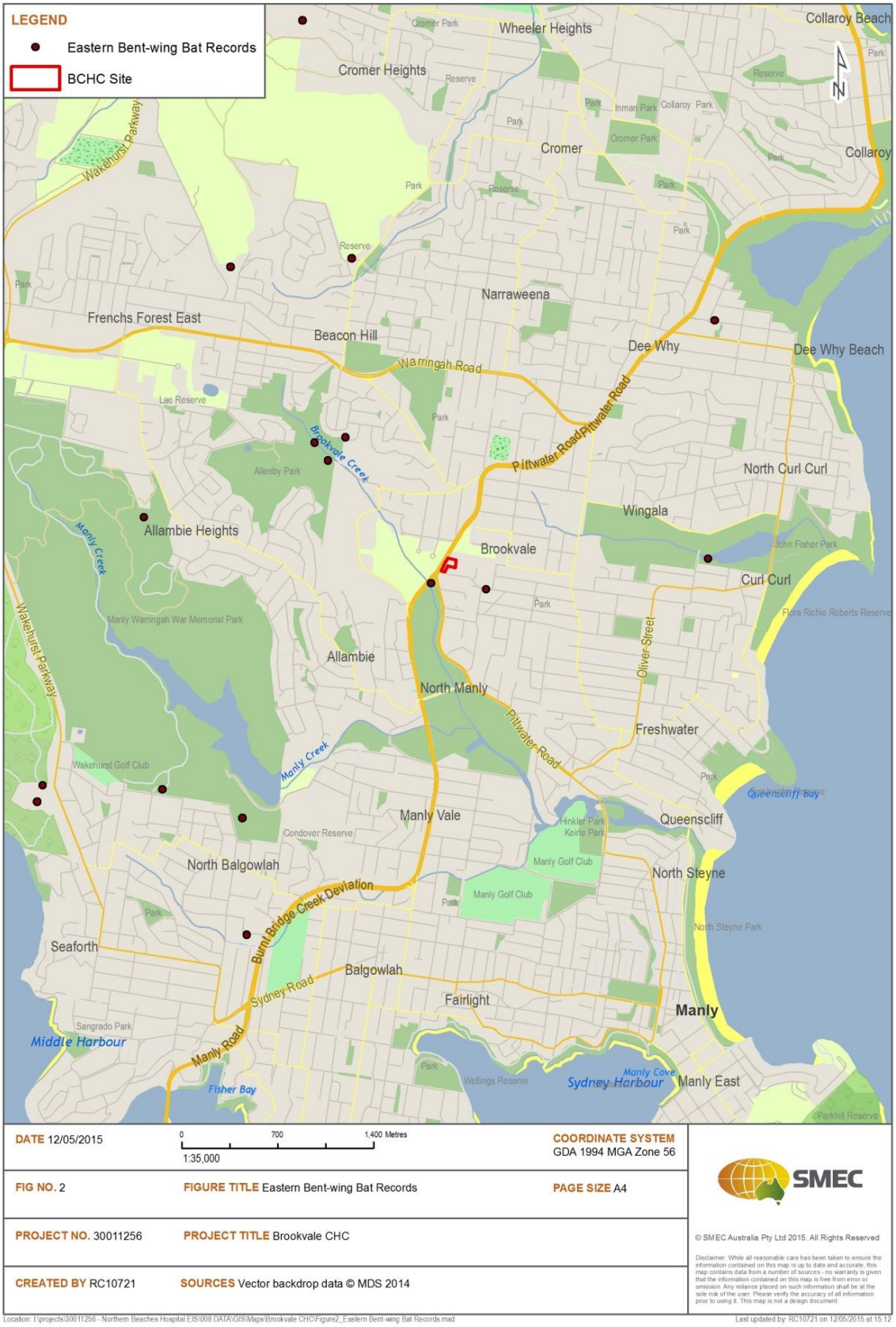

Figure 2 Eastern Bentwing-bat records in the locality

2 METHODOLOGY

2.1 Desktop review

A desktop review of relevant databases and literature was undertaken. This comprised:

- Atlas of NSW Wildlife (BioNet)
- NSW Office of Environment and Heritage (OEH) Endangered Ecological Community and Threatened Species Profiles (OEH 2105)
- Survey Guidelines for Australia's threatened bats (DEWHA 2010)
- Review of a Flora and Fauna Assessment Report prepared by Eco Logical Australia Pty Ltd - the augmentation of the drainage infrastructure that runs through the Warringah Mall site in Brookvale, New South Wales. Report to Warringah Council (Hoye 2009)
- Warringah Council website
- Australian Bat Society website
- Sydney Bats website.

2.2 Fieldwork

A search of the buildings and structures was undertaken on Monday 4 May 2015 during daylight for roost sites and signs of microbat activity. Spotlights were used to observe the structures for a period of two hours after dusk for microbats exiting the buildings. The structures were searched from the outside as they were not safe to enter.

An ultrasonic Anabat bat detector connected to a storage ZCAIMs was used to record and identify the echolocation calls of microchiropteran bats navigating or foraging across the site. The detector was placed between the buildings for two consecutive nights with the recorder set to record throughout the night, from sunset to sunrise. Bat call analysis and identification was undertaken with reference to *Bat Calls of New South Wales Southern Region* (Pennay *et. al.* 2004).

To ensure reliable and accurate results the following procedure was followed:

- Recordings containing less than three pulses were not analysed (Law *et al* 1999)
- Only search phase calls were analysed (McKenzie *et al* 2002)
- Three categories of confidence in species identification were used (adapted from Mills *et al* 1996):
    - definite – identity not in doubt
    - probable – low probability of confusion with species of similar calls
    - possible – medium to high probability of confusion with species with similar calls.

3 RESULTS

3.1 Fieldwork results

The active search of the buildings found no bat droppings observed in any of the three building structures.

During the search period after dusk there were no observations of bats exiting any of the buildings and no micro bat 'chatter' could be heard coming from within any of the building structures.

The buildings may provide some roosting habitat for the Eastern Bentwing-bat in the roof cavity, particularly of the house (Building 1). However, the roof does have several holes in it with part of the roof cavity falling down from fire damage and large sections of tiles are missing from the roof. One feature of roost sites is the presence of a domed area where temperature and humidity are elevated (DEC 2004). The damage to the roof cavity indicates that there could not be habitat present with a constant elevated temperature and humidity.

3.2 Bat call analysis

Microchiropteran bat activity was low throughout the survey with only two species recorded by the Anabat:

- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*) (TSC Act – Vulnerable) – probable ID (Figure 3)
- White-striped Freetail-bat (*Tadarida australis*) – possible ID.

There were only two passes recorded for the Eastern Bentwing-bat (one on each night of the survey) and only one pass recorded for the White-striped Freetail-bat.

The survey was undertaken at the correct time of year to detect the presence of roosting Eastern Bentwing-bats. The Eastern Bentwing-bat is seasonal in its use of stormwater drains and other structures in the Sydney Basin (Hoye and Spence 2004). This species generally occurs in large numbers from February to September and is often absent in most roosts from October until February (Hoye 2009).

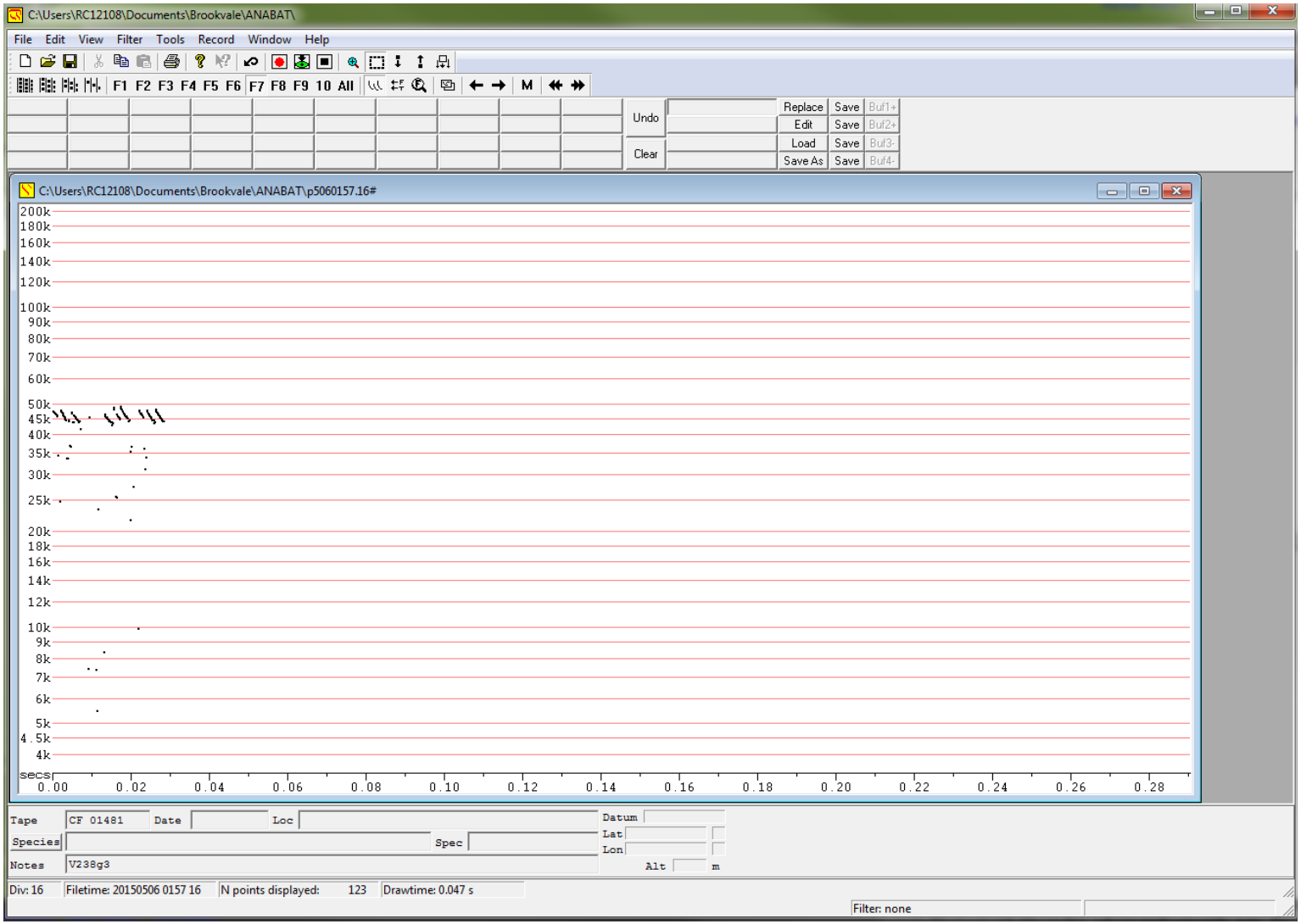

Figure 3 Eastern Bentwing-bat call sequence

4 POTENTIAL IMPACTS AND MITIGATION

The study area is not considered to comprise important habitat for this species as it does not contain suitable foraging or favourable roosting habitat. Although there were two records of the Eastern Bentwing-bat during this survey this is a very low number of calls. The lack of habitat and low number of calls indicates that it is very unlikely the species would be using the site for roosting or foraging and it is more probable that the individual or individuals would have flown over the site travelling between areas of more suitable habitat within the locality. There are several areas within the locality that are known to contain suitable habitat where this species has been recorded. This includes John Fisher Reserve, Manly Warringah War Memorial Park and Warringah Golf Course.

It is unlikely that the Eastern Bentwing-bat would be affected by the project for the following reasons:

- There are no roosting structures or maternity caves that have been identified on site and it is highly unlikely that breeding is occurring within the study area. The project is not likely to have an adverse effect on the species life cycle.
- The extent of habitat that is likely to be removed or modified as a result of the project is minimal. The site is not considered to provide suitable foraging habitat and it is unlikely they will be utilising this area for roosting given the absence of suitable roosting sites and caves on site.
- The study area is located in an urban landscape with existing fragmented habitat and there is an absence of suitable habitat within the area. This species also highly mobile, with the Eastern Bentwing-bat capable of dispersing within a 300 km range of maternity caves, it is likely that the individual or individuals recorded during this survey was flying over the site travelling between areas of more favourable habitat within the locality.
- The potential habitat to be removed is not considered important to the long-term survival of the species, in the locality.
- The project is not part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process relating to the species.

Although the Eastern Bentwing-bat was not utilising habitat in the building structures at the time of the survey, and it is highly unlikely they would roost or forage in the study area, the following precautionary mitigation measures are recommended:

- The buildings should be inspected immediately prior to demolition in the unlikely event that the species may opportunistically use the building structures to roost depending on seasonal factors and available habitat in the area.
- Where possible, demolition of the buildings should take place between October and February as this is the time of year when Eastern Bentwing-bats are often absent from most roosts (Hoye 2009).

5 CONCLUSION

It is very unlikely that the building structures at 620 Pittwater Road would be used for roosting by the Eastern Bentwing-bat. There is no suitable foraging habitat on the site. The Eastern Bentwing-bat was recorded via Anabat detector on the site. There were only two calls, likely to be individuals moving between other areas of suitable habitat in the locality.

Precautionary mitigation measures have been recommended to manage potential risks to individuals of this species with regard to construction activities.

6 REFERENCES

Churchill, S. (1998) *Australian Bats*, New Holland Publishers.

DEWHA (2010) *Survey Guidelines for Australia's threatened bats. Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*, Australian Government Department of the Environment, Water, Heritage and the Arts, Commonwealth of Australia 2010.

Eco Logical Australia (2008) *Proposed Drain Augmentation – Warringah Mall, Brookvale, A report to AMPCI,* December 2008.

Hoye, G. (2009) *Review of a Flora and Fauna Assessment Report Prepared by Eco Logical Australia Pty Ltd - the augmentation of the drainage infrastructure that runs through the Warringah Mall site in Brookvale, New South Wales*, report to Warringah Council, Fly By Night Bat Surveys Pty Ltd. 5 May 2009.

Ku-ring-gai Bat Conservation Society (2011) http://www.sydneybats.org.au/microbats/. Accessed 8/5/2015

NSW Office of Environment and Heritage (OEH) (2013a), *The Native Vegetation of the Sydney Metropolitan Area, Version 2, Volume 1 Technical Report*, NSW Office of Environment and Heritage, Sydney.

NSW Office of Environment and Heritage (OEH) (2013b), *The Native Vegetation of the Sydney Metropolitan Area, Version 2, Volume 2 Community Profiles*, NSW Office of Environment and Heritage, Sydney.

NSW Office of Environment and Heritage (2015) *Threatened Species Profiles*, Office of Environment and Heritage, Sydney.

NSW Office of Environment and Heritage (2015) *Atlas of NSW Wildlife Database*, NSW Office of Environment and Heritage (OEH) Accessed 8/5/15.

Pennay, M., Law, B. Reinhold, L. (2004) *Bat Calls of New South Wales: Region based Guide to the echolocation calls of Microchiropteran bats*, NSW Department of Environment and Conservation, Hurstville.

Smith, P. and Smith, J. (1997). *Flora and fauna of major Warringah Council reserves*. Report to Warringah Council. P & J Smith Ecological Consultants, Blaxland.