


FLORA AND FAUNA

ASSESSMENT GUIDELINES FOR DEVELOPMENT APPLICATIONS



A green tree frog is perched on a light-colored, textured rock. The frog's body is a vibrant green with darker green mottled patterns. Its large, bulging eyes are prominent. The background is a soft-focus green, suggesting a natural habitat.

We acknowledge the Traditional Custodians of this land, the Darug and GuriNgai peoples, and pay respect to their Ancestors and Elders past and present and to their Heritage. We acknowledge and uphold their intrinsic connections and continuing relationships to Country.

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Contents

Introduction.....	4
Purpose of these guidelines.....	6
Legislation & Guidelines.....	8
Environment Protection and Biodiversity Conservation Act 1999.....	8
Environmental Planning and Assessment Act 1979.....	8
Biodiversity Conservation Act 2016.....	8
Coastal Management Act 2016.....	8
Fisheries Management Act 1994.....	8
Water Management Act 2000.....	9
Biosecurity Act 2015.....	9
Rural Fires Act 1997.....	9
National Parks and Wildlife Act 1974.....	9
State Environmental Planning Policies.....	9
Hornsby Local Environment Plan 2013.....	9
Hornsby Development Control Plan 2013.....	9
Calculating your impact.....	11
When is a Flora and Fauna report required?.....	11
When is a Biodiversity Development Assessment Report required?.....	13
Other ecological reports.....	13
Who can prepare an Ecological Report?.....	13
What report do I need?.....	14
What should a flora and fauna report contain?.....	16
Site overview.....	16
Maps.....	16
Legislative review.....	16
Flora and Fauna survey data.....	16
Recommendations and offsets.....	18
Resources.....	20

Introduction

“ *The Hornsby Local Government Area contains a variety landscapes, featuring different flora and fauna species and ecological communities. We are lucky enough to border the Hawkesbury River, Sydney Harbour catchments and several national parks. Hornsby is also home to Blue Gum Diatreme Forest, a Critically Endangered Ecological Community which is featured in Hornsby Park.*

The Shire contains swathes of publicly accessible natural areas as well as bushland within privately owned land.

These natural areas cover 73.6% of the Council area and hold biodiversity values including habitat for common and threatened species and communities. ”

These Flora and Fauna Guidelines have been produced to inform private landholders, developers and ecological experts of the minimum ecological reporting required for a development application. These reports assist Hornsby Shire Council in assessing development which may impact on biodiversity values. By identifying the biodiversity features of the land, landowners and Council can collaborate to preserve our local biodiversity while still supporting the needs of our urban and rural communities.

Flora and fauna rely on a specific set of environmental conditions to survive, and these conditions can be modified by development. It's important to remember that plants and animals use corridors of bushland or canopy connectivity to survive, particularly in urban areas where there is a lot of pressure on small reserves as habitat. Planning and environmental controls aim to minimise detrimental impact and support the ongoing conservation of our precious wildlife and their habitat. Ecological reports such as Flora and Fauna Reports or Biodiversity Development Assessment Reports (BDAR), provide an assessment of the ecological values found within a property. Where a development will impact biodiversity values, recommendations can be made to protect, enhance, or replace those values.



Photo: Mangroves by Ana Rubio



Photo: *Berowra Waters Ferry and Marina* by Daniel Burkhardt

Purpose of these guidelines

These guidelines have been developed to assist applicants and landowners in understanding whether their land requires a Flora and Fauna Report to accompany a development application. The consideration of biodiversity features on the property before development occurs minimises the impact that development may have, contributing to loss of biodiversity through habitat loss, fragmentation and edge effects.

The Hornsby Development Control Plan (HDCP) identifies development controls which apply to all development within Hornsby LGA. Part 1C.1 identifies the need to protect the environment and biodiversity values.



Photo: Lace monitor by Rachel Whiteley

Biodiversity values can include:

- Native vegetation communities
- Hollow bearing trees
- Habitat features including nests, dreys and burrows
- Groups of trees
- Isolated paddock trees
- Dense areas of exotic or weed species as fauna habitat
- Threatened species sightings
- Creeks, rivers, dams and wetlands
- Seagrass and mangroves
- Riparian zones
- Rock outcrops
- Land adjoining bushland or a national park
- Roadside vegetation
- Listed biodiversity values found in state and federal legislation including threatened species and threatened ecological communities

Hornsby Shire Council requires consideration of the 'avoid, minimise and mitigate' principles to biodiversity assessment. These principles are found in section 1C.1 of the HDCP 2013 as well as the NSW Biodiversity Conservation Act 2016. It requires development to first avoid impacts to biodiversity values. Where impacts cannot be avoided, they should be minimised. Finally, mitigation measures should be proposed to offset any residual impact. In many developments, impacts to biodiversity can be completely avoided by locating structures and ancillary elements of a development away from bushland, creeks, rock platforms and hollow bearing trees. By understanding what sort of biodiversity values are found within a property, this principle can be applied which reduces the need for changes to development proposals during the assessment process.



Photo: *Hawkesbury Magic* by Lynne Springett

Legislation & Guidelines

Commonwealth

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act is Australia's Commonwealth environment legislation. It identifies significant or threatened flora, fauna, ecological communities and heritage places as 'matters of national environmental significance'. Under this Act, any development (or 'action') requires ministerial approval if the development will have or is likely to have in impact on a Matter of National Environmental Significance. The proposal must be assessed by relevant ministers across federal and state government departments. Final approval under the EPBC Act is given by the federal Environment Minister after the assessment process has been completed and recommendations from relevant departments have been considered. Some species and ecological communities found in Hornsby LGA are protected under this legislation. For more information on what's protected visit the Department of Climate Change, Environment, Energy and Water.



Photo: *Powerful Owl* by Jenny Stiles

State

Environmental Planning and Assessment Act 1979

The NSW Environmental Planning and Assessment Act 1979 (EP&A Act) is the planning legislation that guides the development process. Development which requires consent from Council is identified in Part 4 of the Act. This legislation also allows Council to develop strategic documents which ensure our Council areas are well designed and enjoyable places to live.

Biodiversity Conservation Act 2016

The NSW Biodiversity Conservation Act 2016 (BC Act) aims to conserve biodiversity through ecologically sustainable development. It lists threatened species and ecological communities which must be considered during the development process. The act also identifies Key Threatening Processes which contribute to the decline of those species and communities. The Biodiversity Offset Scheme (BOS) is a key part of this Act, requiring a specific assessment of biodiversity values using the Biodiversity Assessment Method (BAM). Under section 7.2 of the Biodiversity Conservation Regulation 2017, any development which triggers entry into the Biodiversity Offset Scheme must provide a Biodiversity Development Assessment Report (BDAR).

Coastal Management Act 2016

The Coastal Management Act supports ecologically sustainable development throughout coastal zones and coastal management areas. The Hawkesbury River is identified on the coastal zones and coastal management areas map under this Act.

Fisheries Management Act 1994

The NSW Fisheries Management Act requires development to consider its impact on marine environments. Saltmarsh and mangrove communities are covered under this legislation, which means that development adjoining the Hawkesbury River or marine ecological communities are required to consider the development and offsetting requirements identified by the Act.

Water Management Act 2000

Development which falls within 40 metres of a mapped watercourse may require additional approvals under the Water Management Act. If the development involves a Controlled Activity, referral to a Natural Resources Access Regulator may be required.

Biosecurity Act 2015

The Biosecurity Act protects the environment and the economy from the effects of pests, diseases and weeds which degrade the natural environment and agricultural crops. Some species are a priority for removal due to their ability to spread and establish quickly. If you have weeds on your property, you may be asked to remove them through the recommendations of your flora and fauna report, in a vegetation management plan or as a condition in your development consent.

Rural Fires Act 1997

The Rural Fires Act requires the mapping of bush fire prone land. This mapping, along with Planning for Bushfire Protection 2019, identifies when development is required to consider bush fire protection and mitigation measures through the development process. Some of the standard conditions applied to development on bush fire prone land include maintain asset protection zones, water storage and construction standards.

National Parks and Wildlife Act 1974

Native flora and fauna are protected under the National Parks and Wildlife Act. For development within 1km of a National Park should consider the Guidelines for Developments adjacent to National Parks and Wildlife Service Lands to minimise indirect impacts to NPWS land and habitat.

State Environmental Planning Policies

There are a number of State Environmental Planning Policies (SEPP) which identify what development requires consent and to what standard the development should be constructed to. Some SEPPs which apply within Hornsby LGA include Biodiversity and Conservation, Resilience and Hazards and Exempt and Complying Development.

- The Biodiversity and Conservation SEPP requires vegetation removal to be granted under a vegetation or tree removal permit. It also covers Koala Habitat Protection. Under section 4.9(2), Council can request a koala assessment report from a suitably qualified and experienced person to identify koala habitat or presence if the land to be developed is greater than 1ha.
- The Exempt and Complying Development SEPP identifies development which can be carried out without a development application. This SEPP does not apply to developments on environmentally sensitive or protected land including heritage conservation areas, mapped areas of Terrestrial Biodiversity (as mapped by Hornsby's LEP) and riverfront land.
- The Resilience and Hazards SEPP applies to coastal zones identified in the Coastal Management Act. It identifies that any land which is identified as a coastal zone must have development consent to undertake any works, including to remove or damage terrestrial native vegetation, marine vegetation, and undertake earthworks and drainage works. To find out if your property is impacted by this SEPP, visit the Planning Portal. Alternatively, you can go to the Fisheries Data Portal.

Local

Hornsby Development Control Plan 2013

The Development Control Plan (DCP) is a strategic document created under the EP&A Act. It provides a framework for the types and style of development which will maintain the aesthetic of the neighbourhood. It also includes prescriptive measures which are considered in the assessment process, of particular note are the avoid, minimise and mitigate principles.

Hornsby Local Environment Plan 2013

A Local Environment Plan (LEP) is a Council's key planning instrument created under the EP&A Act. It identifies the permissible types of development within the Local Government Area. For biodiversity, consideration must be given to the terrestrial biodiversity map. If a development is to occur within land which has been identified to contain terrestrial biodiversity values, a development application must be accompanied by a flora and fauna report.



Photo: *Hawkesbury River* by Petra Holland

Calculating your impact

It's important to understand the full extent of your development so your supporting reports accurately reflect the area of impact. All modifications to the land should be considered, including:

- Building footprint
- Earthworks
- Driveways
- Utilities
- Asset protection zones
- Stormwater/drainage
- Wastewater
- Riparian work
- Landscaping
- Tree or bushland clearing
- Heritage landscape removal or modifications

The use of current aerial mapping can assist you in identifying your impact area, such as the Biodiversity Values Map and Threshold Tool, SEED portal or Sixmaps. The diagrams and plans which you provide with your development application should identify any biodiversity values, including trees, bushland, creeks, rock outcrops which will help confirm the extent of your development.

It is also important to consider all direct and indirect impacts. Ancillary development, such as the installation of services and utilities, may result in additional impacts to biodiversity through additional clearing or tree root disturbance. Indirect impacts include changes of use and alteration of typical wastewater and stormwater runoff, altering moisture availability downstream of a development and negatively impacting the bushland below. Flora and Fauna reports need to identify and consider all impacts of the proposal, calculate the actual area of impact, and describe how works can be appropriately managed through mitigation measures and offsetting.

When is a flora and fauna report required?

A flora and fauna report is required if a development will or is likely to impact biodiversity values. This could include direct, indirect or prescribed impacts to common or threatened species, ecological communities or habitat. Council determines the likelihood of impact in a number of ways, including the review of vegetation maps, aerial photography and site inspections. Even if you don't think you have any biodiversity features on your land, your development could impact adjoining land which contains biodiversity features like canopy trees, hollow bearing trees, shrub vegetation, waterways and rock outcrops.

A suitably qualified and experienced consultant (see Who can prepare an Ecological Report?) should be consulted prior to the design of a proposal. This will ensure that any ecological constraints can be considered appropriately to avoid and minimise impacts, rather than retrospectively trying to achieve these outcomes.



Photo: *Little wattlebird on Banksia serrata*
by Marie Kobler



Photo: *A possum who refused to sleep* by Yukhym Pyshnohraiev

When is a Biodiversity Development Assessment Report required?

The Biodiversity Offset Scheme (BOS) uses a standardised assessment methodology called the Biodiversity Assessment Methodology (BAM) to produce a Biodiversity Development Assessment Report (BDAR). This methodology has been developed as a framework which considers vegetation condition, habitat availability, likelihood of threatened species presence and impact assessment including direct, indirect and prescribed impacts. Offsetting is required under BOS through the purchase and/or retirement of biodiversity credits or payment to the Biodiversity Conservation Fund.

A BDAR is required to be submitted with a development application if the following thresholds are exceeded:

- The property is mapped on the Biodiversity Values Map
- Impacts exceed the area clearing threshold
- The development is likely to have a significant impact on a threatened species or threatened ecological community

Area clearing threshold

Issue	Requirement
Minimum lot size	Threshold for clearing
Less than 1ha	0.25ha or more
1ha to less than 40ha	0.5ha or more
40ha to less than 1,000ha	1ha or more
1,000ha or more	2ha or more

Table 1: Area clearing threshold as determined by the Biodiversity Conservation Regulation 2017

To confirm if the property is mapped on the Biodiversity Values Map or exceeds the clearing threshold, an initial search should be completed using the Biodiversity Values Map and Threshold Tool. A user guide is available for this tool.

Other Ecological Reports

Vegetation Management Plan (VMP)

A VMP may be required to inform the replacement of vegetation which is being lost as a result of development within a property. These typically inform a management period of 3-5 years and require suitably qualified and experienced professionals to attend the property to undertake weeding, replacement planting and other maintenance of bushland or habitat for the purposes of preserving and improving biodiversity values. Council has guidelines for the development of VMPs which may assist in developing these reports.

Integrated Bushfire and Vegetation Management Plan (IBVMP)

An IBVMP may be required to inform the removal or modification of vegetation, bushland or habitat for the purposes of establishing an Asset Protection Zone (APZ). This involves selective tree or vegetation removal, prioritising of weeds over natives and specific distances identified to meet minimum standards. Replacement planting may be permissible where it does not impede the establishment of the APZ to minimise impacts on local biodiversity.

Wildlife Management Plan (WMP)

A WMP may be required when wildlife on a property is likely to be impacted by the proposed development. It may involve the protection, management or relocation of wildlife, monitoring of wildlife throughout a specific time frame or season for the purpose of ensuring wildlife and their habitat is preserved throughout and after the development.

Who can prepare an Ecological Report?

Council requires that a Flora and Fauna Report, or any other kind of ecological report, is prepared by a suitably qualified and experienced consultant or consultancy. A consultant should have relevant tertiary qualifications and experience in an ecological field. Typically, this includes but is not limited to studies in environmental sciences, biology, and conservation. They may also require a Biodiversity Conservation Licence and animal ethics approval for more detailed survey work involving threatened species and ecological communities. If your development requires a BDAR, the ecological consultant must also be an Accredited Assessor to apply the BAM.

What report do I need?

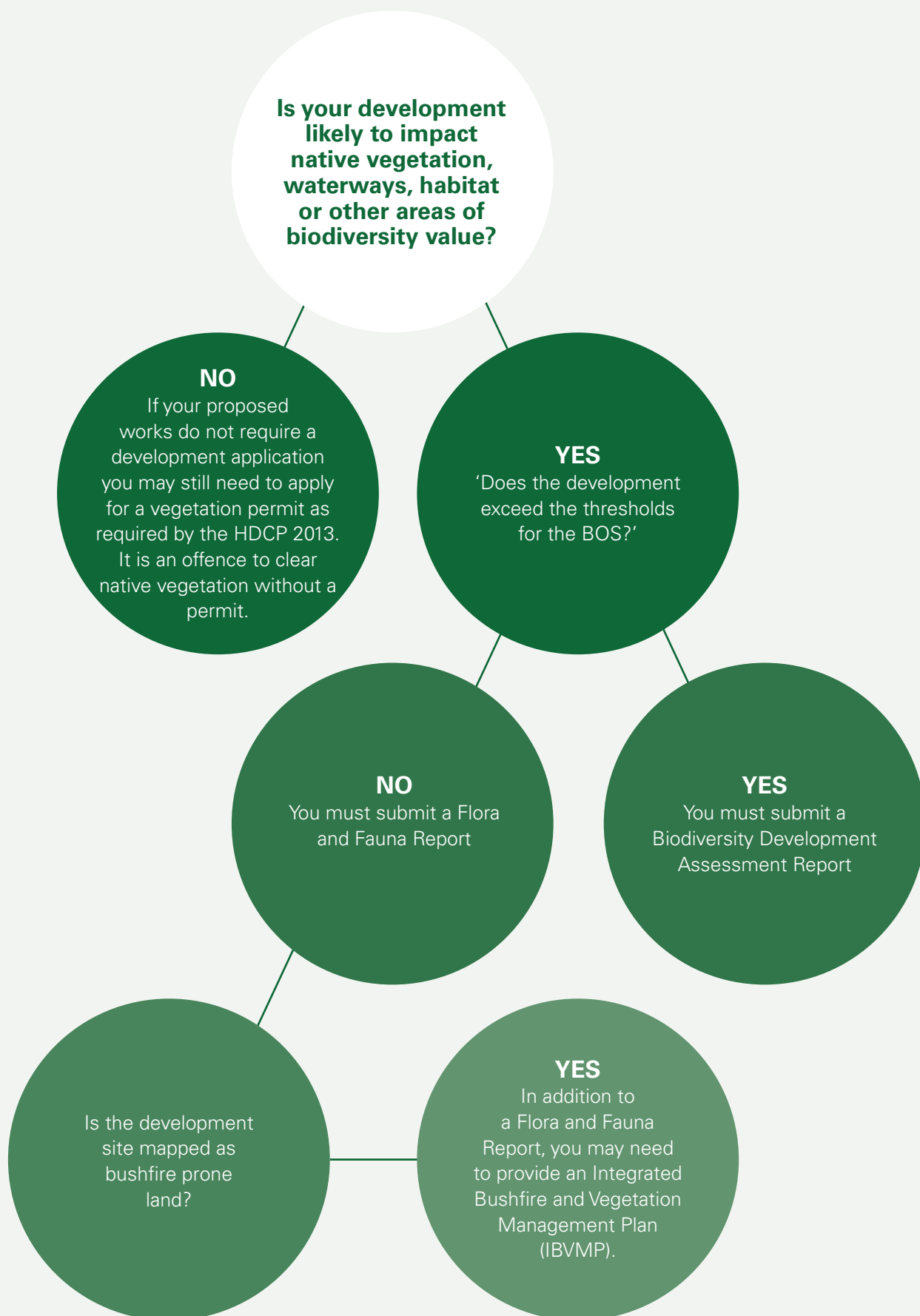




Photo: *Variegated fairy-wren* by Marie Kobler

What should a Flora and Fauna report contain?

A Flora and Fauna Report needs to include sufficient information to enable a proper assessment of impacts on biodiversity values. The method of collecting and presenting this information can be modelled on the Biodiversity Assessment Methodology which outlines standard practices to identify and measures impacts on biodiversity values. Alternatively, the preparation of a Flora and Fauna Report must consider the following guidelines.

1. Desktop Assessment

- An overview of the subject property and surrounding environment, including vegetation condition and composition, corridor connectivity, waterways, and landscape features.
- A description of the development area and any impacted or adjoining bushland or biodiversity values. This should include identification of any surrounding vegetation communities, flora and fauna (including threatened species) and habitat features. These can be identified using relevant mapping and database searches (such as BioNet Atlas, Council's online portal, SEED portal, Atlas of Living Australia or similar).
- An overview of the proposed development and all ancillary elements including asset protection zones and wastewater systems.
- A calculation of the impact area.
- A review of how the proposed development has implemented the avoid, minimise and mitigate principles.

2. Maps

- A map which identifies the location of biodiversity values within the subject property.
- An map indicating the surrounding environment, including any vegetation corridors and waterways in the land surrounding the property.
- A map of the proposed development within the subject property and any ancillary development required including building footprints, driveways, wastewater, utility placement and landscaping.
- Any maps which demonstrate survey efforts.

3. Legislative Review

- A review of relevant legislation should be included in a flora and fauna report. This will identify what needs to be assessed at the state and federal level.
- To meet legislative obligations under the BC Act 2016, a , a Threatened Species Test of Significance must be completed. It should be noted that if a threatened species test of significance finds that impact on threatened species is likely, the development will have triggered entry into the Biodiversity Offset Scheme.
- To meet legislative obligations under the EPBC Act 1999, a Protected Matters Search must be completed for the subject site. This search will identify any species or ecological communities to be considered for further assessment or targeted surveys. Consideration must be given to the Significant Impact Guidelines to assess the significance of any impact on threatened entities. If it is determined that the development will have a significant impact on a Matter of National Environment Significance, a referral to the Commonwealth Environment Minister is required.
- Other legislative requirements may need consideration. If required, Council will refer your application on to the relevant government department for assessment.

4. Flora and Fauna Surveys

- Survey effort must be sufficient to identify all relevant biodiversity values on the site. This includes flora, fauna, habitat and environmental features. Tables 2 and 3 give guidance on Council's expectations for survey effort and methods. Consideration should be given to capture any ecological communities and habitat values throughout the property.
- Threatened species targeted surveys must demonstrate alignment with best practice survey guidelines for survey timing, seasonality and method.
- Sufficient floristic data is to be used to identify the most likely Plant Community Type (PCT) or the vegetation community as identified by Smith & Smith in Native Vegetation Communities of Hornsby Shire 2008. This data must be included in the final report.
- Targeted habitat surveys may be required to determine potential presence of species.

Minimum flora survey effort

Vegetation composition	Minimum lot size	Survey requirement
Cleared site (grassland area, remnant trees)	<2ha	1 random meander per vegetation community/patch, habitat observations
	>2ha	1 random meander per vegetation community, habitat observations
Partially cleared site (combination of cleared/grassland area with remnant bushland or regrowth)	<2ha	1 random meander through each cleared area, 1 quadrat plot per vegetation community/patch
	>2ha	1 random meander through each cleared area, 2 quadrat plots per vegetation community/patch
Undisturbed site (remnant bushland or regrowth)	<2ha	1 quadrat plot within development footprint, 1 quadrat plot per vegetation community
	>2ha	1 quadrat plot within development footprint, 2 quadrat plots per vegetation community

Table 2: Minimum flora survey effort

Recommended fauna survey effort

Survey method	Amphibians	Bats	Diurnal birds	Nocturnal birds	Diurnal mammals	Nocturnal mammals	Reptiles	Habitat
Anabat		X						
Acoustic recording	X	X	X	X		X		
Camera trap			X	X	X	X	X	X
Camera search of hollows			X	X		X		X
Call playback	X	X	X	X		X		
Scat search				X	X	X		
Hair tubes					X	X		
Hollow inspection		X	X	X	X	X	X	X
Meander	X	X	X	X	X	X	X	X
Spotlighting	X	X		X		X	X	X
Stag watch		X	X	X		X	X	X
Trapping	X	X			X	X	X	

Table 3: Recommended fauna survey effort

5. Impact Assessment

- The assessment of impacts on biodiversity values from the proposed development must consider direct and indirect impacts. Direct impacts are the more obvious such as the removal of vegetation. Indirect impacts can occur beyond the development footprint and occur over time and may include changes in hydrology, introduction of weeds, disturbance of habitat due to increased usage and noise.
- Assessment criteria will include relevant Parts of HDCP including Trees, Vegetation and Biodiversity, legislative requirements (tests of significance) and other relevant planning controls.
- The assessment should consider a broad picture of the site and its surroundings to provide a clear understanding of the scale of impacts (at a site, local population or regional level)
- Demonstration of the avoid and minimise principles.
- Once a desktop survey and physical flora and fauna survey efforts have identified any potential or actual species presence, any species or communities to be impacted must be assessed for impacts.
- A Threatened Species Test of Significance must be completed in accordance with the requirements of the Biodiversity Conservation Act 2016 for any species likely to be present or impacted by the development.
- The impacts to any common species which were identified in surveys must be assessed, including impacts to identified habitat features.
- If required, an assessment of threatened species and communities should be undertaken in accordance with the Environmental Protection and Biodiversity Conservation Act 1999.

6. Recommendations and Offsetting

- If the ecologist identifies that changes can be made to reduce ecological impact on the environment, recommendations should be made to reduce that impact in accordance with the avoid, minimise and mitigate principle.
- If the development will have an ecological impact which cannot be avoided or minimised, recommendations to mitigate that impact should be made. Hornsby Shire Council has a Green Offsets Code which identifies the replacement planting ratio required based on the area of vegetation or habitat to be removed. The principle of protect, enhance and replace is introduced as a tiered offset approach based on site constraints such as available area for replacement planting. Consultants should refer to this code when making a recommendation for offsetting within the subject property.
- Ongoing monitoring requirements may be recommended, as these can be implemented and managed through other reports including WMPs, VMPs and IBVMPs. Council may request these documents as additional information throughout the development assessment process.



Photo: *Darwinia biflora* by Rachel Whiteley



Photo: *Spotted Sun Orchid* by Rachel Whiteley

Resources

Calculating your impact resources

Biodiversity Values Map and Threshold Tool

<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap>

Biodiversity Values Map and Threshold Tool User Guide

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-values-map-threshold-tool-user-guide-190705.pdf>

Council Property Search Tool

<https://hscenquiry.hornsby.nsw.gov.au/Pages/XC.Track/SearchProperty.aspx>

NSW Planning Portal Spatial Viewer

<https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>

Fisheries NSW Spatial Data Portal

https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal

Six Maps

<https://maps.six.nsw.gov.au/>

Bionet Atlas

https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx

Atlas of Living Australia

<https://www.ala.org.au/>

Whats protected under the EPBC Act

<https://www.dcceew.gov.au/environment/epbc/our-role/what-is-protected>

Department of Planning, Industry and Environment Guidelines for developments adjacent to National Parks and Wildlife Service lands

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Development-guidelines/developments-adjacent-npws-lands-200362.pdf>

Office of Environment and Heritage Threatened Species Test of Significance Guidelines

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/threatened-species-test-significance-guidelines-170634.pdf>

Environment and Water Protected Matters Search Tool

<https://pmst.awe.gov.au/#/map?lng=131.52832031250003&lat=-28.6905876542507&zoom=5&baseLayers=Imagery,ImageryLabels>

Survey resources

Threatened species of Hornsby Shire Council

<https://www.hornsby.nsw.gov.au/resources/documents/environment/bushlands/List-of-threatened-species-in-Hornsby-Shire.pdf>

Field survey method guidelines

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/field-survey-method-guidelines.pdf>

Threatened species survey and assessment guidelines – amphibians

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/amphibians-field-survey-methods-090213.pdf>

Surveying threatened plants and their habitats

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/surveying-threatened-plants-and-habitats-nsw-survey-guide-biodiversity-assessment-method-200146.pdf>

'Species credit' threatened bats and their habitats

<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/species-credit-threatened-bats-survey-guide-180466.pdf>

Survey guidelines for Australia's threatened mammals

<https://www.agriculture.gov.au/sites/default/files/documents/survey-guidelines-mammals.pdf>

Survey guidelines for Australia's threatened bats

dcceew.gov.au