

CENTRAL COAST COUNCIL

FLORA AND FAUNA GUIDELINES



2019

Central
Coast
Council



Table of Contents

Introduction2

Definitions of terms and acronyms used in this document6

Relevant overarching legislation and Environmental Planning Instruments8

Environment Protection and Biodiversity Act 19998

Biodiversity Conservation Act 20168

Environmental Planning and Assessment Act 19799

 Environmental Planning Instruments9

Fisheries Management Act 19949

Rural Fires Act 19979

Protection of Environment Operations Act 19979

 State Environmental Planning Policy (Coastal Management) 201810

 State Environmental Planning Policy 19- Bushland in Urban Areas10

 State Environmental Planning Policy (Vegetation in Non-Rural Areas) 201710

 State Environmental Planning Policy- Habitat Protection10

Water Management Act 200010

What type of ecological report is required? 11

Calculating the total area of impact 15

Biodiversity Development Assessment Report (BDAR) 16

 How is a BDAR prepared?16

 Serious and Irreversible Impacts17

 Consideration of the principles of Avoid, Minimise and Offset19

 Meeting an offset obligation20

 What type of land can be established as a Biodiversity Stewardship site?21

Ecological Assessment Reports 22

 What if my application does not require a BDAR? 22

 Study area 22

 Assessing indirect impacts to biodiversity 23

What should my flora and fauna report contain? 24

 Field surveys and mapping24

 Field survey results28

 Likelihood of Occurrence table28

 Evidence of Avoid, Minimise and Offset29

 Test of Significance29

 Site photographs30

 Mitigation measures30

 Mitigating the loss of tree hollows31

 Salvaging hollows and creating log habitat31

 Dam dewatering33

 Biodiversity Certification33

 Freshwater aquatic survey requirements33

 Estuarine and marine survey requirements33

What is a Wildlife Management Plan (WMP) and when do I need one? 34

Vegetation Management Plans 36

 What is a Vegetation Management Plan?36

 How detailed should the VMP be?37

 Who can prepare a VMP?38

 Who can carry out the works specified in a VMP?38

 When should replanting be included?38

 Performance targets38

Other ecologically related Conditions of Consent that Council may impose on developments 39

Appendix A 40

Photo's by Dr Chris McLean

FLORA AND FAUNA GUIDELINES



Eastern Water Dragon

Introduction

The Central Coast region contains 70% native vegetation cover and maintains a high diversity of flora and fauna. The One Central Coast - Community Strategic Plan 2018-2028 identifies the need to protect our rich environmental heritage by conserving beaches, waterways, bushland, wildlife corridors and inland areas and the diversity of local native species. Many of the flora and fauna species occurring within the region are threatened with extinction, thus require careful management to ensure they persist into the future.

The introduction of the *Biodiversity Conservation Act 2016* substantially changed the way in which ecological impacts associated with development are assessed. In particular, larger developments and areas of high biodiversity value will need to secure conservation land in perpetuity through a market based program called the Biodiversity Offsets Scheme (BOS).

This document provides guidance to proponents on the most appropriate assessment method for their application. Consideration of the information contained within these guidelines will streamline the development assessment process.



Grey Gum bark

These guidelines consider the topics of:

- What is the overarching legislation and Environmental Planning Instruments that underpin these guidelines?
- What are the NSW Biodiversity Values Map and Biodiversity Offset Scheme Entry Tool (BOSET)?
- When is a Biodiversity Development Assessment Report (BDAR) required?
- What does avoid, minimise and offset mean?
- If I don't need a BDAR, what content does Council need in my ecology report? What level of survey effort is required?
- The Threatened Species Test of Significance (the "5 Part Test") and the importance of adequately defining local occurrence or local population.
- What is a Vegetation Management Plan (VMP) and when do I need one?
- What is a Wildlife Management Plan (WMP) and when do I need one?

Definitions of terms and acronyms used in this document

AOBV	Areas of Outstanding Biodiversity Value
BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
BCAR	Biodiversity Certification Assessment Report
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
Biodiversity	Biodiversity is the variety of different types of plants and animal species (including micro-organisms) as measured in a specified geographic location or ecosystem at a particular time. The number of different plants and animals that live in a patch or type of forest is an example of biodiversity.
BMAT	Biodiversity Values Map and Threshold Tool
BOS	Biodiversity Offsets Scheme
BOSET Report	Report generated using the BMAT
BSSAR	Biodiversity Stewardship Site Assessment Report
DCP	Development Control Plan
DPIE	Department of Planning, Industry and Environment
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
Ecological Assessment Report	Ecological assessment assessing direct and indirect impacts to biodiversity, including flora and fauna. This type of report is also often referred to as a Flora and Fauna Report.
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
LEP	Local Environmental Plan
LGA	Local Government Area
Native Vegetation	Vegetation that comprises of species of plants that are considered to naturally occur in the Central Coast region.
PCT	Plant Community Type
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
SAII	Serious and Irreversible Impacts
SEPP	State Environmental Planning Policy
VMP	Vegetation Management Plan



Powerful Owl



Giant Barred Frog



Relevant overarching legislation and Environmental Planning Instruments

Environment Protection and Biodiversity Conservation Act 1999

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a Matter of National Environmental Significance.

Matters of National Environmental Significance currently relevant to the Central Coast LGA include nationally scheduled threatened species, nationally scheduled endangered ecological communities, and migratory species. This Act also applies to World Heritage properties and Ramsar Wetlands, however these areas do not currently occur within the LGA.

Approval under the EPBC Act is required in addition to obtaining development consent under the *Environmental Planning and Assessment Act 1979* (EP&A Act) for any action which may impact on Matters of National Environmental Significance. The onus of obtaining this approval, if required, is on the applicant. If a referral under the EPBC Act is required, Council encourages applicants to consult with the Commonwealth Department of Environment and Energy prior to lodgement of the development application.

Biodiversity Conservation Act 2016

The purpose of the *NSW Biodiversity Conservation Act 2016* (BC Act) is to conserve biodiversity and to establish a framework to avoid, minimise and offset the impacts of proposed development on biodiversity and to provide a scientific method to assess development impacts. Protected species contribute to the biodiversity of the Central Coast and are an integral part of the ecological processes that support threatened species such as through the provision of prey.

Council is required to consider the environmental impacts of development applications, projects, activities and rezoning proposals on biodiversity under Section 4.15 of the EP&A Act and relevant provisions contained within Parts 6 and 7 of the BC Act.

In accordance with Section 7.7 of the BC Act, a development to which the Biodiversity Offsets Scheme applies will also be required to apply the Biodiversity Assessment Method and produce a Biodiversity Development Assessment Report (BDAR) to accompany a development application.

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act 1979) is the overarching legislation responsible for urban and regional planning in New South Wales.

The EP&A Act 1979 provides the legislative framework for:

1. The preparation and processing of environmental planning instruments (Local Environmental Plans (LEPs), State Environmental Planning Policy (SEPPs) and Regional Plans), and and Development Control Plans (DCPs) (Part III).
2. The lodgement and processing of development applications for development, including for State Significant Development (Part IV).
3. The approval process for activities where the applicant (e.g. Councils) are their own consent authority (Part V).

Key consideration of impacts to biodiversity under s4.15 of this Act is required in addition to those considered under the Biodiversity Conservation Act 2016, as confirmed in the NSW Court of Appeal case of *Davis v Gosford City Council*¹.

¹ Davis v Gosford City Council [2014] NSWCA 343.

Environmental Planning Instruments

The Wyong Local Environment Plan 2013 (LEP) and Development Control Plan 2013 (DCP), the Gosford LEP 2014 and DCP 2014 and the future Central Coast Consolidated LEP and DCP contain legal provisions to protect locally significant native vegetation communities, rare species of flora, fauna and other sensitive environmental features including vegetation constraint areas, ecological buffer areas, riparian lands and watercourses, steep slopes, environmentally sensitive land and development excluded land. To determine the land zoning and relevant DCP controls for your site, visit Council's website or contact Council's Duty Planner at either the Gosford or Wyong offices.

If development is proposed within an Environmental land zoning, signified as E2, E3 or E4, or those identified along the Hawkesbury River in Sydney Regional Environmental Plan no. 20, additional environmental considerations will apply. Any proposed development in these zones should minimise the level of tree and vegetation clearing, prioritising the retention of large, high value trees and ensure that visual impacts from tree and vegetation clearing are minimised.

Fisheries Management Act 1994

The purpose of the *Fisheries Management Act 1994* is to conserve, develop and share the fishery resources for the benefit of present and future generations. Importantly the Act protects important fish habitat such as seagrasses, saltmarsh and mangroves. Any actions that have the potential to harm important fish habitat may require approval from NSW Department of Primary Industries.

Rural Fires Act 1997

The *Rural Fires Act 1997* (RFS Act), among other things, aims to provide regulatory guidance to prevent, mitigate and suppress bush and other fires and to minimise the likely impacts from those fires. Across the Central Coast, around 70% of urban land is bushfire prone and as such, development in these areas must be conducted in accordance with the Planning for Bush Fire Protection 2018 Code of Practice. While an individual development may be located in an area that does not contain native vegetation, the required Asset Protection Zone (APZ) may impact on native vegetation and as such may trigger requirements contained within the BC Act.

Protection of Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* aims to limit environmental pollution in New South Wales, including pollution of lakes, estuaries and creeks. While ancillary legislation to those described elsewhere in this document, it is important that to maintain resilient biodiversity that these areas do not become polluted.



Glossy Black Cockatoo

Relevant overarching legislation and Environmental Planning Instruments cont.

<p>State Environmental Planning Policy (Coastal Management) 2018</p> <p>State Environmental Planning Policy (Coastal Management) 2018 protects State Significant coastal wetlands (formerly designated as SEPP 14 Wetlands), State Significant Coastal Rainforests (formerly designated as SEPP 26 Littoral Rainforests) from impacts resulting from development. If a proposed development is within or adjacent to a wetland or littoral rainforest, Council consent is required, through the submission of a development application and concurrence from the Department of Planning, Industry and Environment (DPIE). Maps showing the approximate locations of State Significant Wetlands and littoral rainforests in the Central Coast Council area are available from Council.</p> <p>This SEPP also protects coastal areas and as such, Council must adequately consider if a development is at risk from coastal hazards and must not compromise the appropriate environmental functionality of the coastal zone. Concurrence from the DPIE may be required for projects that affect coastal matters considered by this SEPP.</p>	<p>State Environmental Planning Policy (SEPP 19) - Bushland in Urban Areas</p> <p>SEPP 19- Bushland in Urban Areas protects publicly owned bushland in urban areas. Bushland under Council management must not be harmed without Council's consent. Additionally, Council must consider development adjacent to bushland areas to ensure that the development does not compromise the quality of the bushland in the future.</p>	<p>State Environmental Planning Policy- Koala Habitat Protection</p> <p>SEPP 44, among other things, aims to protect core areas of Koala habitat, being identified as areas that contain breeding Koalas. Development of land that contains breeding Koalas must be accompanied by a Koala Plan of Management. Potential areas of core Koala habitat occur in the west of the Central Coast LGA.</p>
	<p>State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017</p> <p>This SEPP aims to provide a framework for the removal of trees and vegetation that are not associated with development. This includes the removal of single trees or applications to clear areas of native vegetation outside of rural areas, including those with an environmental land zoning.</p>	<p>Water Management Act 2000</p> <p>The purpose of the <i>Water Management Act 2000</i> is to provide for sustainable management of water resources in New South Wales and among other things, to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality. If a development is proposed within 40 metres of a waterway, referral to and concurrence from the Natural Resources Access Regulator (NRAR) may be required.</p>

What type of ecological report is required?

The proponent for a development needs to determine whether the biodiversity offsets scheme applies to their proposal. As outlined in further detail below, development proposals that trigger the BOS need to submit a BDAR. If the development does not trigger the BOS, a Flora and Fauna Assessment prepared in accordance with these guidelines would still be required.

In all instances a BOSET Report is required to be submitted with all development applications. A BOSET Report is generated using the Office of Environment and Heritage Biodiversity Values Map and Threshold Tool (BMAT) here www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap.

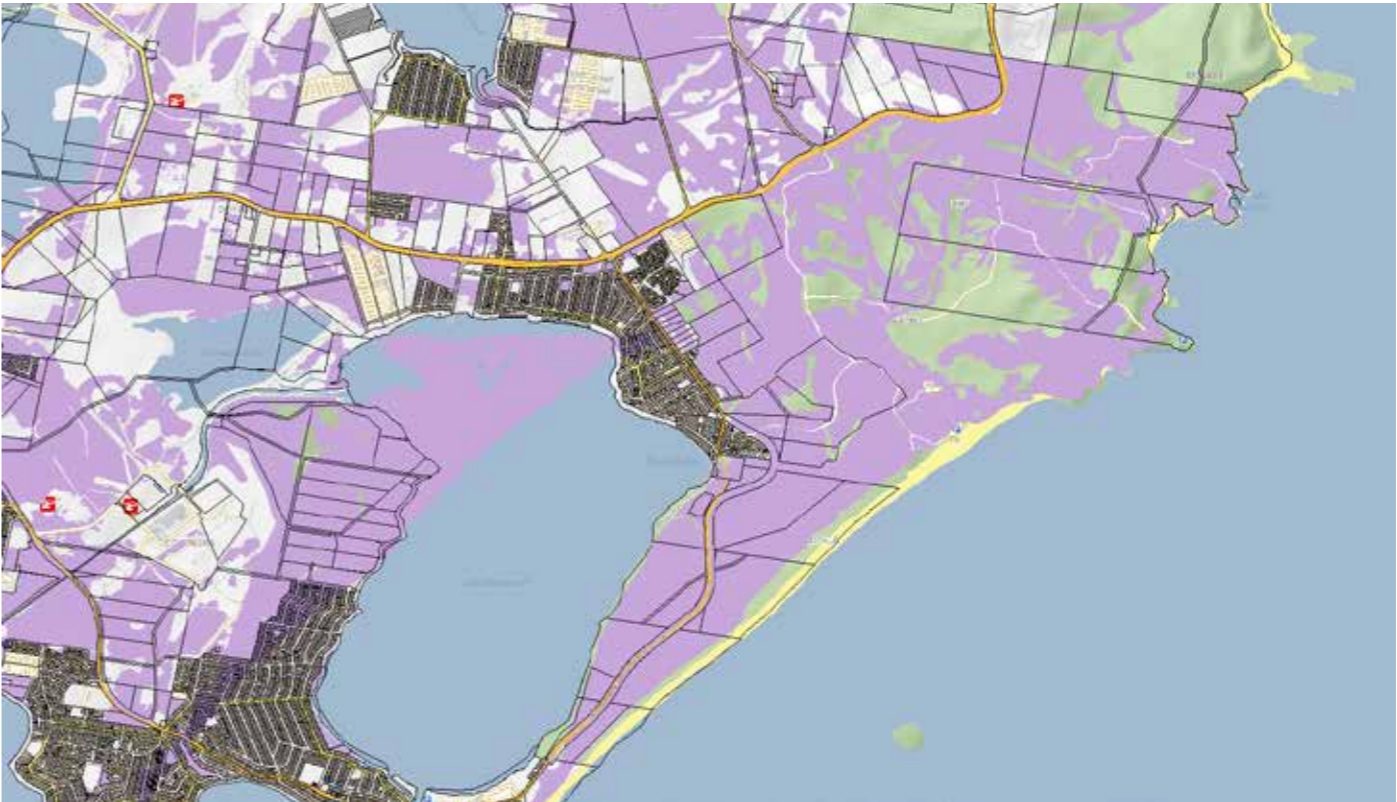


Figure 1: Example extract of the Biodiversity Values Map of an area in the north of the Central Coast. Searches completed on this map must be less than 90 days old.



Persoonia



Leaf Green Tree Frog

The type of additional reports required will depend on the location of your site and the area of native vegetation to be affected. Areas of the Central Coast that contain high biodiversity values are triggered into the scheme on the BMAT. As such, any development, including single tree removal, underscrubbing and clearing for the construction of a single dwelling house on lands affected by this map need to be accompanied by a Biodiversity Development Assessment Report (BDAR). A BDAR is also required if a development site exceeds the area clearing threshold as stated in Section 7.2 of the *Biodiversity Conservation Regulations 2016* summarised in Table 1. Further information is available on Council's website under Planning and Development Guidelines under Biodiversity centralcoast.nsw.gov.au/plan-and-build/planning-controls-and-guidelines/biodiversity.

For sites that propose to indirectly or directly modify native vegetation which are not triggered into the BOS, a Flora and Fauna Assessment should instead be prepared.

Table 1: area of clearing required for land not on the Biodiversity Values Map that requires the preparation of a Biodiversity Development Assessment Report

Minimum Local Environment Plan lot size*	Clearing threshold where a BDAR is required
Less than 1 ha	0.25 ha or more
Between 1 and 40 ha	0.5 ha or more
40 to 1000 ha	1 ha or more

*Note: the preparation of a BDAR may also be required if Council considers a proposal to represent a significant impact to the local occurrence or local population of threatened species.

Ecological assessment process

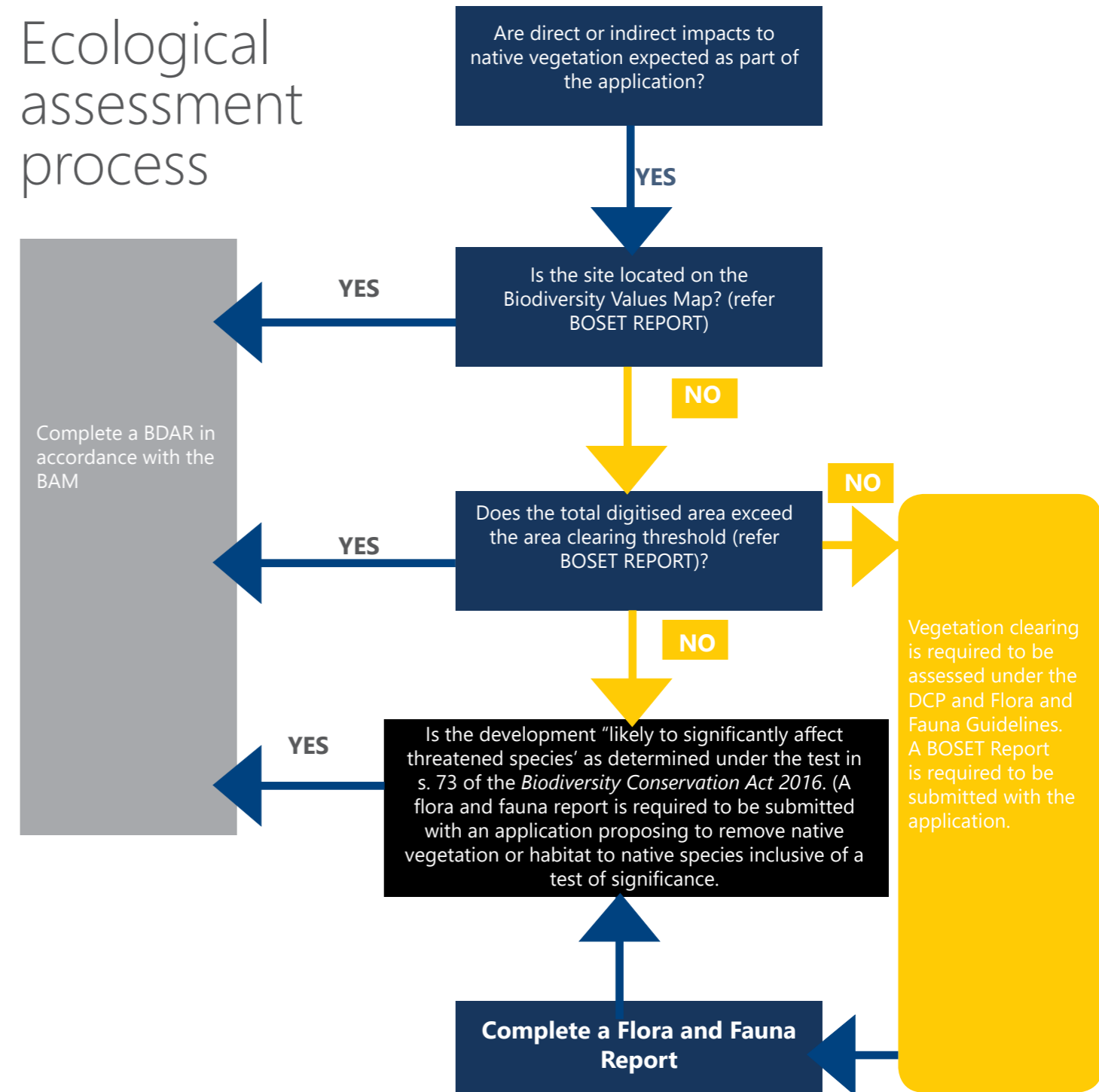


Figure 2: Pathway for determining the type of ecological assessment that needs to be prepared to accompany a development application.

Consideration of the principles of Avoid, Minimise and Offset

The *Biodiversity Conservation Act 2016* establishes a framework to avoid, minimise and offset impacts on biodiversity. Section 8 of the Biodiversity Assessment Method (BAM) outlines how to avoid and minimise impacts on biodiversity values.

All applications to Council for development or clearing approvals must set out how impacts on biodiversity will be avoided and minimised. This includes applications that do not trigger entry into the Biodiversity Offsets Scheme. This is particularly important on properties with an environmental zoning.

Avoid In the first instance the applicant must make all reasonable attempts to avoid any impact on environmentally sensitive land. This involves relocating the development or changing the design of the proposal to prevent any works associated with the development occurring within environmentally sensitive areas. This should avoid the removal of any hollow-bearing trees or glider sap trees and position development away from rock outcrops and waterways.

Council offers a pre-development meeting service which may assist in identifying areas of high biodiversity value.

Minimise Where it is not possible to “avoid” any areas of environmentally sensitive land, every attempt shall be made to “minimise impacts”. In this part minimise means designing and constructing the development so that any impact on environmentally sensitive land is of a minor scale and significance only. To minimise biodiversity impacts a proponent may also propose measures such as limiting certain operations during the breeding season of local threatened species, or reducing use of lighting at night to minimise impacts on nocturnal threatened species.

Mitigate and offset Where it is not possible to “avoid” or “minimise” any impact on environmentally sensitive land, any impacts must be “mitigated”. In this part “mitigate” means taking all reasonable steps to relieve any impacts associated with works in environmentally sensitive land such as rehabilitation or re-establishment of affected areas such as through the implementation of a Vegetation Management Plan or compensating for the loss of hollow-bearing trees. Formal Biodiversity Offsets may be required for the remaining residual impacts.



Hollow Bearing Tree

Calculating the total area of impact

The Biodiversity Values Map and Threshold Tool along with Biodiversity Values Map Threshold Tool User Guide explain how to measure the clearing footprint to determine whether the biodiversity offsets scheme threshold will be triggered.

The area of impact can be defined by the total area which will be cleared or disturbed as part of the development. Council is required to assess all applications, including subdivisions, to include any reasonable extent of clearing.

The area of impact needs to be calculated for the whole development including asset protection zones required by the Rural Fire Service, roads, services, On Site Sewerage Management, fence lines and any other impacts to vegetation. The entire area proposed to be cleared is required to be identified on all plans. For sites where subdivision is proposed, all areas of potential future clearing must be determined at the subdivision stage or if this does not occur, it must be assumed that complete clearing will occur. For example this may require the creation of Building Location Envelopes on the property.



Syzigium



Gompholobium



Isopogon

BIODIVERSITY DEVELOPMENT

ASSESSMENT REPORT (BDAR)

How is a BDAR prepared?

A Biodiversity Development Assessment Report (BDAR) can only be prepared by an assessor who is accredited by the Department of Planning, Industry and Environment. A BDAR assesses the proposed impacts to biodiversity through a standard field method where field collected data is entered into an internet based calculator to determine the amount of credits required to be offset. The amount of credits that a proposed development impacts upon needs to be offset with an equal or greater number of credits. The offset sites are referred to as a Biodiversity Stewardship Site (BSS) and require active management to occur on the site in perpetuity. The number of credits that need to be offset will vary by the type and condition of the vegetation being impacted, therefore vegetation that is considered to be in poor condition will usually require less credits to be retired than high quality vegetation. In this situation it's important to work with the accredited assessor to attempt to avoid areas that contain vegetation that is of the highest value.

A list of accredited assessors is available at **customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor** or alternatively ask an ecological consultant if they are an accredited assessor when planning your development reporting requirements.

BDAR requirements for planning proposals

For applicants seeking to rezone their land, if impacts to biodiversity are likely to trigger the need to prepare a BDAR at the development application stage, it is Council's preference for a BDAR to be included with the planning proposal. This is to ensure that applicants are



Stone Gecko



Smooth Bark Apple Tree bark

fully aware of the likely offsetting cost and that Serious and Irreversible Impacts are avoided. Alternatively, for sites with high biodiversity constraints, Council encourages applicants to consider the possibility of completing Biodiversity Certification over the development portion of the land.

Serious and Irreversible Impacts

The *Biodiversity Conservation Regulation 2017* identifies the need for consideration of Serious and Irreversible Impact (SAIL) on threatened species and ecological communities. A SAIL is an impact that a consent authority considers likely to significantly increase the extinction risk of a threatened species or ecological community. Where a BDAR has been submitted with a DA or clearing application, Council must not grant approval if they determine the proposal is likely to have a serious and irreversible impact on biodiversity.

All BDARs must adequately assess potential impacts to SAIL. While OEH provides guidance on potential candidate SAIL, this list is not exhaustive and the accredited assessor should identify if there are any other potential candidate SAIL within the study area of the BDAR.

Criteria for Identifying a Serious and Irreversible Impact



Riparian Zone

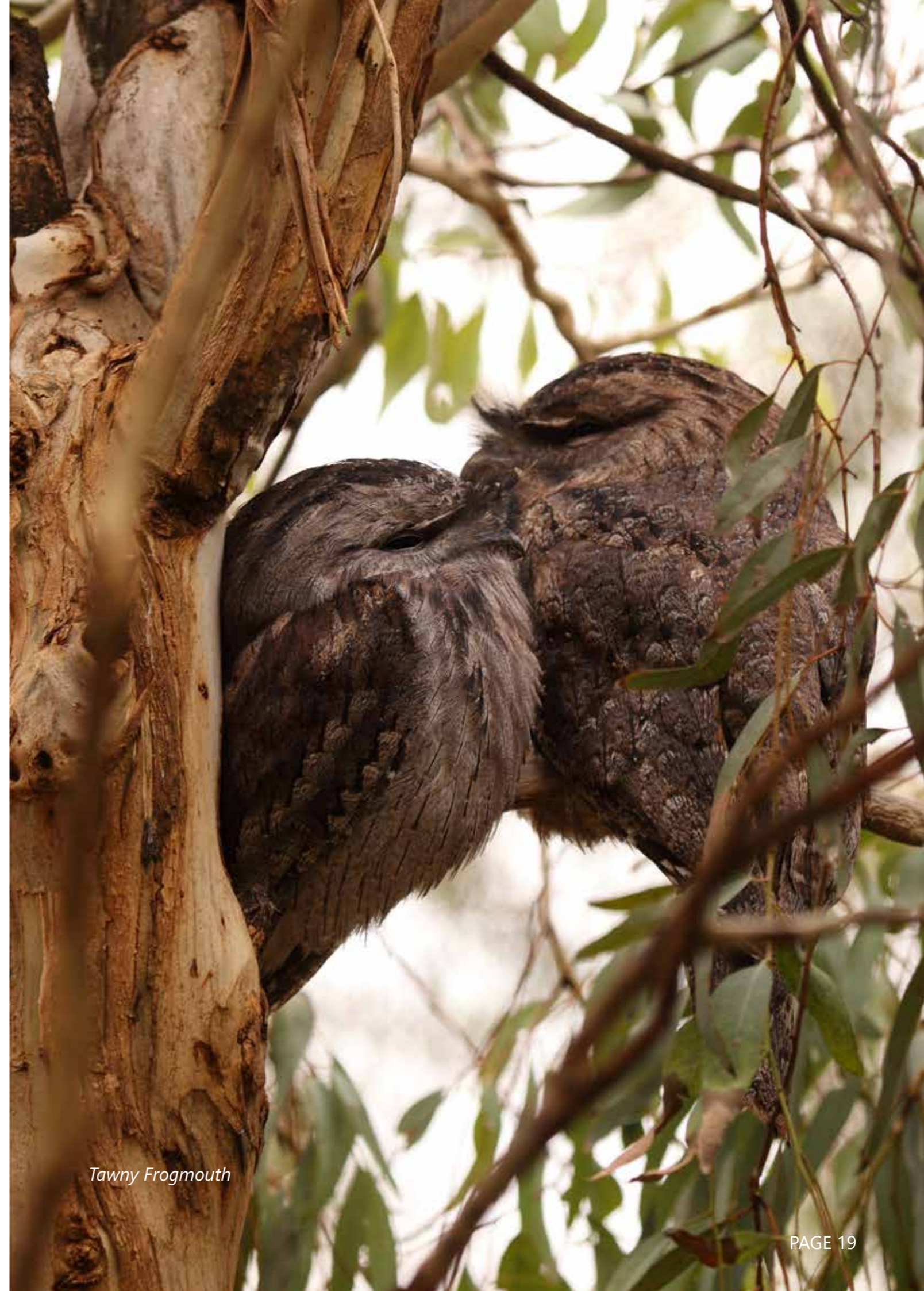
A serious and irreversible impact is likely to:

1. cause further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or
2. further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or
3. impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or
4. impact a species or ecological community that is unlikely to respond to measures to assist in its recovery

It is the responsibility of an applicant to demonstrate to Council that a serious and irreversible impact is unlikely to occur.



Lesser Long Eared Bat



Tawny Frogmouth



Koala

Meeting an offset obligation

Proponents of development have a range of options to offset biodiversity impacts under the Biodiversity Offsets Scheme. These include buying credits from Biodiversity Stewardship change to sites and/ or funding biodiversity actions payments of funds into the Biodiversity Conservation Fund to meet their offset obligation. If a developer pays into the Fund, the Biodiversity Conservation Trust is then responsible for securing the offset. The *Biodiversity Conservation Regulation 2017* contains offset rules governing how these offset options are used.

On the Central Coast the options for meeting the biodiversity credit offset obligation include:

- Purchase credits from the market as advertised on the Biodiversity Credits Register or placing a request for credits on the same Register. As credits are set on an open market, the price paid will vary depending on who the seller is and how rare the credits are that are needed.
- Pay into the Biodiversity Conservation Fund, held by the NSW Government where the Biodiversity Conservation Trust will purchase the required number and type of credits on an applicant's behalf. This payment will be higher than negotiating directly with a seller as there is risk that the Biodiversity Conservation Trust will not be able to locate the credits for the current market price.
- Locating an area of vegetation to be conserved in perpetuity as a Biodiversity Stewardship Site. This will require the preparation of another type of report called a Biodiversity Stewardship Site Assessment Report (BSSAR) to demonstrate that particular area will offset the biodiversity credit obligation for the proposed impacts of a development. This may include approaching local landholders who own areas of high conservation value native vegetation and negotiating with them as to their willingness to establish a BSS on their land.

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What type of land can be established as a Biodiversity Stewardship site?

Biodiversity Stewardship Sites can be established over a variety of land tenures, including Crown and Council land and across a range of land zonings, including over land zoned as E2- Environmental Conservation.

If you own land that has high biodiversity values, this land also has the potential to be established as a Biodiversity Stewardship Site. This will provide an income source to the landholder in perpetuity to pay for land management activities. Further information is available from the NSW Biodiversity Conservation Trust.

Applications for Biodiversity Stewardship sites are made to the Biodiversity Conservation Trust (BCT). The BCT will assess the landholder's application against relevant legal and technical requirements and agree on the terms of the Biodiversity Stewardship Agreement. More information can be found at the BCT website at www.bct.nsw.gov.au.



Lambertia

ECOLOGICAL ASSESSMENT REPORTS



Green Tree Snake

What if my application does not require a BDAR?

Proposals that result in direct or indirect impacts to native vegetation or habitats that do not need to prepare a BDAR will require an ecological assessment report, which are often referred to as flora and fauna reports or assessments. The following is the minimum level of information that is required to be contained within the ecological assessment report. The surveys should follow the process outlined on Figure 3 and in Table 2.

Evidence that the biodiversity offsets scheme threshold is not triggered will need to be submitted with these development applications.

Study area

The study area must include all areas likely to be directly impacted by the development, including lots, roads (including footpath, kerb and gutter), asset protection zones, stormwater infrastructure and water quality basins, water and sewer services to connection point. The study area must also include areas likely to be indirectly impacted, particularly sensitive environments such as endangered ecological communities. Indirect impacts include altered flow regimes, noise, light, weeds, public access etc.



Assessing indirect impacts to biodiversity

An ecological assessment report should be prepared for any site that is not mapped on the Biodiversity Values Map or that is below the offset threshold and that has direct or indirect impacts on areas of native vegetation or important wildlife habitat.

Indirect impacts can include but are not limited to:

- Development that is more intensive than the current landuse, for example conversion from grassland to residential development.
- Development that results in increased light spill into adjacent bushland.
- Any development immediately adjacent to public bushland managed for conservation such as a National Park or Council reserve.
- Impacts to water quality from stormwater discharge into wetlands and watercourses that contain native vegetation.
- Impacts on altered hydrology such as limiting or increasing the flow of stormwater into native vegetation.
- Increased traffic that may result in increased roadkill.

Ecological assessment reports for indirect impacts may consist of a short letter style report that should assess the nature and severity of the indirect impact and if further assessment is required.

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What should my flora and fauna report contain?

Field surveys and mapping

For any proposal that will result in a direct or indirect impact on ecological matters, field surveys need to be completed. The field surveys must have a level of survey no less than is outlined on Figure 3 and in Appendix A and must also record the following information that is to be displayed on a map:

- The impact area, including the location of Asset Protection Zones.
- The location of any hollow-bearing trees.
- The location of any glider sap feed trees.
- The location of any stick nests with a diameter greater than 0.5m.
- The location of any other important wildlife habitat, including but not limited to rock outcrops, farm dams, creeks and streams.
- The distribution of Plant Community Types (PCTs) on the site, including the area of each PCT and the area to be cleared or disturbed.
- The location of all field survey GPS track logs, such as the location of completed parallel transects and spotlighting traverses.
- The location of all fixed survey site locations such as BAM plots and fixed ultrasonic bat recording sites.
- The distribution of any recorded threatened species.

Ecologists must use a scientifically robust, fit for purpose and repeatable method to survey for target species. Surveys must be conducted in accordance with available taxa-specific guides, including published peer reviewed guidelines and survey guidelines published by the NSW OEH and Commonwealth Department of Environment and Energy.

Further information about survey requirements is also available in the threatened biodiversity data collection in NSW Government’s BioNet, including the optimal month to survey for each species, the unit of measure and other information in the ‘General Notes’ field. The notes will specify any environmental conditions required for survey, or the best time to survey for that species within a particular population or a region.

Appendix A details required survey times for threatened flora. Where there is a high likelihood of threatened owl breeding habitat occurring on a site, additional stag watching should occur during the breeding season for those species. This is particularly relevant within heavily vegetated landscapes.

No survey guidelines are provided for wetland habitats and if these habitats are proposed to be developed, it is recommended that the proposed survey effort is first discussed with Council.

Where there is a high likelihood of cryptic threatened flora occurring on the site, the applicant should first consult with Council’s Ecologist to determine the time of flowering of local reference populations.

Historical surveys can be referred to within the ecological assessment report, however the most recent surveys must be less than five years old.



Banksia

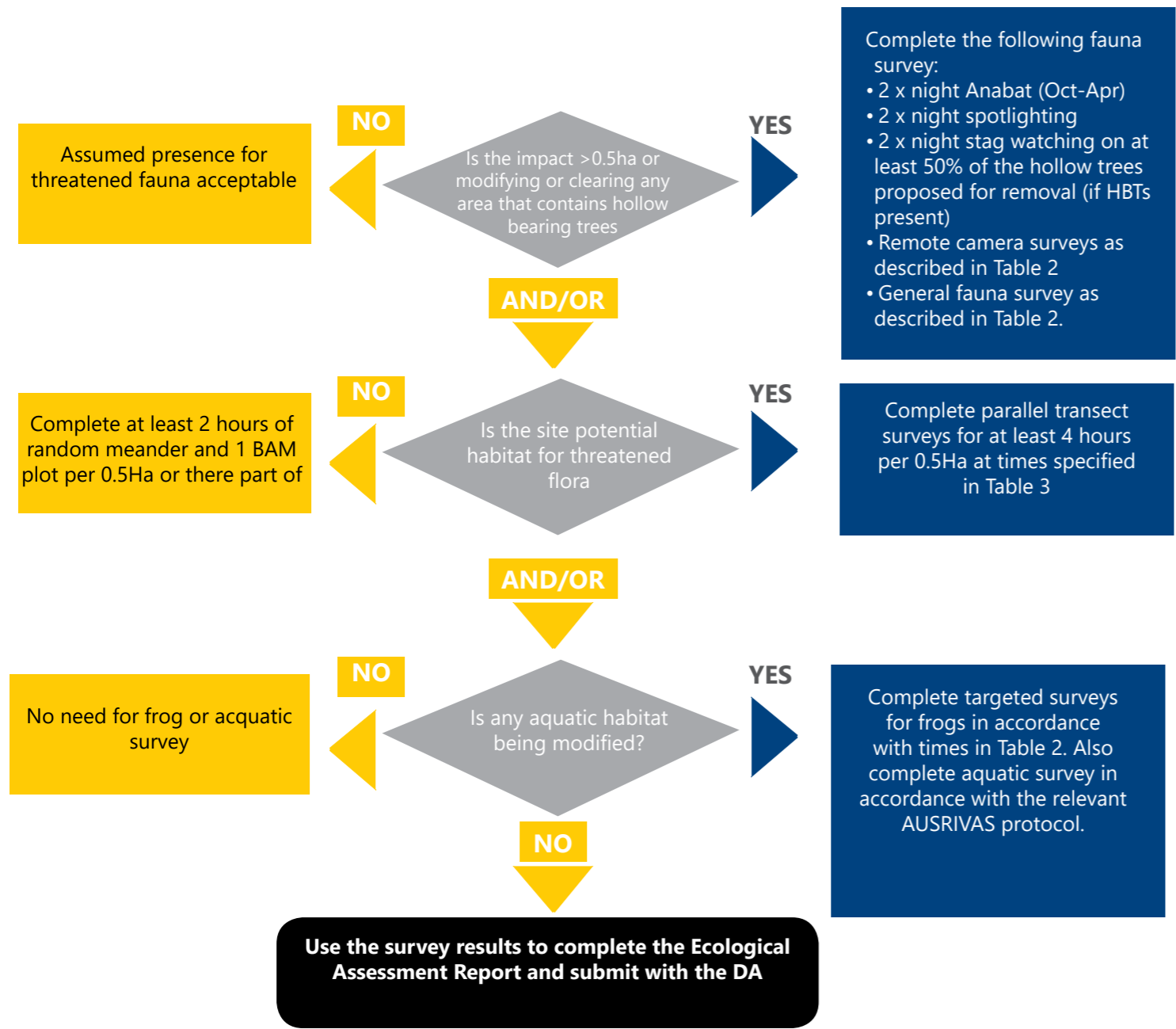


Brown Antechinus



Regent Honeyeater

How to determine what surveys are needed in an Ecological Assessment Report



Dwarf Apple

Table 2: minimum required level of field survey for sites with an impact area of less than 0.5 ha that propose the removal of mature trees.

Field method	Minimum level of survey effort
Parallel transects <5m apart	4 hours per 0.5 ha with a minimum survey of 2 hours ¹ .
Biodiversity Assessment Method plots	One BAM plot per vegetation zone.
Ultrasonic bat detection	At least two hours recording at dusk for two nights ² .
Stag watching	Observation of at least 50% of hollow-bearing trees proposed for removal at dusk for at least two nights.
Targeted frog survey	Minimum 1 hour of survey per night over two nights ³ .
Remote cameras	One arboreal mounted (>3m) and one terrestrial camera (0.5-1m) in place for at least 14 consecutive nights. Where possible the arboreal camera should be mounted opposite a hollow. ⁴
General fauna survey	Opportunistic observations of fauna while on site such as birds and reptiles.

¹ Surveys must consider the detectability of the species that have the potential to occur, in particular cryptic species such as threatened terrestrial orchids. Appropriate months for survey are included in Appendix A.

² Surveys to be completed on nights free of predicted rain between October-April. Detectors must be placed adjacent to hollow-bearing trees if present. Linear projects may require additional survey effort and proposed survey effort should first be discussed with Council.

³ surveys must occur in the most appropriate season for the species being targeted. Surveys should be completed after rain. Additional surveys may be required in areas of known or high likelihood of occurrence of the Stuttering Frog, Giant Barred Frog, Green and Golden Bell Frog, Green Thighed Frog, Wallum Froglet and Mahony's Toadlet in accordance with NSW OEH and/ or federal amphibian survey guidelines.

⁴ Arboreal cameras should include sugar water or tuna oil spray attractant and terrestrial cameras should include a meat bait placed in a bait holder.



Scribbly Gum bark

Figure 3: How to determine what type of surveys council requires within an Ecological Assessment Report based on site attributes.

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 Development applications should not be lodged until such time as all required ecological surveys and assessments have been completed, particularly in relation to seasonal flora surveys.



Field survey results

The results of the field survey are to be included in the report, including the dates of the field survey effort (in hours) on each day for each survey method for the species recorded, the BAM plot data and any important observations. The field survey results section of the report must also determine the most likely PCTs that occur on the site and if that PCT is part of any Threatened Ecological Community. Documentation of field surveys are required to be included in reports, some examples include photos from remote cameras, microbat sonographs and GPS track logs.

Likelihood of Occurrence table

A 10km search of the NSW Bionet database is to occur to determine which species have low, moderate, high or known likelihood of occurring on the site. Other databases such as the Atlas of Living Australia may also need to be searched, particularly for bird records. If a species is considered to have a low likelihood of occurrence on the site, the conclusions of this must be adequately supported by evidence. Appropriate evidence may include the absence of habitat that the species prefers, for example if a species relies on wetlands and no wetlands occur on or adjacent to the site, it can be considered to have a low likelihood of occurrence or due to the absence of any recent reliable records within a 5km radius of the site.



Evidence of Avoid, Minimise and Offset

As discussed on page 14, the BC Act places a strong emphasis on the need to avoid, minimise and offset impacts on biodiversity. These considerations are also required to be included in the ecological assessment report.

Test of Significance

All species determined to have a moderate or greater likelihood of occurrence must be assessed within a Threatened Species Test of Significance, commonly referred to as the “Five Part Test of Significance” (7.3 of the BC Act 2016). The Five Part Test of Significance where applicable must include details of:

- The area of occurrence for the local population of threatened flora species.
- The local habitat for threatened fauna species.
- The local occurrence of any Threatened Ecological Community.
- The area of habitat proposed for removal or modification.
- The number of individual threatened plants proposed for removal.
- Any other proposed impact, such as the number of hollow-bearing trees proposed for removal.



Antechinus

Aggregate Five Part Tests of Significance should only be completed for species with similar ecological requirements. For example it would be acceptable to complete an assessment for hollow-dependent microbats but not the Grey-headed Flying Fox which has different ecological requirements and migration patterns.

The local habitat for a threatened species or local occurrence of a Threatened Ecological Community should consider any breaks in the availability of suitable habitat that may limit the ability of pollinators or fauna species to cross those breaks. Large roads should be considered as barriers to dispersal for most species while large tracts of unsuitable habitat or areas of different vegetation may also restrict the occurrence of the local habitat/ local occurrence. The area of local habitat/ local occurrence should be stated within the Five Part Test and if possible shown on a map. Conclusions drawn within Five Part Tests should be well supported by evidence rather than opinion, such as factual information around the percentage of vegetation removal. Further information is contained within the NSW Office of Environment and Heritage (2018) Threatened Species Test of Significance Guidelines. <https://www.environment.nsw.gov.au/biodiversity/threatened-species-test-of-significance.htm>.

Where a species or Threatened Ecological Community listed under the *Environment Protection and Biodiversity Conservation Act 1999* have a moderate or greater likelihood of occurring on the site, the Department of the Environment (2013) Matters of National Environmental Significance Significant Impact Guidelines 1.1 must be used to assess the likely impacts.

Site photographs

A number of site photos should be included within the report, documenting the observed field conditions of the site. The photos should be used to assist Council during an initial desktop review.

Mitigation measures

Where impacts to native vegetation occur, these must be justified as resulting in the least amount of environmental harm, with areas of the highest environmental value being avoided. Where impacts are unavoidable, they must be adequately mitigated and if mitigation is not adequate, offsetting must occur. Types of mitigation measures that should be proposed include:

- Site management prior, during and post construction/ development.
- Delineation of retained vegetation.
- Protection of retained trees within the development footprint.
- Supervision of clearing by a licenced Ecologist.
- Development and implementation of a landscape plan using local native plants.
- Development and implementation of a Vegetation Management Plan to cover areas of retained native vegetation.

- Construction of artificial hollows, durable nesting boxes or reinstallation of removed hollows to other trees.
- Restoration/ remediation of the site.
- Ongoing management.

Details of proposed mitigation measures should be included within the ecological assessment, including reference to any required supporting documentation such as a Vegetation Management Plan. Any mitigation measures proposed within the ecological assessment report should also be repeated within the Statement of Environmental Effects.

Mitigating the loss of tree hollows

An artificial hollow is an alternative to a nesting box and is constructed by an Arborist who has been trained in their construction. The artificial hollow is constructed by cutting a face plate off the host tree, excavating a cavity behind the face plate, prior to the re-attachment of the face plate with bolts or coach screws.

An alternative approach is through the salvage and relocation of natural hollows onto host trees. This process sees high quality hollows cut at the bottom, treated with lanolin to prevent decay before being bolted to a host tree. In instances where artificial hollow or hollow relocation are not suitable Council will assess loss of habitat through nest box installation on a site by site basis.

Salvaging hollows and creating log habitat

If your site contains natural hollows that are in good condition, their relocation to retained trees should be considered. At times the base of the hollow may need to be protected by a metal plate prior to the relocated hollow being mounted to a host tree by a large bolt. Logs are an important component of the forest floor on the Central Coast and as such at times the use of large logs, including those that contain hollows that are generated from tree removal as supplementary log habitat should be considered.



Artificial hollow



Relocating a log with a small excavator



Relocations of salvaged logs



Replanting



Sugar Glider in artificial hollow

Dam dewatering

Dams may at times be proposed for removal to allow for development or replacement. Dams often contain aquatic vegetation that is habitat for a range of native and introduced wildlife including turtles, fish and frogs. Native fauna are protected under the *Biodiversity Conservation Act 2016* and as such need to be appropriately managed during dam dewatering. Dams may also contain high levels of contaminants such as zinc, hydrocarbons and pesticides that also require careful remediation.

If a dam is proposed to be removed, Council will include as a Condition of Consent either that the dewatering process needs to be supervised by an Ecologist or, if the dam dewatering process is more complex, a requirement to prepare a dam dewatering plan. To streamline the development assessment process, if it is known that a dam requires dewatering this plan may also be submitted with the development application. During the dewatering process removed water must not be permitted to enter creeks or drains and as such, dewatering must occur onto land unless a pollution licence is held.

Biodiversity Certification

An area of land, approximately 110 hectares in size at Warnervale is subject to a Biodiversity Certification Order. This means that for development in this area, a Flora and Fauna Assessment or BDAR is not required and this is displayed on the s149 certificate for the property. In the future other areas of the Central Coast may become subject to Biodiversity Certification which would have similar effect in terms of biodiversity reporting requirements. Despite these areas being subject to Biodiversity Certification, Council may still require specific environmental mitigation measures, such as having clearing to be supervised by Ecologists, that retained vegetation is restored and that high quality tree hollows that are removed are relocated in nearby bushland areas or salvaged to be installed elsewhere.

Freshwater aquatic survey requirements

Where the proposed development impacts on aquatic habitat either directly or indirectly, aquatic surveys need to be completed. Where the proposed development impacts on aquatic habitat either directly or indirectly, aquatic surveys need to be completed. For proposals that may result in an a low to moderate impact on water quality, such as constructing waterway vehicular crossings an assessment of the in-stream habitat condition using the AUSRIVAS Physical Assessment Protocol for freshwater habitats is required.

For proposals that may result in a high impact on water quality, such as channel re-alignment, macroinvertebrate surveys using the AUSRIVAS macroinvertebrate survey method, across riffle and edge habitat must occur.

Estuarine and marine survey requirements

Impacts on estuarine and marine environments may occur during the replacement or construction of sea walls or wharves and jetties. In these environments the location of seagrasses must be mapped, including the boundary between different seagrass communities. The area of impact to each seagrass community must also be determined and included on the map.

WILDLIFE MANAGEMENT PLAN (WMP)



Grevillea

What is a Wildlife Management Plan (WMP) and when do I need one?

A WMP is a document that provides details of how mitigation against native animal welfare issues will be achieved. A WMP is required when hollow-bearing trees and/or other important wildlife habitat features are proposed for removal. The WMP is to:

- Identify fauna likely to occur on-site and provide details on management actions to avoid and/or mitigate the risk of harm to the welfare of native animals including avoiding breeding times for species present.
- Identify on a plan and physically mark habitat trees.
- Identify on a plan and physically mark other habitat resources for salvage (eg. very large or significant tree hollows, hollow logs and boulders) and specify where the salvage materials are to be permanently placed or temporarily stored.
- Provide timeframe/schedules and protocols for clearing of non-habitat trees, and then habitat trees. The protocols for clearing of habitat trees are to identify the most benign method of dislodging fauna relocation of fauna/tree felling while the fauna remains in-situ, and treatment of captured fauna.



Sugar Glider exiting hollow

- Identify nearby release areas for animals requiring immediate relocation (this may include a recommendation to install nest boxes in adjacent habitat prior to clearing as temporary refuge for displaced animals). Contact details for the nearest vet are to be included. Ensure appropriate permissions have been granted to enter third party properties if the animals are to be released offsite. Ideally release areas are identified for long-term conservation (e.g. E2 zoned land or Council bushland).
- Detail a Nest Box Replacement/Hollow Relocation Plan for nest box/natural hollow reuse, construction and placement. Details are to include information regarding hollow bearing trees (location, number, aspect of hollow, height), nest boxes (number, type, thermal insulation, thickness), location, installation methods and the recommended monitoring/maintenance program. The final number of nest boxes to be installed will need to be calculated once the number of salvaged hollows is determined. Hollows/boxes must be installed across a sufficient area so as not to exceed natural hollow densities for target species.
- Detail a monitoring program for nest boxes/salvaged hollows to determine their usage and to carry out repairs or replacement (as required). Monitoring is to occur every six (6) months for a minimum period of five (5) years following installation. Monitoring reports are to be prepared by the Ecologist and forwarded to Council after each monitoring event.

VEGETATION MANAGEMENT PLANS (VMP)



Eastern Swamp Hen

What is a Vegetation Management Plan?

Council may require a Vegetation Management Plan (VMP) if your development will result in direct or indirect impacts on trees and native vegetation. Even if a development does not directly remove vegetation but is located immediately adjacent to vegetation an indirect impact may occur that will require mitigation through the implementation of a VMP. A VMP is to be a concise, site specific and practical document for use by a developer and/or land owner, to:

- Guide the retention and protection of native vegetation during development
- Ensure the long-term management of vegetation for ecological or biodiversity outcomes.
- Provide details on how a Condition of Consent that requires a VMP will be achieved.

The specifications of the VMP may be incorporated into Council Conditions of Consent and will have an implementation period of no less than 5 years, unless otherwise specified. VMP required under a Controlled Activity Approval under the *Water Management Act 2000* (NSW) can also be submitted to Council.



How detailed should the VMP be?

All VMPs must clearly identify the property (Lot, DP and address) that the work will occur on and include a map showing treatment zones and the area of each. The VMP has to contain sufficient detail to allow a bush regenerator to prepare a quote for the implementation of the plan. For small sites, such as where a VMP covers an area of less than 2000m², the VMP may consist of a single A3 sized site plan with annotated work areas, photographs of the current ecological state of the site and performance benchmarks. However for larger sites a more detailed plan may be required that could be over 20 pages in length.

The key topics to be addressed by the VMP are:

- The purpose and objectives of the VMP, in other words, what does it hope to achieve once implemented and the duration of the VMP. In most cases Council will expect at least a five year implementation period with the VMP being written to allow for in-perpetuity management.
- The current ecological state of the VMP area, including identification of the vegetation community present, existing and potential future threats to the long-term viability of the VMP area.
- The types of weeds that are present on the site, including their distribution and proposed removal techniques.
- Legislative considerations such as if a licence under the *Biodiversity Conservation Act 2016* (NSW) is required for seed collection from threatened plants.
- If any rubbish removal needs to occur and how this will be completed.



Repurposed tree hollow

- If the area needs to be maintained as a bushfire asset protection zone or as a drainage corridor;
- If hollow-bearing trees are proposed for removal in the development area, details of replacement with artificial hollows/ nesting boxes must be included in the VMP.
- The location of any proposed revegetation activities, including the species proposed to be used and the planting density. Where possible all plants must be of local provenance, from seed collected locally
- Identification of monitoring and evaluation methods and annual performance targets.

Who can prepare a VMP?

A VMP should be prepared by an Environmental Consultant or Bush Regenerator with theoretical and practical experience in bushland restoration and management, including weed control.

Who can carry out the works specified in a VMP?

All works must be supervised by someone who holds at a minimum, a Certificate III in Bushland Regeneration/ Conservation and Land Management and at least 500 hours of practical bushland regeneration. Those working under the supervisor must have at least 100 hours experience in bush regeneration and should be at a minimum enrolled in a Certificate II in Bushland Regeneration/ Conservation and Land Management.

For low risk sites, such as those that do not occur in areas of known threatened flora habitat or Endangered Ecological Communities, landholders may apply to Council to implement restoration activities themselves however they must have some previous experience in ecological restoration and first obtain written consent from Council to do so.

When should replanting be included?

Due to the cost of planting, it should only be proposed for highly disturbed environments such as, areas lacking native tree canopy cover, that have a long history of slashing, or along watercourses that require stabilisation. Replanting may also be required if specified targets for natural regeneration are not met. If replanting is to occur, the VMP must include a species list of readily available species that are known from the local area that occur in similar vegetation communities.

In most situations, planting densities should occur at a rate of 1 canopy tree per 4m², 1 midstorey shrub per 2m² and 4 grasses and/ or groundcovers per square metre.

Performance targets

Performance targets are necessary to enable objective measurement of the implementation of the VMP by Council or any other approval body.



Red-necked Wallaby

Targets need to be Specific, Measurable, Achievable, Realistic and Time-bound (SMART). The use of measures such as weed percentage cover over a given area (m²) of land, removal of all refuse from a site and planting survival rates are required.

Examples:

- To reduce weeds to less than 10% cover in any 1000m² area within Year 1 and to less than 5% in any 1000m² area by Year 5.
- To achieve 90% survival rate of all tubestock planted at year 5.
- To ensure there are no areas larger than 4m² that are devoid of native ground cover.
- *"To provide for a stable watercourse and riparian corridor which emulates the native vegetation communities in the area"*, from NSW Department of Water and Energy 2008.

Contingency measures are required for instances where the specific targets are not being met. For example if a high level of tubestock mortality occurs due to grazing, fencing around the tubestock may be required.

Other ecologically related Conditions of Consent that Council may impose on developments

Council can impose Conditions of Consent on development if they are in accordance with the Newbury Principles (*Newbury District Council v Secretary of State for the Environment*) which state Conditions of Consent:

1. Must be imposed for a planning purpose.
2. Must fairly and reasonably relate to the development for which permission is being given.
3. Must be reasonable.

As such in addition to the matters described elsewhere in this document Council may impose Conditions of Consent such as those that require:

- The replanting of trees or shrubs for small impact projects not covered by a VMP, such as for the removal of less than five trees.
- The establishment of buffer perimeter planting to protect retained vegetation for works not covered by a VMP.
- Fencing to protect and delineate retained vegetation.
- That clearing is supervised by a licenced Ecologist.

Appendix A

Required survey times for threatened flora species

Main or peak flowering

Sporadic or minor flowering

Flowering times of many species vary significantly from year to year depending on weather conditions and some species (particularly orchids) may not flower at all in unfavourable seasons. The recommended flowering times should be used as a guide only. If it is crucial to determine presence/absence of a particular cryptic flora species at a site, local flowering at a known nearby reference population should be confirmed before conducting surveys regardless of the stated recommended range of suitable survey times.

Species		Flowering times												Targeted Surveys during flowering season Y – essential D – desirable N – not required	Notes
		Status	J	F	M	A	M	J	J	A	S	O	N	D	
Scientific Name	Common Name(s)	BC'	EPBC'												
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V											Y	
<i>Acacia pubescens</i>	Downy Wattle	V	V												
<i>Ancistrachne maidenii</i>		V	-												
<i>Angophora inopina</i>	Charmhaven Apple, Scrub Apple	V	V											N	
<i>Astrotricha crassifolia</i>	Thick-leaf Star-hair	V	V												
<i>Caladenia porphyrea</i>	Magenta Orchid	E	E											Y	
<i>Caladenia tessellata</i>	Thick lip Spider Orchid, Tessellated Spider Orchid, Daddy Long Legs	E	V											Y	
<i>Callistemon linearifolius</i>	Netted Bottlebrush	V	-											N	
<i>Chamaesyce psammaeton</i>	Sand Spurge, Coastal Spurge	E	-											N	
<i>Corunastylis insignis (Genoplesium insigne)</i>	Wyong midge orchid 1	E	CE											Y	
<i>Corunastylis</i> sp. Charmhaven	Wyong midge orchid 2	CE												Y	Peak flowering may follow spring or summer rain
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V	V											Y	Mainly flowers mid-summer
<i>Cynanchum elegans</i>	White Flowered Wax Plant	E	E											D	Peak flowering in November
<i>Darwinia glaucophylla</i>	A shrub	V	-												
<i>Diuris bracteata</i>		E	Ex											Y	Peak flowering in September, dry sclerophyll woodland
<i>Diuris praecox</i>	Newcastle Doubletail, Rough Doubletail	V	V											Y	
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	An Epacris	V	-												
<i>Eucalyptus camfieldii</i>	Camfield's Stringybark, Heartleaved Stringybark	V	V											N	Flowering irregular and can occur throughout the year, although mainly late spring to early summer.
<i>Eucalyptus oblonga</i> in Bateau Bay, Forresters Beach and Tumby Umbi	Narrow-leaved Stringybark	EP	-											N	
<i>Eucalyptus parramattensis</i> subsp. <i>Parramattensis</i> in Wyong and Lake Macquarie LGAs	Parramatta Red Gum	EP	-											N	

Species		Flowering times												Targeted Surveys during flowering season Y – essential D – desirable N – not required	Notes
		Status	J	F	M	A	M	J	J	A	S	O	N	D	
Scientific Name	Common Name(s)	BC'	EPBC'												
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	Drooping Red Gum, Earp's Gum, Earp's Dirty Gum	V	V											N	
<i>Grevillea parviflora</i> subsp. <i>Parviflora</i>	Small-flower Grevillea	V	V											D	Sporadic flowering in January to February
<i>Grevillea shiressii</i>		V	V											D	
<i>Hibbertia puberula</i>	A Hibbertia	E	-											D	
<i>Hibbertia procumbens</i>	Spreading Guinea Flower	E	-											Y	Flowers in summer
<i>Maundia triglochinoxides</i>	Maundia	V	-											N	
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	V											N	Flowers over just 3 to 4 weeks
<i>Melaleuca groveana</i>	Grove's Paperbark	V	-											N	
<i>Microtis angusii</i>	Angus's Onion Orchid	E	E											Y	Sporadic flowering July to August and November
<i>Pultenaea maritima</i>	Coast Headland Pea	V	-											D	
<i>Prostanthera askania</i>	Tranquility Mintbush	E	E											D	
<i>Prostanthera junonis</i>	Somersby Mintbush	E	E											Y	
<i>Rhizanthella slateri</i>	Eastern Underground Orchid	V	E											Y	Difficult or impossible to detect even, when flowering.
<i>Rutidosia heterogama</i>	Heath Wrinklewort	V	V											D	Can flower sporadically throughout the year when climatic conditions are favourable. Not essential to be flowering when surveys are conducted (for experienced surveyors), but it is easier to detect.
<i>Senecio spathulatus</i>	Coast Groundsel	E	-											Y	
<i>Senna acclinis</i>	Rainforest Senna	E	-											Y	
<i>Streblus pendulinus</i>	Siah's Backbone	-	E											N	
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly, Brush Cherry	E	V											N	
<i>Tetratheca juncea</i>	Black-eyed Susan	V	V											Y	Can be detected August and November to January. Full extent of population can only be detected during peak flowering mid-September to mid-October.
<i>Tetratheca glandulosa</i>	Glandular Pink-bell	V	V											Y	
<i>Thelymitra adorata</i>	Wyong Sun Orchid	CE	-											Y	Not all plants flower every year
<i>Wilsonia backhousei</i>	A sub-shrub	V	-											Y	

*CE= Critically Endangered, E=Endangered, V=Vulnerable, Ex=Presumed Extinct, EP=Endangered Population



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