

Fowler, Mark

From: Andrew Wilson <awplanning@outlook.com>
Sent: Wednesday, 25 September 2019 10:22 AM
To: Fowler, Mark
Cc: Hancock, Cecily; Tull, Keith; Heinrich Ruiz de Roxas
Subject: DA 2019.208 for Cattle Bay Marina - Response to Agency Submissions
Attachments: DA 2019.208 Response to Agency Submissions 230919.pdf; Attachment A.pdf; Attachment B.pdf; Attachment C.pdf; Attachment D.pdf; Attachment E.pdf

Mark,

Please find attached our response to the matters raised in the NSW Government agency submissions on our DA 2019.208 for Cattle Bay marina.

You will see that the attached responses have been prepared in consultation with the relevant agencies and/or matters raised by agencies are agreed as conditions of consent. Given these circumstances and the fact that this marina has been previously approved, it is considered not necessary to refer the attached responses back to the agencies for further comment.

Given the circumstances, we request that the Council assessment be finalised and the DA proceed to be reported to the consent authority for a determination with recommendation for conditional consent as soon as possible without referring the attached responses back to agencies for further comment.

Can you please reply to confirm you have received this email and the attached response to agency submissions. Please also let me know if you have received the general terms of approval from the EPA which we understand is required for the DA.

Thank you.

Regards
Andrew Wilson
Project Planner
Eden Cattle Bay Marina Pty Ltd
Ph.0412575942

Development Application No.2019.208

For Cattle Bay Marina

RESPONSE TO AGENCY SUBMISSIONS

**Submitted to Bega Valley Council
by Eden Cattle Bay Marina Pty Ltd**

23 September 2019

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- A. Response to Port Authority of NSW submission, prepared by Royal Haskoning DHV.
- B. Response to Department of Planning and Environment (Biodiversity and Conservation Division) submission items on biodiversity, prepared by Dr Katie Smythe of Ocean Environmental Consulting.
- C. Response to Department of Planning and Environment (Biodiversity and Conservation Division) items on coastal hazards and processes, prepared by Royal Haskoning DHV.
- D. Response to Department of Primary Industries (NSW Fisheries) submission prepared by Dr Katie Smythe of Ocean Environmental Consulting.
- E. Response to Department of Primary Industries (NSW Fisheries) submission items on superyachts, prepared by Royal Haskoning DHV.

1. INTRODUCTION

This report has been prepared by Eden Cattle Bay Marina Pty Ltd being the applicant in Development Application (DA) No.2019.208 for a proposed marina at Cattle Bay Eden. This report addresses issues raised in submissions by the following NSW Government agencies on the DA:

- Port Authority of New South Wales;
- Transport for NSW (Maritime);
- Department of Planning Industry and Environment (Crown Lands);
- Department of Planning Industry and Environment (Biodiversity and Conservation Division);
- Department of Primary Industries (NSW Fisheries);

This report and the appended statements prepared by specialist consultants provide additional information on the proposed marina development that supplement the Environmental Impact Statement (EIS) lodged with the DA addressing issues raised in the agency submissions.

2. RESPONSE TO AGENCY SUBMISSIONS

AGENCY SUBMISSION AND ISSUE RAISED		APPLICANT COMMENT AND RESPONSE
PORT AUTHORITY OF NEW SOUTH WALES		A response to each of the matters raised in the Port Authority of NSW submission is provided in the statement dated 9 September 2019 prepared by the project engineers Royal Haskoning DHV in Attachment A to this report.
Cumulative impacts		
Marine traffic, navigation and safety		
Hazards		
First port of entry requirements		
TRANSPORT FOR NSW		The conditions proposed by TfNSW are agreed.
No objections subject to conditions for the following: • installation of navigation aids to be approved by Maritime; • licence or lease for the land to take effect when construction commences; • 12 months notice to Maritime on displacement / relocation of existing moorings.		
DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT (CROWN LANDS)		
Council should consider matters in landowners consent letter of 20/12/18.		
Crown Lands has agreed to deal direct with the applicant on leasing the land which is subject to DA consent.		Noted.
Work or occupation on Crown land cannot commence without tenure arrangement with Crown Lands.		Noted.
DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT (BIODIVERSITY AND CONSERVATION DIVISION)		
Biodiversity		A response to biodiversity matters raised in the DPIE submission is provided in the statement dated 20 September 2019 prepared by Dr Katie Smythe of Ocean Environmental Consulting in Attachment B to this report.
Proponent must demonstrate how the proposed development does not exceed the biodiversity offsets scheme threshold in Section 7.4 of the BC Act.		
Marine Mammal protection		The comments by DPIE on marine mammal protection can be included as conditions of consent.
Mitigation and management measures in Marine Ecology Report should be incorporated into CEMP and OEMP.		

AGENCY SUBMISSION AND ISSUE RAISED	APPLICANT COMMENT AND RESPONSE
Preparation of a Marine Mammal Protected Plan is supported and a draft is requested to be provided to DPIE BCD for input.	
Aboriginal cultural heritage DPIE recommends an updated assessment for Aboriginal cultural heritage values in line with 2010 assessment requirements. Not undertaking the assessment prior to approval means that any Aboriginal objects uncovered during development will require immediate stop work whilst objects are assessed, which could result in significant time delays during construction. If it is assessed that Aboriginal objects are to be harmed, an Aboriginal Heritage Impact Permit (AHIP) will be required.	The land based component of the proposed marina is affecting only land that has been subject to urban industrial development (ie. existing concrete slab and services infrastructure), and does not involve new earthworks or subsurface disturbance that would uncover an Aboriginal object. The proposed development involves the placement and use of temporary demountable buildings on the top of an existing concrete slab, renovation and use of the top of the existing concrete slab for car parking, and use of existing services infrastructure at the site. There are no proposed works with potential for uncovering an Aboriginal object, and further Aboriginal heritage assessment is therefore not warranted. There seems to be a misunderstanding in the DPIE submission that the marina is part of the Part 3A Concept Plan Approval for the tourist development on the land base which involves substantial earthworks requiring further archaeological assessment. This is not the case. The marina is a stand-alone DA with temporary facilities on the land base without earthworks, and is not part of the Part 3A Concept Plan Approval. The above situation is the same as with the previous DA for the same marina development which was granted consent in December 2015 without further Aboriginal heritage assessment. This issue is adequately covered by existing legislation protecting Aboriginal objects. An additional precautionary condition of consent can be imposed if Council believes it is needed similar to the previous 2015 marina consent requiring further Aboriginal archaeological heritage assessment should any earthwork occur under the existing concrete slab or outside existing services trenches.
Coastal processes and hazards Both the Eden Safe Harbour wave attenuator and the Cattle Bay Marina wave attenuator should be incorporated in the wave modelling Extreme coastal events have not been considered for Cocora Beach Impacts of coastal hazards on the land based component of the proposal have not been considered, noting Bega Valley Shire Council's Coastal Processes and Hazards Definition Study (2015) Further investigations are required on the impact of coastal erosion on beach	A response to each of the matters raised on coastal hazards and processes in the DPIE submission is provided in the statement dated 10 September 2019 prepared by the project engineers Royal Haskoning DHV in Attachment C to this report.

AGENCY SUBMISSION AND ISSUE RAISED	APPLICANT COMMENT AND RESPONSE
amenity and assets at Cattle Bay	
A longer term monitoring program should be established at Cocora Beach to determine if impact predictions are accurate and how any negative impacts shown by the monitoring would be mitigated.	
Flooding Council should consider the 'Towamba River, Lake Curalo, and Twofold Bay Flood Study at Towamba and Eden'.	A response to the flooding considerations raised in the DPIE submission is provided in the statement dated 10 September 2019 prepared by the project engineers Royal Haskoning DHV in Attachment C to this report. The land based component of the DA has temporary facilities to support the proposed marina until the approved tourist development is constructed with permanent buildings that meet relevant water levels. A flood evacuation plan is provided for the temporary land based marina facility in the Operational Environmental Management Plan in the EIS lodged with the DA.
Water quality	A response to the water quality matter raised in the DPIE submission is provided in the statement dated 20 September 2019 prepared by Dr Katie Smythe of Ocean Environmental Consulting in Attachment B to this report.
DEPARTMENT OF PRIMARY INDUSTRIES / FISHERIES NSW	
General Terms of Approval are issued with conditions.	Noted and conditions are agreed.
Amendments requested to the Construction Environmental Management Plan.	The amendments to the CEMP are agreed to be included as conditions of consent.
General comments on operational risks and impacts over the longer term:	
- Aquaculture	The comments on aquaculture are addressed in the attached statement dated 20 September 2019 prepared by Dr Katie Smythe of Ocean Environmental Consulting in Attachment D to this report.
- Operational Environmental Management Plan	The amendments to the CEMP are agreed to be included as conditions of consent.
- Super yacht berthing.	A response to the superyacht matters raised in the DPI Fisheries submission is provided in the statement dated 16 September 2019 prepared by the project engineers Royal Haskoning DHV in Attachment E to this report.
- Recreational Fishing	The comments from DPI supporting the proposal for public access to the jetty and marina for recreational fishing are noted.

AGENCY SUBMISSION AND ISSUE RAISED	APPLICANT COMMENT AND RESPONSE
- Wave attenuator	The comments on the implications of the wave attenuators are addressed in the statement dated 20 September 2019 prepared by Dr Katie Smythe of Ocean Environmental Consulting in Attachment D to this report.
- Conditions on ongoing operations	The additional conditions for ongoing operation of the marina are agreed.
Biosecurity	The comments on biosecurity are addressed in the attached statement dated 20 September 2019 prepared by Dr Katie Smythe of Ocean Environmental Consulting in Attachment D to this report.

3. CONCLUSION

This report and the appended statements prepared by the project ecologist, Dr Katie Smythe of Ocean Environmental Consulting, and the project engineer, Royal Haskoning DHV, provide additional supplementary information on the proposed marina development in Development Application No.2019.208 to address matters raised in submissions from NSW Government agencies. This includes agreement to additional conditions of consent recommended in agency submissions.

The EIS lodged with the Development Application together with the additional supplementary information in this response to agency submissions provide the basis of environmental planning merit on which the Development Application can proceed to be supported and granted development consent by planning authorities.

Prepared by Andrew Wilson
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Date: 09 September 2019

Your reference:

Our reference: PA1042-104_ip20190922-cattle
bay new da

Classification: Project related

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Dear Andrew

**CATTLE BAY MARINA – DA 2019.208
PORT AUTHORITY OF NSW SUBMISSION**

I refer to your email of 9 August 2019 which included a submission on the proposed Cattle Bay Marina by the Port Authority of NSW (PANSW) dated 2 August 2019 and a request that I respond to the matters raised by PANSW. I am pleased to provide a response, details of which are set out below.

PANSW has made comments in four areas:

- Cumulative Impacts;
- Marine Traffic, Navigation and Safety;
- Hazards;
- First Port of Entry Requirements.

A number of matters raised by PANSW were addressed in a letter I prepared dated 29 March 2019 confirming pre-lodgement consultations carried out with Crown Lands and Port Authority of NSW which would not appear to have been included in the EIS.

Comments made by PANSW are addressed in turn under the separate headings below. In places, statements made in my letter of 29 March 2019 are reiterated, with updates where appropriate.

Cumulative Impacts

PANSW has noted that it understands the design of the proposed Eden Safe Harbour Project wave attenuator may change from what has been considered in the Cattle Bay development application's EIS. PANSW therefore recommended that the Cattle Bay Marina applicant consult further with Crown Lands and/or RMS, as the proponent of the Safe Harbour Project.

This particular matter was the subject of discussions held with Mr Andrew Dooley of the then Department of Industry (Dol) back in March 2019. The outcome of these discussions were included in my letter of 29 March 2019. To reiterate, Mr Dooley advised at that time the following:

- the alignment of the Eden Safe Harbour Project wave attenuator set out in the Amended Review of Environmental Factors (AREF) prepared for Dol by Advisian (August, 2018) and illustrated in the Community update – fourth quarter 2018 (so-called Option 21) took into account the location of the original approved Cattle Bay Marina wave attenuator;
- the EIS for Cattle Bay Marina should be prepared on the basis of the alignment of the Eden Safe Harbour Project wave attenuator as shown in the AREF, ie. Option 21; and
- an entrance channel to Cattle Bay Marina approximately 30m wide is retained by the Option 21 alignment.

As part of preparation of this letter I consulted again with Mr Dooley on 21 August 2019. Mr Dooley advised that:

- the published position of the Eden Safe Harbour Project wave attenuator remains that shown in the AREF, ie Option 21, and includes the approximately 30m wide gap to the proposed Cattle Bay Marina wave attenuator;
- consideration is being given to alternative alignments for the Eden Safe Harbour Project wave attenuator, however those currently under consideration would not encroach closer to the Cattle Bay Marina wave attenuator than Option 21;
- it is the intention that any finalised alignment for the Eden Safe Harbour Project wave attenuator would allow for safe navigation to the proposed Cattle Bay Marina.

It is considered that consultation with the proponent of the Eden Safe Harbour Project wave attenuator has currently been taken as far as practicable and has re-confirmed that the two wave attenuator projects can be undertaken compatibly.

Marine Traffic, Navigation and Safety

PANSW has noted that approval under Section 67ZN of the *Ports and Maritime Administration Regulation 2012* is required prior to any disturbance of the seabed from construction works. This is understood. An application for approval would be made following any approval of the development application for Cattle Bay Marina and prior to disturbance of the seabed from construction works.

PANSW has also noted that if the development application is approved, further consultation with the Harbour Master will be required in relation to marina construction and operation including, but not necessarily limited to:

- the relocation of swing moorings;
- the appropriate marking out and lighting of moored construction vessels and the delineation of construction areas;
- installation of required aids to navigation; and
- the development of appropriate information on safe navigation in the Port of Eden.

Again the above matters are understood. As indicated by PANSW the appropriate time for the required further consultation is following any approval of the development application. As such, the above

requirements could be included in the conditions of any approval. It is noted that discussion of some of the above matters is included in the EIS, eg:

- discussion of a swing mooring relocation strategy is included in Appendix 8 of the EIS;
- reference to appropriate marking out and lighting of moored construction vessels and delineation of construction areas is included in the Construction Environmental Management Plan (CEMP) in Appendix 10 of the EIS;
- reference to the introduction of a network of Aids to Navigation is included in the Operational Environmental Management Plan (OEMP) in Appendix 9 of the EIS;
- information relating to safe navigation is included in the OEMP.

Hazards

PANSW has noted that the assessment for the proposed marina should consider the potential effects of the significant prop wash that can be generated by cruise ships and tugs on vessels moored at the marina, and that PANSW did not see any evidence in the assessment that this matter has been adequately assessed and considered.

The above comment by PANSW is likely to be due to the fact that my letter of 29 March 2019 would not appear to have been included in the EIS. In any case, the following points can be made in regard to the potential hazard to vessels moored at the proposed Cattle Bay Marina due to prop wash generated by cruise ships and tugs:

- the prop wash from cruise ships and tugs can potentially be an issue for vessels moored at a marina, subject mainly to the separation distance between the cruise ship or tug and the marina, all other things being equal, eg. orientation of the propeller jet and applied power¹;
- the existence of a wave attenuator assists in the attenuation of propeller wash;
- the Cattle Bay Marina wave attenuator would be located a minimum of 150m from the edge of the cruise ship channel compared to 30m in the case of the proposed Eden Safe Harbour Project wave attenuator, ie. there is 5 times more separation distance to the Cattle Bay Marina wave attenuator from the source of the wash²;
- the proposed Eden Safe Harbour Project wave attenuator and proposed Cattle Bay Marina wave attenuator are of similar design;
- extensive assessments of propeller wash impacts on the Eden Safe Harbour Project wave attenuator have been undertaken on behalf of government including ship simulation studies, two dimensional and three dimensional computational fluid dynamics (CFD) modelling of propeller wash, and a risk analysis in consultation with PANSW (Morgan et al, 2019). It is also well known that it is proposed to develop a marina behind this attenuator;
- the government has committed to development of the Eden Safe Harbour Project wave attenuator having considered the prop wash risk to the attenuator, and to future marina vessels behind it, associated with cruise ship and tug operations;

¹ The greater the separation distance the greater the attenuation of the propeller jet velocities as ambient surrounding water is entrained into the jet.

² Further, it is physically possible in the case of the Eden Safe Harbour Project wave attenuator that a working tug can be positioned immediately adjacent to this attenuator (zero distance) and at full power propelling wash towards the attenuator, albeit this would be an 'unplanned' operation.

- it should be self evident that the hazard to the Cattle Bay Marina project due to prop wash is substantially less than that associated with the government's Eden Safe Harbour Project.

In my opinion, the Cattle Bay Marina project could be satisfactorily designed so as not to be adversely affected by cruise ship and tug prop wash, mainly by virtue of the separation distance between the project and the source of the wash.

First Port of Entry Requirements

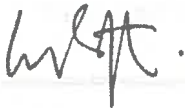
PANSW has noted that the Applicant may need to apply to the Department of Agriculture to extend a Biodiversity Point of Entry Determination to the proposed Cattle Bay Marina, beyond that already held by the Port of Eden for Breakwater Wharf and soon to be extended to the New Breakwater Wharf Extension.

Such an application could be made by the Applicant in the event it is required.

Reference

Morgan, B, Adamantidis, C and Gan, J 'Assessment of Cruise Ship and Tug Propeller Wash Impacts on the Eden Wave Attenuator', Australasian Coasts & Ports 2019 Conference, Hobart, 10-13 September 2019

I trust the above meets with your requirements. Please contact me should you require any clarification or additional information.



Greg Britton

Technical Director
Maritime & Aviation



Ocean Environmental
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20 September 2019

RESPONSES TO AGENCY SUBMISSIONS REGARDING DEVELOPMENT APPLICATION 2019.208, CATTLE BAY MARINA, LOT 2 DP1138056 and LOT 4 DP1138056, CATTLE BAY ROAD EDEN

I refer to the submission received from Department of Planning, Industry and Environment (DPIE) (dated 5th August 2019) regarding the proposed Cattle Bay Marina. Below I provide my responses to comments made regarding issues relating to biodiversity and water quality.

DEPARTMENT OF PLANNING, INDUSTRY, AND ENVIRONMENT (BIODIVERSITY AND CONSERVATION DIVISION) – 5th August 2019

Biodiversity

DPIE states that the EIS does not meet the requirements for the *Biodiversity Conservation Act* 2017 for biodiversity assessment. DPIE acknowledges that the site comprises cleared land covered by a concrete slab but still requires that the proponent demonstrates how the proposed development does not exceed the Biodiversity Offsets Scheme threshold as set out in Section 7.4 of the BC Act.

Following discussion with Allison Treweek (DPIE) on 20th September 2019, it is considered that the additional information regarding terrestrial biodiversity provided below (and in **Appendix A** to **Appendix E**) address DPIE's requirement.

Biodiversity Offsets Scheme

In summary, the proposal will not trigger the Biodiversity Offsets Scheme under the BC Act for the following reasons:

- ❖ Study area features:
 - All proposed land based works are to occur on an existing concrete slab which is approximately 1 ha in size.
 - The only land based works proposed are car parking and two demountable buildings which would both be on this concrete slab.
- ❖ No clearing of native vegetation will occur as a result of the proposal.
- ❖ No landscaping is proposed at the site, therefore there is no risk of introduction of non-native flora and incursion into nearby areas of native bushland.
- ❖ There is no risk of runoff associated with the proposal to nearby areas of native bushland – all runoff from the site would be into the existing drainage channel.
- ❖ No terrestrial (or marine) Areas of Outstanding Biodiversity Value (AOBV) declared under the BC Act 2016 occur within the study area, or in proximity to the study area, so no impacts on these AOBVs would occur (refer to list of AOBVs in New South Wales in **Appendix A**).
- ❖ Threatened or protected terrestrial species which have the potential to occur within a 10 km radius of the study site have been identified (as identified by a NSW Atlas of NSW Wildlife Database Search – refer to results in **Appendix B**). None of these species



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have the potential to be significantly impacted by the proposal (refer to the Test of Significance under the BC Act in **Appendix D**).

- ❖ Key Threatening Processes (KTPs) as identified under the BC Act 2016 are listed in **Appendix C**. No KTPs associated with terrestrial environments would be associated with the proposal. Those KTPs associated with marine environments have been covered in the Cattle Bay Marina Marine Ecology Report 2019.
- ❖ Clause 6.1 of the Biodiversity Conservation Regulation 2017 lists 'additional biodiversity impacts to which scheme applies'. These have been addressed in **Appendix E** and no impacts on these will occur.

In conclusion, the proposal does not exceed the Biodiversity Offsets Scheme threshold as set out in Section 7.4 of the BC Act.

Marine Biodiversity

For the marine environment, background searches for threatened and protected marine species and marine / shorebirds listed under the BC Act with the potential to be impacted by the proposal have already been undertaken. Areas of marine Outstanding Biodiversity Value (AOBVs) listed under the BC Act within the project area have also been identified (none occur). Key Threatening Processes which have the potential to impact the marine environment under the BC Act have also been discussed. Further, an Assessment of Significance under the BC Act for threatened marine species or ecological communities as identified in the Cattle Bay Marina Marine Ecology Report 2019 has already been undertaken (in Section 9.3).

Marine Mammal Protection Plan

We confirm that all mitigation / management regarding marine mammals outlined in the Ocean Environmental reporting would be included in the Final CEMP and OEMP. This should be included as a Condition of Consent.

We are aware that a Marine Mammal Protection Plan is required if the DA is approved and prior to construction. This should be included as a Condition of Consent.

Water Quality

DPIE requests information as to how the 'stop work' turbidity trigger of 25 NTU above background levels has been determined and its suitability for the site.

The proposed turbidity trigger value was initially proposed in 2015 in the original Water Quality Management Plan based on a project which had recently been undertaken by Ocean Environmental for the Jones Bay Wharf in Sydney. Similar to Cattle Bay, this project also involved piling but no dredging. For the Jones Bay Wharf project, the NSW Government Department of Planning and Infrastructure had provided the stated trigger value as a Condition of Consent (MP09-0205) (see below).



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D4. WATER SAMPLING

During construction, the Proponent must ensure that, the level of total suspended solids (TSS) within 1 metre of the outside of the silt curtain does not exceed the background TSS by more than 50mg/l. As part of this process, the Proponent is required to measure nephelometric turbidity units (NTU) levels with a turbidity meter. On each occasion sampling is carried out, at least two representative samples from water within 1 metre of the outside of the silt curtain are to be taken to establish the NTU levels. Background NTU levels are to be identified by taking representative samples from the water within 25 metres of construction works.

Readings of less than 25 NTU should be considered to be less than 50mg/l TSS. In the event that turbidity readings exceed the background levels by 25 NTU, the Proponent must have a sample of the water analysed for TSS, and record the NTU and TSS levels in a logbook that must be made available to an officer of the OE&H on request.

The proposed Cattle Bay Marina project similarly proposes to undertake piling with no dredging and the same trigger value has been proposed in the Water Quality Management Plan since 2015, with no comments or suggestion of the use of an alternative trigger value from any of the agencies which have reviewed this document since then (including NSW DPI (Fisheries), NSW OEH, NSW EPA, Port Authority of NSW and Eden Mussels).

We consider this trigger value to be quite standard and appropriate, based on the knowledge that some small scale impacts are likely to occur for any seafloor disturbance, and that any resuspended sediments would likely resettle very quickly in this area due to their sandy nature.

Background turbidity data collected by Elgin and Associates (2017) from Cattle Bay, Snug Cove and Greater Twofold Bay, as described in the Water Quality Management Plan 2019, provides the following information, which shows that while turbidity in the area is typically low, storm and oceanic events can cause a four to ten times increase in turbidity values.

- *Turbidity was relatively low (<1.5 NTU) at all sites throughout the monitoring period. Median site-specific turbidity values ranged from 0.3 to 0.9 NTU. The outer Twofold Bay site (BAY2) consistently had the lowest turbidity (median 0.3 NTU), with Cattle Bay (CB1) and inner Twofold Bay (BAY1) characterised by highest turbidity (median 0.9 NTU). Surface waters were less turbid than bottom waters across all sites. Levels of turbidity did not exceed the ANZECC (2000) guideline (<10 NTU) during the monitoring period.*
- *Elevated levels of turbidity were observed across all sites during post-event sampling and the subsequent sampling round. During post-event sampling, turbidity was observed to be four to ten times greater than median turbidity observed under calm conditions with the sites most affected by increased turbidity including W2, CB1, and MU1 (all in Snug Cove / Cattle Bay). Highest turbidity observed was 7.4 NTU at Cattle Bay (Elgin Associates 2017).*

SUMMARY OF REQUIRED PROGRAMS + PLANS IF DA 2019.208 IS APPROVED

We acknowledge that the following Programs / Plans and Permits relating to the marine environment would be required to be prepared if the DA 2019.208 is approved and prior to commencement of construction.



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1. Water Quality Monitoring Program
2. NSW DPI Permit to Harm Marine Vegetation
3. Marine Mammal Protection Plan
4. Introduced Marine Species Management Plan

Please don't hesitate to call me for clarification on any of the above.

Regards

Dr Katie Smythe
Marine Consultant & Director
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Appendix A. Areas of Outstanding Biodiversity Value

Areas of Outstanding Biodiversity Value

The *Biodiversity Conservation Act 2016* gives the Minister for the Environment the power to declare Areas Of Outstanding Biodiversity Value (AOBVs). AOBVs are special areas that contain irreplaceable biodiversity values that are important to the whole of NSW, Australia or globally (DPIE 2016).

Areas of declared critical habitat under the *Threatened Species Conservation Act 1995*, (including Little Penguin and Wollemi Pine declared areas), have become the first AOBVs in NSW with the commencement of the *Biodiversity Conservation Act 2016*. The Biodiversity Conservation Regulation 2017 establishes the criteria for declaring AOBVs. The criteria have been designed to identify the most valuable sites for biodiversity conservation in NSW (DPIE 2016).

Critical habitat declarations (AOBVs) in NSW include:

- ❖ Gould's Petrel - critical habitat declaration
- ❖ Little penguin population in Sydney's North Harbour - critical habitat declaration
- ❖ Mitchell's Rainforest Snail in Stotts Island Nature Reserve - critical habitat declaration
- ❖ Wollemi Pine - critical habitat declaration

(DPIE 2016)

None of these AOBVs occur within or near to the study area and will not be impacted by the proposal.

DPIE (2016). Critical Habitat Register.

<https://www.environment.nsw.gov.au/criticalhabitat/criticalhabitatprotectionbydoctype.htm>



A BioNet Atlas of NSW Wildlife Database Search was undertaken on 20th September 2019 to identify any threatened or protected terrestrial flora or fauna (as listed under the BC Act 2016) known to occur within a 10 km radius of the study area (this radius is automatically selected by the search tool). Search results are provided on the following pages.



Search area radius of 10 km was based around the study area shown above.

BioNet (2019). <http://www.bionet.nsw.gov.au/>

Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Å; ^^ rounded to 0.01Å). Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Entities in selected area [North: -37.02 West: 149.85 East: 149.95 South: -37.12] returned a total of 5,251 records of 986 species.

Report generated on 20/09/2019 4:16 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Actinopterygii	Poeciliidae	T013	<i>Gambusia holbrooki</i>	*	Mosquito Fish			1	
Animalia	Amphibia	Myobatrachidae	3131	<i>Crinia parinsignifera</i>		Eastern Sign-bearing Froglet	P		2	
Animalia	Amphibia	Myobatrachidae	3134	<i>Crinia signifera</i>		Common Eastern Froglet	P		25	
Animalia	Amphibia	Myobatrachidae	3058	<i>Limnodynastes dumerilii</i>		Eastern Banjo Frog	P		2	
Animalia	Amphibia	Myobatrachidae	3061	<i>Limnodynastes peronii</i>		Brown-striped Frog	P		7	
Animalia	Amphibia	Myobatrachidae	3063	<i>Limnodynastes tasmaniensis</i>		Spotted Grass Frog	P		1	
Animalia	Amphibia	Myobatrachidae	3117	<i>Pseudophryne bibronii</i>		Bibron's Toadlet	P		1	
Animalia	Amphibia	Hylidae	3166	<i>Litoria aurea</i>		Green and Golden Bell Frog	E1,P	V	1	
Animalia	Amphibia	Hylidae	3175	<i>Litoria citropa</i>		Blue Mountains Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3182	<i>Litoria ewingii</i>		Brown Tree Frog	P		2	
Animalia	Amphibia	Hylidae	3190	<i>Litoria jervisiensis</i>		Jervis Bay Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3204	<i>Litoria peronii</i>		Peron's Tree Frog	P		9	
Animalia	Amphibia	Hylidae	3206	<i>Litoria phyllochroa</i>		Leaf-green Tree Frog	P		2	
Animalia	Amphibia	Hylidae	3215	<i>Litoria verreauxii</i>		Verreaux's Frog	P		11	
Animalia	Reptilia	Cheloniidae	2007	<i>Chelonia mydas</i>		Green Turtle	V,P	V	1	
Animalia	Reptilia	Chelidae	2017	<i>Chelodina longicollis</i>		Eastern Snake-necked Turtle	P		2	
Animalia	Reptilia	Scincidae	2425	<i>Egernia saxatilis</i>		Black Rock Skink	P		1	
Animalia	Reptilia	Scincidae	2214	<i>Eulamprus heatwolei</i>		Yellow-bellied Water-skink	P		3	
Animalia	Reptilia	Scincidae	2450	<i>Lampropholis delicata</i>		Dark-flecked Garden Sunskink	P		1	
Animalia	Reptilia	Scincidae	2451	<i>Lampropholis guichenoti</i>		Pale-flecked Garden Sunskink	P		1	
Animalia	Reptilia	Agamidae	2252	<i>Intellagama lesueurii</i>		Eastern Water Dragon	P		1	
Animalia	Reptilia	Varanidae	9056	<i>Varanus sp.</i>		Unidentified Goanna	P		1	
Animalia	Reptilia	Varanidae	2283	<i>Varanus varius</i>		Lace Monitor	P		5	
Animalia	Reptilia	Pythonidae	2625	<i>Morelia spilota</i>		Carpet & Diamond Pythons	P		1	
Animalia	Reptilia	Elapidae	2640	<i>Acanthophis antarcticus</i>		Common Death Adder	P		1	
Animalia	Reptilia	Elapidae	2805	<i>Drysdalia rhodogaster</i>		Mustard-bellied Snake	P		2	
Animalia	Reptilia	Elapidae	2681	<i>Notechis scutatus</i>		Tiger Snake	P		2	
Animalia	Reptilia	Elapidae	2693	<i>Pseudechis porphyriacus</i>		Red-bellied Black Snake	P		22	
Animalia	Reptilia	Elapidae	2699	<i>Pseudonaja textilis</i>		Eastern Brown Snake	P		1	
Animalia	Aves	Anatidae	0210	<i>Anas castanea</i>		Chestnut Teal	P		4	
Animalia	Aves	Anatidae	0211	<i>Anas gracilis</i>		Grey Teal	P		1	
Animalia	Aves	Anatidae	0208	<i>Anas superciliosa</i>		Pacific Black Duck	P		2	
Animalia	Aves	Anatidae	0202	<i>Chenonetta jubata</i>		Australian Wood Duck	P		3	
Animalia	Aves	Anatidae	0203	<i>Cygnus atratus</i>		Black Swan	P		7	
Animalia	Aves	Columbidae	0028	<i>Columba leucomela</i>		White-headed Pigeon	P		2	
Animalia	Aves	Columbidae	0957	<i>Columba livia</i>	*	Rock Dove	P		2	
Animalia	Aves	Columbidae	9931	<i>Geopelia striata</i>		Peaceful Dove	P		2	
Animalia	Aves	Columbidae	0044	<i>Leucosarcia melanoleuca</i>		Wonga Pigeon	P		14	
Animalia	Aves	Columbidae	0034	<i>Phaps chalcoptera</i>		Common Bronzewing	P		2	
Animalia	Aves	Columbidae	0035	<i>Phaps elegans</i>		Brush Bronzewing	P		1	
Animalia	Aves	Columbidae	0989	<i>Streptopelia chinensis</i>	*	Spotted Turtle-Dove	P		1	
Animalia	Aves	Podargidae	0313	<i>Podargus strigoides</i>		Tawny Frogmouth	P		1	
Animalia	Aves	Caprimulgidae	0330	<i>Eurostopodus mystacalis</i>		White-throated Nightjar	P		7	
Animalia	Aves	Aegothelidae	0317	<i>Aegothales cristatus</i>		Australian Owlet-nightjar	P		10	
Animalia	Aves	Apodidae	0334	<i>Hirundapus caudacutus</i>		White-throated Needletail	P	C,J,K	5	
Animalia	Aves	Oceanitidae	0065	<i>Pelagodroma marina</i>		White-faced Storm-Petrel	P		1	
Animalia	Aves	Diomedelidae	0091	<i>Thalassarche cauta</i>		Shy Albatross	V,P	V	1	
Animalia	Aves	Diomedelidae	0089	<i>Thalassarche chlororhynchus</i>		Yellow-nosed Albatross	P		1	
Animalia	Aves	Diomedelidae	9959	<i>Thalassarche chlororhynchus bassi</i>			P		1	
Animalia	Aves	Diomedelidae	0859	<i>Thalassarche impavida</i>		Campbell Albatross	P	V	1	
Animalia	Aves	Diomedelidae	0088	<i>Thalassarche melanophrys</i>		Black-browed Albatross	V,P	V	2	
Animalia	Aves	Procellariidae	0071	<i>Ardeanna tenuirostris</i>		Short-tailed Shearwater	P	J,K	4	
Animalia	Aves	Procellariidae	0083	<i>Pachyptila turtur</i>		Fairy Prion	P		2	
Animalia	Aves	Procellariidae	0068	<i>Puffinus gavia</i>		Fluttering Shearwater	P		1	
Animalia	Aves	Spheniscidae	0005	<i>Eudyptula minor</i>		Little Penguin	P		166	
Animalia	Aves	Sulidae	0104	<i>Morus serrator</i>		Australasian Gannet	P		9	
Animalia	Aves	Anhinga	8731	<i>Anhinga novaehollandiae</i>		Australasian Darter	P		1	
Animalia	Aves	Phalacrocoracidae	0100	<i>Microcarbo melanoleucos</i>		Little Pied Cormorant	P		8	
Animalia	Aves	Phalacrocoracidae	0096	<i>Phalacrocorax carbo</i>		Great Cormorant	P		14	
Animalia	Aves	Phalacrocoracidae	0098	<i>Phalacrocorax fuscescens</i>		Black-faced Cormorant	P		3	
Animalia	Aves	Phalacrocoracidae	T021	<i>Phalacrocorax sp.</i>		Unidentified Cormorant	P		1	
Animalia	Aves	Phalacrocoracidae	0097	<i>Phalacrocorax sulcirostris</i>		Little Black Cormorant	P		2	
Animalia	Aves	Phalacrocoracidae	0099	<i>Phalacrocorax varius</i>		Pied Cormorant	P		6	

Animalia	Aves	Pelecanidae	0106	<i>Pelecanus conspicillatus</i>	Australian Pelican	P		29	
Animalia	Aves	Ardeidae	8712	<i>Ardea modesta</i>	Eastern Great Egret	P		1	
Animalia	Aves	Ardeidae	T179	<i>Ardea/Egretta sp.</i>	Unidentified Egret	P		1	
Animalia	Aves	Ardeidae	0193	<i>Butorides striatus</i>	Striated Heron	P		1	
Animalia	Aves	Ardeidae	0191	<i>Egretta sacra</i>	Eastern Reef Egret	P	C	1	
Animalia	Aves	Threskiornithidae	0179	<i>Threskiornis molucca</i>	Australian White ibis	P		3	
Animalia	Aves	Accipitridae	0222	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk	P		1	
Animalia	Aves	Accipitridae	0220	<i>Accipiter novaehollandiae</i>	Grey Goshawk	P		1	
Animalia	Aves	Accipitridae	0224	<i>Aquila audax</i>	Wedge-tailed Eagle	P		1	
Animalia	Aves	Accipitridae	0219	<i>Circus approximans</i>	Swamp Harrier	P		2	
Animalia	Aves	Accipitridae	0226	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	C	15	
Animalia	Aves	Accipitridae	0228	<i>Haliastur spheurnus</i>	Whistling Kite	P		3	
Animalia	Aves	Accipitridae	0225	<i>Hieraetus morphnoides</i>	Little Eagle	V,P		2	
Animalia	Aves	Accipitridae	0230	<i>^Lophoictinia isura</i>	Square-tailed Kite	V,P,3		4	
Animalia	Aves	Accipitridae	8739	<i>^Pandion cristatus</i>	Eastern Osprey	V,P,3		2	
Animalia	Aves	Falconidae	0240	<i>Falco cenchroides</i>	Nankeen Kestrel	P		1	
Animalia	Aves	Falconidae	0235	<i>Falco longipennis</i>	Australian Hobby	P		2	
Animalia	Aves	Falconidae	0237	<i>Falco peregrinus</i>	Peregrine Falcon	P		1	
Animalia	Aves	Rallidae	0056	<i>Gallinula tenebrosa</i>	Dusky Moorhen	P		1	
Animalia	Aves	Rallidae	0045	<i>Lewinia pectoralis</i>	Lewin's Rail	P		1	
Animalia	Aves	Rallidae	0058	<i>Porphyrion porphyrio</i>	Purple Swampphen	P		1	
Animalia	Aves	Rallidae	0050	<i>Porzana pusilla</i>	Baillon's Crane	P		1	
Animalia	Aves	Burhinidae	0175	<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P		1	
Animalia	Aves	Haematopodidae	0131	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V,P		1	
Animalia	Aves	Haematopodidae	0130	<i>Haematopus longirostris</i>	Pied Oystercatcher	E1,P		11	
Animalia	Aves	Charadriidae	0143	<i>Charadrius ruficapillus</i>	Red-capped Plover	P		2	
Animalia	Aves	Charadriidae	0136	<i>Pluvialis squatarola</i>	Grey Plover	P	C,J,K	3	
Animalia	Aves	Charadriidae	0138	<i>Thinornis rubricollis</i>	Hooded Plover	E4A,P	V	8	
Animalia	Aves	Charadriidae	0133	<i>Vanellus miles</i>	Masked Lapwing	P		19	
Animalia	Aves	Scolopacidae	0149	<i>Numenius madagascariensis</i>	Eastern Curlew	P	CE,C,J,K	1	
Animalia	Aves	Stercorariidae	0980	<i>Catharacta skua</i>	Great Skua	P		1	
Animalia	Aves	Stercorariidae	0128	<i>Stercorarius parasiticus</i>	Arctic Jaeger	P	J,K	2	
Animalia	Aves	Laridae	0125	<i>Chroicocephalus novaehollandiae</i>	Silver Gull	P		32	
Animalia	Aves	Laridae	0126	<i>Larus pacificus</i>	Pacific Gull	P		3	
Animalia	Aves	Laridae	0115	<i>Thalasseus bergii</i>	Crested Tern	P		21	
Animalia	Aves	Cacatuidae	0269	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	P		14	
Animalia	Aves	Cacatuidae	0268	<i>^Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P,3		15	
Animalia	Aves	Cacatuidae	0267	<i>Calyptorhynchus funereus</i>	Yellow-tailed Black-Cockatoo	P		16	
Animalia	Aves	Cacatuidae	0265	<i>^Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V,P,2		8	
Animalia	Aves	Cacatuidae	0273	<i>Eolophus roseicapillus</i>	Galah	P		14	
Animalia	Aves	Psittacidae	0281	<i>Alisterus scapularis</i>	Australian King-Parrot	P		36	
Animalia	Aves	Psittacidae	0258	<i>Glossopsitta concinna</i>	Musk Lorikeet	P		4	
Animalia	Aves	Psittacidae	0260	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		8	
Animalia	Aves	Psittacidae	0309	<i>^Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	1	
Animalia	Aves	Psittacidae	0282	<i>Platycercus elegans</i>	Crimson Rosella	P		33	
Animalia	Aves	Psittacidae	0288	<i>Platycercus eximius</i>	Eastern Rosella	P		3	
Animalia	Aves	Psittacidae	9947	<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	P		21	
Animalia	Aves	Cuculidae	0338	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	P		8	
Animalia	Aves	Cuculidae	0343	<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo	P		2	
Animalia	Aves	Strigidae	9922	<i>Ninox novaeseelandiae</i>	Southern Boobook	P		25	
Animalia	Aves	Strigidae	0248	<i>^Ninox strenua</i>	Powerful Owl	V,P,3		19	
Animalia	Aves	Tytonidae	0250	<i>^Tyto novaehollandiae</i>	Masked Owl	V,P,3		7	
Animalia	Aves	Tytonidae	9924	<i>^Tyto tenebricosa</i>	Sooty Owl	V,P,3		12	
Animalia	Aves	Alcedinidae	0319	<i>Ceyx azureus</i>	Azure Kingfisher	P		2	
Animalia	Aves	Alcedinidae	0322	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	P		35	
Animalia	Aves	Alcedinidae	0326	<i>Todiramphus sanctus</i>	Sacred Kingfisher	P		1	
Animalia	Aves	Coraciidae	0318	<i>Eurystomus orientalis</i>	Dollarbird	P		1	
Animalia	Aves	Menuridae	0350	<i>Menura novaehollandiae</i>	Superb Lyrebird	P		34	
Animalia	Aves	Climacteridae	0558	<i>Cormobates leucophaea</i>	White-throated Treecreeper	P		38	
Animalia	Aves	Ptilonorhynchidae	0679	<i>Ptilonorhynchus violaceus</i>	Satin Bowerbird	P		11	
Animalia	Aves	Maluridae	0529	<i>Malurus cyaneus</i>	Superb Fairy-wren	P		16	
Animalia	Aves	Maluridae	0536	<i>Malurus lamberti</i>	Variegated Fairy-wren	P		1	
Animalia	Aves	Maluridae	0526	<i>Stipiturus malachurus</i>	Southern Emu-wren	P		2	
Animalia	Aves	Dasyornithidae	0506	<i>Pycnophilus floccosus</i>	Pilotbird	P		11	
Animalia	Aves	Acanthizidae	0486	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	P		1	
Animalia	Aves	Acanthizidae	0470	<i>Acanthiza lineata</i>	Striated Thornbill	P		24	
Animalia	Aves	Acanthizidae	0475	<i>Acanthiza pusilla</i>	Brown Thornbill	P		36	
Animalia	Aves	Acanthizidae	0484	<i>Acanthiza reguloides</i>	Buff-rumped Thornbill	P		1	
Animalia	Aves	Acanthizidae	0454	<i>Gerygone mouki</i>	Brown Gerygone	P		7	
Animalia	Aves	Acanthizidae	0488	<i>Sericornis frontalis</i>	White-browed Scrubwren	P		6	

Animalia	Aves	Acanthizidae	0494	<i>Sericornis magnirostra</i>	Large-billed Scrubwren	P		1
Animalia	Aves	Pardalotidae	0565	<i>Pardalotus punctatus</i>	Spotted Pardalote	P		8
Animalia	Aves	Pardalotidae	0976	<i>Pardalotus striatus</i>	Striated Pardalote	P		3
Animalia	Aves	Meliphagidae	0591	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill	P		25
Animalia	Aves	Meliphagidae	0638	<i>Anthochaera carunculata</i>	Red Wattlebird	P		24
Animalia	Aves	Meliphagidae	0710	<i>Anthochaera chrysoptera</i>	Little Wattlebird	P		11
Animalia	Aves	Meliphagidae	T210	<i>Anthochaera sp.</i>	Unidentified Wattlebird	P		8
Animalia	Aves	Meliphagidae	0614	<i>Caligavis chrysops</i>	Yellow-faced Honeyeater	P		16
Animalia	Aves	Meliphagidae	0619	<i>Lichenostomus melanops</i>	Yellow-tufted Honeyeater	P		2
Animalia	Aves	Meliphagidae	0634	<i>Manorina melanocephala</i>	Noisy Miner	P		4
Animalia	Aves	Meliphagidae	0633	<i>Manorina melanophrys</i>	Bell Miner	P		32
Animalia	Aves	Meliphagidae	0605	<i>Meliphaga lewinii</i>	Lewin's Honeyeater	P		5
Animalia	Aves	Meliphagidae	0583	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater	P		4
Animalia	Aves	Meliphagidae	0578	<i>Melithreptus lunatus</i>	White-naped Honeyeater	P		10
Animalia	Aves	Meliphagidae	0586	<i>Myzomela sanguinolenta</i>	Scarlet Honeyeater	P		5
Animalia	Aves	Meliphagidae	0645	<i>Phileman corniculatus</i>	Noisy Friarbird	P		1
Animalia	Aves	Meliphagidae	0632	<i>Phylidonyris niger</i>	White-cheeked Honeyeater	P		1
Animalia	Aves	Meliphagidae	0631	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	P		8
Animalia	Aves	Meliphagidae	0630	<i>Phylidonyris pyrrhoptera</i>	Crescent Honeyeater	P		19
Animalia	Aves	Psophodidae	0436	<i>Cinclosoma punctatum</i>	Spotted Quail-thrush	P		7
Animalia	Aves	Psophodidae	0421	<i>Psophodes olivaceus</i>	Eastern Whipbird	P		22
Animalia	Aves	Neositidae	0549	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		1
Animalia	Aves	Campephagidae	0424	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	P		10
Animalia	Aves	Campephagidae	0425	<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike	P		1
Animalia	Aves	Pachycephalidae	0408	<i>Colluricincla harmonica</i>	Grey Shrike-thrush	P		27
Animalia	Aves	Pachycephalidae	0398	<i>Pachycephala pectoralis</i>	Golden Whistler	P		22
Animalia	Aves	Pachycephalidae	0401	<i>Pachycephala rufiventris</i>	Rufous Whistler	P		4
Animalia	Aves	Oriolidae	0671	<i>Oriolus sagittatus</i>	Olive-backed Oriole	P		3
Animalia	Aves	Artamidae	8519	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		4
Animalia	Aves	Artamidae	T022	<i>Cracticus sp.</i>	Unidentified Butcherbird	P		1
Animalia	Aves	Artamidae	0705	<i>Cracticus tibicen</i>	Australian Magpie	P		21
Animalia	Aves	Artamidae	0702	<i>Cracticus torquatus</i>	Grey Butcherbird	P		12
Animalia	Aves	Artamidae	0694	<i>Strepera graculina</i>	Pied Currawong	P		92
Animalia	Aves	Artamidae	T906	<i>Strepera sp.</i>		P		1
Animalia	Aves	Dicruridae	0673	<i>Dicrurus bracteatus</i>	Spangled Drongo	P		1
Animalia	Aves	Rhipiduridae	0361	<i>Rhipidura albiscapa</i>	Grey Fantail	P		38
Animalia	Aves	Rhipiduridae	0364	<i>Rhipidura leucophrys</i>	Willie Wagtail	P		4
Animalia	Aves	Rhipiduridae	0362	<i>Rhipidura rufifrons</i>	Rufous Fantail	P		7
Animalia	Aves	Corvidae	0930	<i>Corvus coronoides</i>	Australian Raven	P		7
Animalia	Aves	Monarchidae	0415	<i>Grallina cyanoleuca</i>	Magpie-lark	P		6
Animalia	Aves	Monarchidae	0373	<i>Monarcha melanopsis</i>	Black-faced Monarch	P		4
Animalia	Aves	Monarchidae	9955	<i>Myiagra inquieta</i>	Restless Flycatcher	P		1
Animalia	Aves	Monarchidae	0365	<i>Myiagra rubecula</i>	Leadend Flycatcher	P		2
Animalia	Aves	Petroicidae	0392	<i>Eopsaltria australis</i>	Eastern Yellow Robin	P		24
Animalia	Aves	Petroicidae	0377	<i>Microeca fascians</i>	Jacky Winter	P		5
Animalia	Aves	Petroicidae	0380	<i>Petroica boodang</i>	Scarlet Robin	V,P		3
Animalia	Aves	Petroicidae	0384	<i>Petroica rosea</i>	Rose Robin	P		4
Animalia	Aves	Timaliidae	0574	<i>Zosterops lateralis</i>	Silvereye	P		12
Animalia	Aves	Hirundinidae	0357	<i>Hirundo neoxena</i>	Welcome Swallow	P		10
Animalia	Aves	Turdidae	0991	<i>Turdus merula</i>	Eurasian Blackbird			7
Animalia	Aves	Sturnidae	0998	<i>Sturnus tristis</i>	Common Myna			1
Animalia	Aves	Sturnidae	0999	<i>Sturnus vulgaris</i>	Common Starling			1
Animalia	Aves	Nectariniidae	0564	<i>Dicaeum hirundinaceum</i>	Mistletoebird	P		9
Animalia	Aves	Estrildidae	0662	<i>Neochmia temporalis</i>	Red-browed Finch	P		9
Animalia	Aves	Passeridae	0995	<i>Passer domesticus</i>	House Sparrow			4
Animalia	Mammalia	Tachyglossidae	1003	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	P		18
Animalia	Mammalia	Dasyuridae	1668	<i>Antechinus agilis</i>	Agile Antechinus	P		26
Animalia	Mammalia	Dasyuridae	1674	<i>Antechinus stuartii</i>	Brown Antechinus	P		29
Animalia	Mammalia	Dasyuridae	1033	<i>Antechinus swainsonii</i>	Dusky Antechinus	P		1
Animalia	Mammalia	Dasyuridae	1008	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	1
Animalia	Mammalia	Peramelidae	1710	<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (eastern)	E1,P	E	2
Animalia	Mammalia	Peramelidae	T081	<i>Isodon/Perameles sp.</i>	unidentified Bandicoot	P		19
Animalia	Mammalia	Peramelidae	1097	<i>Perameles nasuta</i>	Long-nosed Bandicoot	P		9
Animalia	Mammalia	Phascolarctidae	1162	<i>Phascolarctos cinereus</i>	Koala	V,P	V	5
Animalia	Mammalia	Vombatidae	1165	<i>Vombatus ursinus</i>	Common Wombat	P		129
Animalia	Mammalia	Burramyidae	1150	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		4
Animalia	Mammalia	Petauridae	1136	<i>Petaurus australis</i>	Yellow-bellied Glider	V,P		62

Animalia	Mammalia	Petauridae	1138	<i>Petaurus breviceps</i>	Sugar Glider	P		14	
Animalia	Mammalia	Pseudocheiridae	1129	<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum	P		38	
Animalia	Mammalia	Acrobatidae	1147	<i>Acrobates pygmaeus</i>	Feathertail Glider	P		8	
Animalia	Mammalia	Phalangeridae	T082	<i>Trichosurus sp.</i>	brushtail possum	P		12	
Animalia	Mammalia	Phalangeridae	1113	<i>Trichosurus vulpecula</i>	Common Brushtail Possum	P		135	
Animalia	Mammalia	Potoroidae	1175	<i>Potorous tridactylus</i>	Long-nosed Potoroo	V,P	V	1	
Animalia	Mammalia	Macropodidae	1265	<i>Macropus giganteus</i>	Eastern Grey Kangaroo	P		62	
Animalia	Mammalia	Macropodidae	1261	<i>Macropus rufogriseus</i>	Red-necked Wallaby	P		105	
Animalia	Mammalia	Macropodidae	T085	<i>Macropus sp.</i>	kangaroo / wallaby	P		17	
Animalia	Mammalia	Macropodidae	1242	<i>Wallabia bicolor</i>	Swamp Wallaby	P		53	
Animalia	Mammalia	Pteropodidae	1280	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	4	
Animalia	Mammalia	Pteropodidae	T087	<i>Pteropus sp.</i>	Flying-fox	P		10	
Animalia	Mammalia	Rhinolophidae	1303	<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe-bat	P		1	
Animalia	Mammalia	Emballonuridae	1321	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V,P		1	
Animalia	Mammalia	Molossidae	1324	<i>Austronomus australis</i>	White-striped Freetail-bat	P		4	
Animalia	Mammalia	Molossidae	1329	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V,P		5	
Animalia	Mammalia	Molossidae	1938	<i>Mormopterus ridei</i>	Eastern Free-tailed Bat	P		6	
Animalia	Mammalia	Molossidae	T091	<i>Mormopterus sp.</i>	mastiff-bat	P		2	
Animalia	Mammalia	Vespertilionidae	1349	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	P		4	
Animalia	Mammalia	Vespertilionidae	1351	<i>Chalinolobus morio</i>	Chocolate Wattled Bat	P		10	
Animalia	Mammalia	Vespertilionidae	1372	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		5	
Animalia	Mammalia	Vespertilionidae	1357	<i>Myotis macropus</i>	Southern Myotis	V,P		6	
Animalia	Mammalia	Vespertilionidae	1335	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	P		8	
Animalia	Mammalia	Vespertilionidae	T092	<i>Nyctophilus sp.</i>	long-eared bat	P		2	
Animalia	Mammalia	Vespertilionidae	1361	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		4	
Animalia	Mammalia	Vespertilionidae	1365	<i>Scotorepens orion</i>	Eastern Broad-nosed Bat	P		3	
Animalia	Mammalia	Vespertilionidae	1022	<i>Vespadelus darlingtoni</i>	Large Forest Bat	P		8	
Animalia	Mammalia	Vespertilionidae	1378	<i>Vespadelus regulus</i>	Southern Forest Bat	P		10	
Animalia	Mammalia	Vespertilionidae	1379	<i>Vespadelus vulturnus</i>	Little Forest Bat	P		10	
Animalia	Mammalia	Muridae	1412	<i>Mus musculus</i>	House Mouse			3	
Animalia	Mammalia	Muridae	1395	<i>Rattus fuscipes</i>	Bush Rat	P		16	
Animalia	Mammalia	Muridae	1398	<i>Rattus lutreolus</i>	Swamp Rat	P		2	
Animalia	Mammalia	Dugongidae	1558	<i>Dugong dugon</i>	Dugong	E1,P		1	
Animalia	Mammalia	Otariidae	1543	<i>Arctocephalus forsteri</i>	New Zealand Fur-seal	V,P		1	
Animalia	Mammalia	Otariidae	1882	<i>Arctocephalus pusillus doriferus</i>	Australian Fur-seal	V,P		2	
Animalia	Mammalia	Otariidae	9040	<i>Seal sp.</i>	Unidentified Seal	P		2	
Animalia	Mammalia	Canidae	1531	<i>Canis lupus</i>	Dingo, domestic dog			37	
Animalia	Mammalia	Canidae	1904	<i>Canis lupus dingo</i>	Dingo			1	
Animalia	Mammalia	Canidae	1532	<i>Vulpes vulpes</i>	Fox			28	
Animalia	Mammalia	Felidae	1536	<i>Felis catus</i>	Cat			10	
Animalia	Mammalia	Leporidae	1510	<i>Oryctolagus cuniculus</i>	Rabbit			3	
Animalia	Mammalia	Cervidae	9112	<i>Cervus sp.</i>	Unidentified Deer			5	
Animalia	Mammalia	Cervidae	1523	<i>Dama dama</i>	Fallow Deer			1	
Animalia	Mammalia	Balaenidae	1561	<i>Eubalaena australis</i>	Southern Right Whale	E1,P	E	1	
Animalia	Mammalia	Balaenopteridae	1567	<i>Balaenoptera musculus</i>	Blue Whale	E1,P	E	3	
Animalia	Mammalia	Balaenopteridae	1575	<i>Megaptera novaeangliae</i>	Humpback Whale	V,P	V	122	
Animalia	Mammalia	Balaenopteridae	9041	<i>Whale sp.</i>	Unidentified Whale	P		2	
Animalia	Mammalia	Kogiidae	1581	<i>Kogia breviceps</i>	Pygmy Sperm Whale	P		3	
Animalia	Mammalia	Delphinidae	1616	<i>Delphinus delphis</i>	Common Dolphin	P		2	
Animalia	Mammalia	Delphinidae	1600	<i>Orcinus orca</i>	Killer Whale	P		2	
Animalia	Mammalia	Delphinidae	1899	<i>Tursiops aduncus</i>	Long-beaked Bottle-nosed Dolphin	P		1	
Animalia	Unknown	Unknown Fauna	T351	<i>Mammal sp.</i>	Unidentified Mammal			1	
Plantae	Flora	Acanthaceae	1004	<i>Brunoniella pumilio</i>	Dwarf Blue Trumpet			1	
Plantae	Flora	Acanthaceae	1010	<i>Pseuderanthemum variabile</i>	Pastel Flower			1	
Plantae	Flora	Adiantaceae	7997	<i>Adiantum aethiopicum</i>	Common Maidenhair	P		9	
Plantae	Flora	Adiantaceae	8444	<i>Pellaea falcata</i>	Sickle Fern			2	
Plantae	Flora	Adoxaceae	1953	<i>Sambucus australasica</i>	Native Elderberry			1	
Plantae	Flora	Aizoaceae	1022	<i>Aptenia cordifolia</i>	Heartleaf Ice Plant			1	
Plantae	Flora	Aizoaceae	1025	<i>Carpobrotus glaucescens</i>	Pigface			6	
Plantae	Flora	Aizoaceae	11185	<i>Tetragonia tetragonioides</i>	New Zealand Spinach			3	
Plantae	Flora	Alliaceae	10418	<i>Agapanthus praecox subsp. orientalis</i>				1	
Plantae	Flora	Alliaceae	14523	<i>Tulbaghia violacea</i>	Society Garlic			1	
Plantae	Flora	Amaranthaceae	6478	<i>Alternanthera denticulata</i>	Lesser Joyweed			1	
Plantae	Flora	Amaranthaceae	7896	<i>Deeringia amaranthoides</i>				1	
Plantae	Flora	Amygdalaceae	5623	<i>Prunus cerasifera</i>	Cherry Plum			1	
Plantae	Flora	Amygdalaceae	5625	<i>Prunus persica</i>				1	
Plantae	Flora	Amygdalaceae	PRUN	<i>Prunus spp.</i>				1	
Plantae	Flora	Anthericaceae	3517	<i>Arthropodium milleflorum</i>	Pale Vanilla-lily			3	

Plantae	Flora	Anthericaceae	7183	<i>Caesia parviflora</i> var. <i>parviflora</i>		2
Plantae	Flora	Anthericaceae	3574	<i>Thysanotus tuberosus</i>	Common Fringe-lily	2
Plantae	Flora	Anthericaceae	7355	<i>Tricoryne elatior</i>	Yellow Autumn-lily	2
Plantae	Flora	Apiaceae	1104	<i>Apium prostratum</i>	Sea Celery	1
Plantae	Flora	Apiaceae	11824	<i>Apium prostratum</i> var. <i>prostratum</i>		2
Plantae	Flora	Apiaceae	6505	<i>Berula erecta</i>	* Water Parsnip	1
Plantae	Flora	Apiaceae	1106	<i>Centella asiatica</i>	Indian Pennywort	4
Plantae	Flora	Apiaceae	1118	<i>Foeniculum vulgare</i>	* Fennel	1
Plantae	Flora	Apiaceae	7959	<i>Hydrocotyle acutiloba</i>		2
Plantae	Flora	Apiaceae	1123	<i>Hydrocotyle bonariensis</i>	*	1
Plantae	Flora	Apiaceae	1126	<i>Hydrocotyle geraniifolia</i>	Forest Pennywort	2
Plantae	Flora	Apiaceae	8461	<i>Hydrocotyle hirta</i>	Hairy Pennywort	4
Plantae	Flora	Apiaceae	1128	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort	5
Plantae	Flora	Apiaceae	7961	<i>Hydrocotyle sibthorpioides</i>		6
Plantae	Flora	Apiaceae	HYDR	<i>Hydrocotyle</i> spp.		2
Plantae	Flora	Apiaceae	1138	<i>Oreomyrrhis eriopoda</i>	Australian Carraway	1
Plantae	Flora	Apiaceae	1144	<i>Platysace lanceolata</i>	Shrubby Platysace	5
Plantae	Flora	Apiaceae	12663	<i>Trachymene composita</i> var. <i>robertsonii</i>		1
Plantae	Flora	Apiaceae	1161	<i>Xanthosia dissecta</i>	Cut-leaved Xanthosia	1
Plantae	Flora	Apiaceae	1162	<i>Xanthosia pilosa</i>	Woolly Xanthosia	6
Plantae	Flora	Apiaceae	1163	<i>Xanthosia tridentata</i>	Rock Xanthosia	1
Plantae	Flora	Apocynaceae	1165	<i>Alyxia buxifolia</i>	Sea Box	4
Plantae	Flora	Apocynaceae	11047	<i>Araujia sericifera</i>	* Moth Vine	1
Plantae	Flora	Apocynaceae	1227	<i>Gomphocarpus fruticosus</i>	* Narrow-leaved Cotton Bush	1
Plantae	Flora	Apocynaceae	1234	<i>Marsdenia rostrata</i>	Milk Vine	13
Plantae	Flora	Apocynaceae	1185	<i>Parsonsia straminea</i>	Common Silkpod	1
Plantae	Flora	Apocynaceae	1240	<i>Tylophora barbata</i>	Bearded Tylophora	13
Plantae	Flora	Araceae	1198	<i>Zantedeschia aethiopica</i>	* Arum Lily	2
Plantae	Flora	Araliaceae	1207	<i>Hedera helix</i>	* English Ivy	2
Plantae	Flora	Araliaceae	1210	<i>Polyscias murrayi</i>	Pencil Cedar	3
Plantae	Flora	Araliaceae	1211	<i>Polyscias sambucifolia</i>	Elderberry Panax	3
Plantae	Flora	Araucariaceae	1214	<i>Araucaria heterophylla</i>	* Norfolk Island Pine	1
Plantae	Flora	Arecaceae	11354	<i>Phoenix canariensis</i>	* Canary Island Date Palm	1
Plantae	Flora	Arecaceae	11731	<i>Syagrus romanzoffiana</i>	* Cocos Palm	1
Plantae	Flora	Asparagaceae	11784	<i>Asparagus aethiopicus</i>	* Asparagus Fern	2
Plantae	Flora	Asparagaceae	3519	<i>Asparagus asparagoides</i>	* Bridal Creeper	7
Plantae	Flora	Asparagaceae	3522	<i>Asparagus scandens</i>	* Asparagus Fern	3
Plantae	Flora	Aspleniaceae	8033	<i>Asplenium flabellifolium</i>	Necklace Fern	3
Plantae	Flora	Asteraceae	13920	<i>Actites megalocarpus</i>	Dune Thistle	1
Plantae	Flora	Asteraceae	1255	<i>Ageratina adenophora</i>	* Crofton Weed	1
Plantae	Flora	Asteraceae	7391	<i>Arctotheca populifolia</i>	* Beach Daisy	1
Plantae	Flora	Asteraceae	1276	<i>Arrhenechthites mixta</i>	Purple Fireweed	1
Plantae	Flora	Asteraceae	1282	<i>Bedfordia arborescens</i>	Blanket Leaf	4
Plantae	Flora	Asteraceae	1283	<i>Bidens pilosa</i>	* Cobbler's Pegs	1
Plantae	Flora	Asteraceae	7700	<i>Brachyscome angustifolia</i> var. <i>heterophylla</i>		2
Plantae	Flora	Asteraceae	1333	<i>Calomeria amaranthoides</i>	Incense Plant	3
Plantae	Flora	Asteraceae	1358	<i>Carthamus lanatus</i>	* Saffron Thistle	1
Plantae	Flora	Asteraceae	1360	<i>Cassinia aculeata</i>	Dolly Bush	5
Plantae	Flora	Asteraceae	1369	<i>Cassinia longifolia</i>		6
Plantae	Flora	Asteraceae	1374	<i>Cassinia trinerva</i>		7
Plantae	Flora	Asteraceae	8562	<i>Chryscephalum semipapposum</i>	Clustered Everlasting	1
Plantae	Flora	Asteraceae	1400	<i>Cirsium vulgare</i>	* Spear Thistle	2
Plantae	Flora	Asteraceae	1404	<i>Conyza bonariensis</i>	* Flaxleaf Fleabane	1
Plantae	Flora	Asteraceae	CONY	<i>Conyza</i> spp.	* A Fleabane	2
Plantae	Flora	Asteraceae	10442	<i>Conyza sumatrensis</i>	* Tall fleabane	12
Plantae	Flora	Asteraceae	13745	<i>Coronidium elatum</i>		5
Plantae	Flora	Asteraceae	13836	<i>Coronidium scorpioides</i>	Button Everlasting	2
Plantae	Flora	Asteraceae	14577	<i>Dimorphotheca ecklonis</i>	* Cape Daisy	1
Plantae	Flora	Asteraceae	11439	<i>Euchiton japonicus</i>		3
Plantae	Flora	Asteraceae	10142	<i>Gamochaeta calviceps</i>	* Cudweed	1
Plantae	Flora	Asteraceae	14493	<i>Gamochaeta coarctata</i>	*	1
Plantae	Flora	Asteraceae	12748	<i>Gamochaeta purpurea</i>	* Purple Cudweed	1
Plantae	Flora	Asteraceae	1540	<i>Hypochaeris glabra</i>	* Smooth Catsear	1
Plantae	Flora	Asteraceae	8788	<i>Hypochaeris radicata</i>	* Catsear	17
Plantae	Flora	Asteraceae	1551	<i>Lagenifera stipitata</i>	Blue Bottle-daisy	3

Plantae	Flora	Asteraceae	11960	<i>Lagenophora stipitata</i>	Common Lagenophora	6
Plantae	Flora	Asteraceae	1555	<i>Leptorhynchos nitidulus</i>		1
Plantae	Flora	Asteraceae	1580	<i>Olearia argophylla</i>	Native Musk	5
Plantae	Flora	Asteraceae	1591	<i>Olearia erubescens</i>	Pink-tip Daisy-bush	1
Plantae	Flora	Asteraceae	1598	<i>Olearia lirata</i>	Snowy Daisy-bush	3
Plantae	Flora	Asteraceae	OLEA	<i>Olearia spp.</i>		1
Plantae	Flora	Asteraceae	9372	<i>Olearia stellulata</i>		2
Plantae	Flora	Asteraceae	1617	<i>Olearia tomentosa</i>	Toothed Daisy-bush	5
Plantae	Flora	Asteraceae	13708	<i>Osteospermum fruticosum</i>		1
Plantae	Flora	Asteraceae	9404	<i>Ozothamnus argophyllus</i>		2
Plantae	Flora	Asteraceae	9611	<i>Ozothamnus cuneifolius</i>	Wedge Everlasting	4
Plantae	Flora	Asteraceae	11127	<i>Ozothamnus dendroideus</i>	Tree Everlasting	1
Plantae	Flora	Asteraceae	8557	<i>Ozothamnus diosmifolius</i>	White Dogwood	3
Plantae	Flora	Asteraceae	8885	<i>Ozothamnus ferrugineus</i>	Tree Everlasting	1
Plantae	Flora	Asteraceae	9999	<i>Ozothamnus obcordatus</i>		1
Plantae	Flora	Asteraceae	8706	<i>Ozothamnus obcordatus subsp. major</i>	Grey Everlasting	3
Plantae	Flora	Asteraceae	10158	<i>Ozothamnus turbinatus</i>		1
Plantae	Flora	Asteraceae	1664	<i>Senecio hispidulus</i>	Hill Fireweed	1
Plantae	Flora	Asteraceae	1667	<i>Senecio linearifolius</i>	Fireweed Groundsel	17
Plantae	Flora	Asteraceae	12804	<i>Senecio linearifolius var. arachnoideus</i>		1
Plantae	Flora	Asteraceae	12805	<i>Senecio linearifolius var. denticulatus</i>		1
Plantae	Flora	Asteraceae	6465	<i>Senecio madagascariensis</i>	Fireweed	5
Plantae	Flora	Asteraceae	1671	<i>Senecio minimus</i>		4
Plantae	Flora	Asteraceae	12811	<i>Senecio pinnatifolius var. pinnatifolius</i>		1
Plantae	Flora	Asteraceae	11634	<i>Senecio prenanthoides</i>		1
Plantae	Flora	Asteraceae	1680	<i>Senecio velleioides</i>		2
Plantae	Flora	Asteraceae	8789	<i>Sigesbeckia orientalis subsp. orientalis</i>	Indian Weed	4
Plantae	Flora	Asteraceae	1689	<i>Sonchus asper</i>	Prickly Sowthistle	2
Plantae	Flora	Asteraceae	1690	<i>Sonchus oleraceus</i>	Common Sowthistle	2
Plantae	Flora	Asteraceae	1698	<i>Taraxacum officinale</i>	Dandelion	1
Plantae	Flora	Asteraceae	1707	<i>Vellereophyton dealbatum</i>	White Cudweed	1
Plantae	Flora	Asteraceae	7433	<i>Vernonia cinerea</i>		1
Plantae	Flora	Asteraceae	6737	<i>Vittadinia cuneata var. cuneata</i>	A Fuzzweed	1
Plantae	Flora	Asteraceae	1720	<i>Vittadinia tenuissima</i>	Western New Holland Daisy	3
Plantae	Flora	Asteraceae	11377	<i>Xerochrysum bracteatum</i>	Golden Everlasting	2
Plantae	Flora	Basellaceae	1733	<i>Anredera cordifolia</i>	Madeira Vine	1
Plantae	Flora	Betulaceae	11591	<i>Betula pendula</i>	European White Birch	1
Plantae	Flora	Bignoniaceae	1740	<i>Pandorea pandorana</i>	Wonga Wonga Vine	8
Plantae	Flora	Blechnaceae	8052	<i>Blechnum cartilagineum</i>	Gristle Fern	10
Plantae	Flora	Blechnaceae	7760	<i>Blechnum minus</i>	Soft Water Fern	1
Plantae	Flora	Blechnaceae	14900	<i>Blechnum neohollandicum</i>		6
Plantae	Flora	Blechnaceae	8058	<i>Blechnum nudum</i>	Fishbone Water Fern	3
Plantae	Flora	Blechnaceae	8060	<i>Blechnum patersonii</i>	Strap Water Fern	1
Plantae	Flora	Blechnaceae	10519	<i>Blechnum patersonii subsp. patersonii</i>		1
Plantae	Flora	Boraginaceae	1747	<i>Cynoglossum australe</i>		1
Plantae	Flora	Boraginaceae	7370	<i>Ehretia acuminata var. acuminata</i>	Koda	1
Plantae	Flora	Brassicaceae	1791	<i>Cakile edentula</i>	American Sea Rocket	4
Plantae	Flora	Brassicaceae	1792	<i>Cakile maritima</i>	Sea Rocket	1
Plantae	Flora	Callitrichaceae	1907	<i>Callitriche muelleri</i>		1
Plantae	Flora	Campanulaceae	10465	<i>Lobelia anceps</i>		5
Plantae	Flora	Campanulaceae	1917	<i>Lobelia gibbosa</i>	Tall Lobelia	1
Plantae	Flora	Campanulaceae	14415	<i>Lobelia purpurascens</i>	whiteroot	6
Plantae	Flora	Campanulaceae	1929	<i>Wahlenbergia communis</i>	Tufted Bluebell	1
Plantae	Flora	Campanulaceae	1934	<i>Wahlenbergia gracilis</i>	Sprawling Bluebell	7
Plantae	Flora	Campanulaceae	8708	<i>Wahlenbergia stricta subsp. stricta</i>	Tall Bluebell	1
Plantae	Flora	Caprifoliaceae	1952	<i>Lonicera japonica</i>	Japanese Honeysuckle	1
Plantae	Flora	Caryophyllaceae	1960	<i>Cerastium glomeratum</i>	Mouse-ear Chickweed	1
Plantae	Flora	Caryophyllaceae	12853	<i>Spergularia australasica</i>		1
Plantae	Flora	Caryophyllaceae	14621	<i>Spergularia tasmanica</i>		1
Plantae	Flora	Caryophyllaceae	2002	<i>Stellaria angustifolia</i>	Swamp Starwort	1
Plantae	Flora	Caryophyllaceae	2004	<i>Stellaria flaccida</i>		4

Plantae	Flora	Casuarinaceae	2012	<i>Allocasuarina littoralis</i>	Black She-Oak	20	
Plantae	Flora	Casuarinaceae	2015	<i>Allocasuarina paludosa</i>		3	
Plantae	Flora	Casuarinaceae	2017	<i>Allocasuarina torulosa</i>	Forest Oak	1	
Plantae	Flora	Casuarinaceae	2018	<i>Allocasuarina verticillata</i>	Drooping Sheoak	2	
Plantae	Flora	Casuarinaceae	CASU	<i>Casuarina spp.</i>		1	
Plantae	Flora	Chenopodiaceae	1000	<i>Atriplex cinerea</i>	Grey Saltbush	1	
Plantae	Flora	Chenopodiaceae	2084	<i>Chenopodium album</i>	Fat Hen	1	
Plantae	Flora	Chenopodiaceae	2110	<i>Einadia hastata</i>	Berry Saltbush	2	
Plantae	Flora	Chenopodiaceae	2113	<i>Einadia trigonos</i>	Fishweed	2	
Plantae	Flora	Chenopodiaceae	2114	<i>Enchylaena tomentosa</i>	Ruby Saltbush	1	
Plantae	Flora	Chenopodiaceae	7808	<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>		7	
Plantae	Flora	Chenopodiaceae	9423	<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>		9	
Plantae	Flora	Chenopodiaceae	2200	<i>Suaeda australis</i>		2	
Plantae	Flora	Clusiaceae	7240	<i>Hypericum gramineum</i>	Small St John's Wort	5	
Plantae	Flora	Clusiaceae	2203	<i>Hypericum japonicum</i>		2	
Plantae	Flora	Clusiaceae	2204	<i>Hypericum perforatum</i>	St. Johns Wort	1	
Plantae	Flora	Colchicaceae	3533	<i>Burchardia umbellata</i>	Milkmaids	2	
Plantae	Flora	Commelinaceae	2209	<i>Commelina cyanea</i>	Native Wandering Jew	1	
Plantae	Flora	Commelinaceae	10508	<i>Tradescantia fluminensis</i>	Wandering Jew	3	
Plantae	Flora	Convolvulaceae	2218	<i>Calystegia soldanella</i>		5	
Plantae	Flora	Convolvulaceae	2220	<i>Convolvulus erubescens</i>	Pink Bindweed	1	
Plantae	Flora	Convolvulaceae	2222	<i>Dichondra repens</i>	Kidney Weed	17	
Plantae	Flora	Convolvulaceae	2234	<i>Wilsonia backhousei</i>	Narrow-leaved Wilsonia	1	
Plantae	Flora	Crassulaceae	2240	<i>Crassula multicava</i>		1	
Plantae	Flora	Cunoniaceae	2268	<i>Bauera rubioides</i>	River Rose	1	
Plantae	Flora	Cupressaceae	2282	<i>Callitris muelleri</i>		1	
Plantae	Flora	Cupressaceae	2285	<i>Callitris rhomboidea</i>	Port Jackson Pine	2	
Plantae	Flora	Cupressaceae	11358	<i>Cupressus macrocarpa</i>	Monterey Cypress	1	
Plantae	Flora	Cyatheaceae	8074	<i>Cyathea australis</i>	Rough Treefern	6	
Plantae	Flora	Cyperaceae	2299	<i>Baumea juncea</i>		1	
Plantae	Flora	Cyperaceae	BAUM	<i>Baumea spp.</i>		1	
Plantae	Flora	Cyperaceae	2306	<i>Bolboschoenus fluviatilis</i>	Marsh Club-rush	1	
Plantae	Flora	Cyperaceae	2310	<i>Carex appressa</i>	Tall Sedge	8	
Plantae	Flora	Cyperaceae	2313	<i>Carex breviculmis</i>		4	
Plantae	Flora	Cyperaceae	2327	<i>Carex inversa</i>	Knob Sedge	1	
Plantae	Flora	Cyperaceae	2331	<i>Carex longibrachiata</i>		5	
Plantae	Flora	Cyperaceae	2335	<i>Carex pumila</i>		5	
Plantae	Flora	Cyperaceae	CARE	<i>Carex spp.</i>		1	
Plantae	Flora	Cyperaceae	2341	<i>Caustis flexuosa</i>	Curly Wig	3	
Plantae	Flora	Cyperaceae	2347	<i>Cyathochaeta diandra</i>		1	
Plantae	Flora	Cyperaceae	2364	<i>Cyperus eragrostis</i>	Umbrella Sedge	3	
Plantae	Flora	Cyperaceae	2374	<i>Cyperus gracilis</i>	Slender Flat-sedge	1	
Plantae	Flora	Cyperaceae	9145	<i>Cyperus gunnii</i> subsp. <i>gunnii</i>		3	
Plantae	Flora	Cyperaceae	2383	<i>Cyperus lucidus</i>	Leafy Flat Sedge	4	
Plantae	Flora	Cyperaceae	2395	<i>Cyperus sanguinolentus</i>		2	
Plantae	Flora	Cyperaceae	2408	<i>Eleocharis acuta</i>		2	
Plantae	Flora	Cyperaceae	2414	<i>Eleocharis gracilis</i>		1	
Plantae	Flora	Cyperaceae	12416	<i>Ficinia nodosa</i>	Knobby Club-rush	13	
Plantae	Flora	Cyperaceae	2431	<i>Gahnia aspera</i>	Rough Saw-sedge	3	
Plantae	Flora	Cyperaceae	2432	<i>Gahnia clarkei</i>	Tall Saw-sedge	8	
Plantae	Flora	Cyperaceae	2435	<i>Gahnia filum</i>		2	
Plantae	Flora	Cyperaceae	2439	<i>Gahnia melanocarpa</i>	Black Fruit Saw-sedge	6	
Plantae	Flora	Cyperaceae	2441	<i>Gahnia radula</i>		6	
Plantae	Flora	Cyperaceae	2442	<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge	2	
Plantae	Flora	Cyperaceae	2450	<i>Isolepis fluitans</i>	Floating Club-rush	1	
Plantae	Flora	Cyperaceae	2454	<i>Isolepis inundata</i>	Club-rush	2	
Plantae	Flora	Cyperaceae	2460	<i>Isolepis prolifera</i>		1	
Plantae	Flora	Cyperaceae	8380	<i>Lepidosperma concavum</i>		9	
Plantae	Flora	Cyperaceae	8379	<i>Lepidosperma elatius</i>		1	
Plantae	Flora	Cyperaceae	6402	<i>Lepidosperma laterale</i>	Variable Sword-sedge	8	
Plantae	Flora	Cyperaceae	2471	<i>Lepidosperma neesii</i>		3	
Plantae	Flora	Cyperaceae	2475	<i>Lepidosperma urophorum</i>		3	
Plantae	Flora	Cyperaceae	2491	<i>Schoenus apogon</i>	Fluke Bogrush	1	
Plantae	Flora	Cyperaceae	2492	<i>Schoenus brevifolius</i>		3	
Plantae	Flora	Cyperaceae	2500	<i>Schoenus melanostachys</i>		2	
Plantae	Flora	Dennstaedtiaceae	7271	<i>Histiopteris incisa</i>	Bat's Wing Fern	1	
Plantae	Flora	Dennstaedtiaceae	7385	<i>Hypolepis glandulifera</i>	Downy Ground Fern	1	
Plantae	Flora	Dennstaedtiaceae	7749	<i>Hypolepis muelleri</i>	Harsh Ground Fern	3	
Plantae	Flora	Dennstaedtiaceae	6403	<i>Pteridium esculentum</i>	Bracken	27	
Plantae	Flora	Dicksoniaceae	8341	<i>Calochlaena dubia</i>	Rainbow Fern	10	
Plantae	Flora	Dicksoniaceae	8082	<i>Dicksonia antarctica</i>	Soft Treefern	3	

Plantae	Flora	Dilleniaceae	2527	<i>Hibbertia aspera</i>	Rough Guinea Flower	7
Plantae	Flora	Dilleniaceae	2532	<i>Hibbertia dentata</i>	Twining Guinea Flower	9
Plantae	Flora	Dilleniaceae	10863	<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>		7
Plantae	Flora	Dilleniaceae	2542	<i>Hibbertia obtusifolia</i>	Hoary Guinea Flower	6
Plantae	Flora	Dilleniaceae	2545	<i>Hibbertia riparia</i>		1
Plantae	Flora	Dilleniaceae	2548	<i>Hibbertia scandens</i>	Climbing Guinea Flower	1
Plantae	Flora	Droseraceae	2558	<i>Drosera glanduligera</i>	Pimpernel Sundew	1
Plantae	Flora	Droseraceae	2559	<i>Drosera peltata</i>	A Sundew	1
Plantae	Flora	Dryopteridaceae	11102	<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	Creeping Shield Fern	6
Plantae	Flora	Dryopteridaceae	8027	<i>Polystichum proliferum</i>	Mother Shield Fern	1
Plantae	Flora	Elaeocarpaceae	2574	<i>Elaeocarpus reticulatus</i>	Blueberry Ash	14
Plantae	Flora	Elaeocarpaceae	6209	<i>Tetratheca pilosa</i>		1
Plantae	Flora	Elaeocarpaceae	6214	<i>Tetratheca thymifolia</i>	Black-eyed Susan	4
Plantae	Flora	Ericaceae	2581	<i>Acrotriche divaricata</i>		1
Plantae	Flora	Ericaceae	2583	<i>Acrotriche serrulata</i>	Honeypots	3
Plantae	Flora	Ericaceae	11592	<i>Arbutus unedo</i>	Strawberry Tree	1
Plantae	Flora	Ericaceae	2597	<i>Epacris impressa</i>	Common Heath	12
Plantae	Flora	Ericaceae	2666	<i>Gaultheria appressa</i>	White Waxberry	1
Plantae	Flora	Ericaceae	2616	<i>Leucopogon ericoides</i>	Pink Beard-heath	3
Plantae	Flora	Ericaceae	2623	<i>Leucopogon juniperinus</i>	Prickly Beard-heath	1
Plantae	Flora	Ericaceae	2624	<i>Leucopogon lanceolatus</i>		3
Plantae	Flora	Ericaceae	12932	<i>Leucopogon lanceolatus</i> subsp. <i>group A</i>		1
Plantae	Flora	Ericaceae	6425	<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>		3
Plantae	Flora	Ericaceae	2632	<i>Leucopogon parviflorus</i>	Coastal Beard-heath	7
Plantae	Flora	Ericaceae	2647	<i>Monotoca elliptica</i>	Tree Broom-heath	16
Plantae	Flora	Ericaceae	2649	<i>Monotoca scoparia</i>		7
Plantae	Flora	Euphorbiaceae	2677	<i>Amperea xiphioclada</i>		2
Plantae	Flora	Euphorbiaceae	9713	<i>Amperea xiphioclada</i> var. <i>xiphioclada</i>		2
Plantae	Flora	Euphorbiaceae	2691	<i>Beyeria lasiocarpa</i>		7
Plantae	Flora	Euphorbiaceae	9899	<i>Euphorbia paralias</i>	Sea Spurge	1
Plantae	Flora	Euphorbiaceae	2721	<i>Euphorbia peplus</i>	Petty Spurge	1
Plantae	Flora	Euphorbiaceae	11947	<i>Homalanthus</i> <i>populifolius</i>		4
Plantae	Flora	Euphorbiaceae	2759	<i>Ricinocarpos pinifolius</i>	Wedding Bush	2
Plantae	Flora	Eupomatiaceae	2768	<i>Eupomatia laurina</i>	Bolwarra	8
Plantae	Flora	Fabaceae	6705	<i>Senna multiglandulosa</i>		1
Plantae	Flora	(Caesalpinioideae) Fabaceae	7377	<i>Senna pendula</i> var. <i>glabrata</i>		1
Plantae	Flora	(Caesalpinioideae) Fabaceae (Faboideae)	2770	<i>Aotus ericoides</i>		4
Plantae	Flora	Fabaceae (Faboideae)	2778	<i>Bossiaea ensata</i>	Sword Bossiaea	3
Plantae	Flora	Fabaceae (Faboideae)	2784	<i>Bossiaea obcordata</i>	Spiny Bossiaea	8
Plantae	Flora	Fabaceae (Faboideae)	2820	<i>Daviesia buxifolia</i>	Box-leaf Bitter-pea	3
Plantae	Flora	Fabaceae (Faboideae)	2827	<i>Daviesia ulicifolia</i>	Gorse Bitter Pea	2
Plantae	Flora	Fabaceae (Faboideae)	10831	<i>Daviesia ulicifolia</i> subsp. <i>ulicifolia</i>		1
Plantae	Flora	Fabaceae (Faboideae)	2830	<i>Daviesia wyattiana</i>	Long-leaf Bitter-pea	1
Plantae	Flora	Fabaceae (Faboideae)	6621	<i>Desmodium gunnii</i>	Slender Tick-trefoil	7
Plantae	Flora	Fabaceae (Faboideae)	2840	<i>Desmodium varians</i>	Slender Tick-trefoil	1
Plantae	Flora	Fabaceae (Faboideae)	2860	<i>Glycine clandestina</i>	Twining glycine	16
Plantae	Flora	Fabaceae (Faboideae)	2866	<i>Gompholobium</i> <i>latifolium</i>	Golden Glory Pea	2
Plantae	Flora	Fabaceae (Faboideae)	2871	<i>Goodia lotifolia</i>		1
Plantae	Flora	Fabaceae (Faboideae)	2873	<i>Hardenbergia violacea</i>	False Sarsaparilla	7
Plantae	Flora	Fabaceae (Faboideae)	2876	<i>Hovea linearis</i>		3
Plantae	Flora	Fabaceae (Faboideae)	2877	<i>Hovea longifolia</i>	Rusty Pods	1
Plantae	Flora	Fabaceae (Faboideae)	2882	<i>Indigofera australis</i>	Australian Indigo	10
Plantae	Flora	Fabaceae (Faboideae)	2898	<i>Kennedia rubicunda</i>	Dusky Coral Pea	9
Plantae	Flora	Fabaceae (Faboideae)	13019	<i>Lathyrus tingitanus</i>		1

Plantae	Flora	Fabaceae (Faboideae)	12079	<i>Lotus subbiflorus</i>	*	Hairy Birds-foot Trefoil	2
Plantae	Flora	Fabaceae (Faboideae)	8928	<i>Lotus uliginosus</i>	*	Birds-foot Trefoil	1
Plantae	Flora	Fabaceae (Faboideae)	2919	<i>Medicago lupulina</i>	*	Black Medic	1
Plantae	Flora	Fabaceae (Faboideae)	2922	<i>Medicago polymorpha</i>	*	Burr Medic	1
Plantae	Flora	Fabaceae (Faboideae)	2928	<i>Melilotus indicus</i>	*	Hexham Scent	1
Plantae	Flora	Fabaceae (Faboideae)	2930	<i>Melilotus officinalis</i>	*	Common Melilot	1
Plantae	Flora	Fabaceae (Faboideae)	2938	<i>Mirbella rubifolia</i>		Heathy Mirbella	1
Plantae	Flora	Fabaceae (Faboideae)	2961	<i>Platylobium formosum</i>			5
Plantae	Flora	Fabaceae (Faboideae)	9354	<i>Platylobium formosum</i> <i>subsp. formosum</i>			2
Plantae	Flora	Fabaceae (Faboideae)	9912	<i>Podolobium ilicifolium</i>		Prickly Shaggy Pea	6
Plantae	Flora	Fabaceae (Faboideae)	2985	<i>Pultenaea daphnoides</i>		Large-leaf Bush-pea	7
Plantae	Flora	Fabaceae (Faboideae)	3014	<i>Pultenaea retusa</i>			2
Plantae	Flora	Fabaceae (Faboideae)	3028	<i>Robinia pseudoacacia</i>	*	Black Locust	1
Plantae	Flora	Fabaceae (Faboideae)	3076	<i>Trifolium dubium</i>	*	Yellow Suckling Clover	1
Plantae	Flora	Fabaceae (Faboideae)	3079	<i>Trifolium glomeratum</i>	*	Clustered Clover	1
Plantae	Flora	Fabaceae (Faboideae)	3085	<i>Trifolium repens</i>	*	White Clover	2
Plantae	Flora	Fabaceae (Faboideae)	11703	<i>Vicia sativa subsp. nigra</i>	*	Narrow-leaved Vetch	1
Plantae	Flora	Fabaceae (Mimosoideae)	3700	<i>Acacia aculeatissima</i>		Snake Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	3723	<i>Acacia brownii</i>		Heath Wattle	2
Plantae	Flora	Fabaceae (Mimosoideae)	3742	<i>Acacia cognata</i>		Narrow-leaf Bower Wattle	8
Plantae	Flora	Fabaceae (Mimosoideae)	3762	<i>Acacia decurrens</i>		Black Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	3772	<i>Acacia falciformis</i>		Broad-leaved Hickory	12
Plantae	Flora	Fabaceae (Mimosoideae)	3774	<i>Acacia fimbriata</i>		Fringed Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	3777	<i>Acacia floribunda</i>		White Sally	1
Plantae	Flora	Fabaceae (Mimosoideae)	3792	<i>Acacia implexa</i>		Hickory Wattle	7
Plantae	Flora	Fabaceae (Mimosoideae)	3816	<i>Acacia longifolia</i>			3
Plantae	Flora	Fabaceae (Mimosoideae)	10790	<i>Acacia longifolia subsp.</i> <i>longifolia</i>		Sydney Golden Wattle	8
Plantae	Flora	Fabaceae (Mimosoideae)	10791	<i>Acacia longifolia subsp.</i> <i>sophorae</i>		Coastal Wattle	11
Plantae	Flora	Fabaceae (Mimosoideae)	3821	<i>Acacia maidenii</i>		Maiden's Wattle	3
Plantae	Flora	Fabaceae (Mimosoideae)	3823	<i>Acacia mearnsii</i>		Black Wattle	18
Plantae	Flora	Fabaceae (Mimosoideae)	3834	<i>Acacia myrtifolia</i>		Red-stemmed Wattle	5
Plantae	Flora	Fabaceae (Mimosoideae)	3838	<i>Acacia obtusata</i>		Blunt-leaf Wattle	2
Plantae	Flora	Fabaceae (Mimosoideae)	3839	<i>Acacia obtusifolia</i>			5
Plantae	Flora	Fabaceae (Mimosoideae)	3845	<i>Acacia paradoxa</i>		Kangaroo Thorn	1
Plantae	Flora	Fabaceae (Mimosoideae)	3869	<i>Acacia rubida</i>		Red-stemmed Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	ACAC	<i>Acacia spp.</i>		Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	3880	<i>Acacia stricta</i>		Straight Wattle	3
Plantae	Flora	Fabaceae (Mimosoideae)	3881	<i>Acacia suaveolens</i>		Sweet Wattle	2
Plantae	Flora	Fabaceae (Mimosoideae)	3882	<i>Acacia subporosa</i>		River Wattle	19
Plantae	Flora	Fabaceae (Mimosoideae)	3885	<i>Acacia terminalis</i>		Sunshine Wattle	6
Plantae	Flora	Fabaceae (Mimosoideae)	10793	<i>Acacia terminalis subsp.</i> <i>angustifolia</i>			2
Plantae	Flora	Fabaceae (Mimosoideae)	3893	<i>Acacia ulicifolia</i>		Prickly Moses	3
Plantae	Flora	Fabaceae (Mimosoideae)	11224	<i>Paraserianthes</i> <i>lophantha subsp.</i> <i>lophantha</i>	*	Crested Wattle	1

Plantae	Flora	Gentianaceae	3131	<i>Centaurium erythraea</i>	*	Common Centaury	4
Plantae	Flora	Gentianaceae	CENA	<i>Centaurium</i> spp.	*		1
Plantae	Flora	Geraniaceae	14683	<i>Geranium gardneri</i>		Rough Cranes-bill	2
Plantae	Flora	Geraniaceae	3148	<i>Geranium homeanum</i>			4
Plantae	Flora	Geraniaceae	8226	<i>Geranium solanderi</i> var. <i>solanderi</i>			2
Plantae	Flora	Geraniaceae	GERA	<i>Geranium</i> spp.			2
Plantae	Flora	Geraniaceae	3157	<i>Pelargonium australe</i>		Native Storksbill	2
Plantae	Flora	Gleicheniaceae	7138	<i>Gleichenia dicarpa</i>		Pouched Coral Fern	1
Plantae	Flora	Goodeniaceae	3166	<i>Coopernookia barbata</i>		Purple Goodenia	1
Plantae	Flora	Goodeniaceae	3174	<i>Dampiera stricta</i>			1
Plantae	Flora	Goodeniaceae	3175	<i>Goodenia bellidifolia</i>			1
Plantae	Flora	Goodeniaceae	8711	<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>			1
Plantae	Flora	Goodeniaceae	9279	<i>Goodenia hederacea</i> subsp. <i>hederacea</i>			1
Plantae	Flora	Goodeniaceae	3192	<i>Goodenia ovata</i>		Hop Goodenia	11
Plantae	Flora	Goodeniaceae	3201	<i>Scaevola aemula</i>		Fairy Fan-flower	1
Plantae	Flora	Goodeniaceae	3203	<i>Scaevola calendulacea</i>			1
Plantae	Flora	Goodeniaceae	3208	<i>Scaevola ramosissima</i>		Purple Fan-flower	4
Plantae	Flora	Haloragaceae	GONO	<i>Gonocarpus</i> spp.		Raspwort	2
Plantae	Flora	Haloragaceae	3247	<i>Gonocarpus tetragynus</i>		Poverty Raspwort	1
Plantae	Flora	Haloragaceae	3248	<i>Gonocarpus teucrioides</i>		Germander Raspwort	14
Plantae	Flora	Hypoxidaceae	7648	<i>Hypoxis hygrometrica</i> var. <i>hygrometrica</i>			1
Plantae	Flora	Iridaceae	10271	<i>Crocasmia x crocasmiflora</i>	*	Montbretia	1
Plantae	Flora	Iridaceae	3298	<i>Libertia paniculata</i>		Branching Grass-flag	1
Plantae	Flora	Iridaceae	3301	<i>Patersonia glabrata</i>		Leafy Purple-flag	8
Plantae	Flora	Iridaceae	3303	<i>Patersonia sericea</i>		Silky Purple-Flag	3
Plantae	Flora	Iridaceae	14929	<i>Sisyrinchium rosulatum</i>	*	Scourweed	1
Plantae	Flora	Iridaceae	9237	<i>Watsonia meriana</i>	*		1
Plantae	Flora	Iridaceae	WATS	<i>Watsonia</i> spp.	*		1
Plantae	Flora	Juglandaceae	11369	<i>Carya illinoensis</i>	*	Pecan	1
Plantae	Flora	Juncaceae	9311	<i>Juncus acutus</i> subsp. <i>acutus</i>	*	Sharp Rush	1
Plantae	Flora	Juncaceae	3316	<i>Juncus articulatus</i>	*	A Rush	1
Plantae	Flora	Juncaceae	3326	<i>Juncus continuus</i>			3
Plantae	Flora	Juncaceae	3331	<i>Juncus gregiflorus</i>			1
Plantae	Flora	Juncaceae	7430	<i>Juncus kraussii</i> subsp. <i>australiensis</i>		Sea Rush	6
Plantae	Flora	Juncaceae	3338	<i>Juncus pallidus</i>			2
Plantae	Flora	Juncaceae	3339	<i>Juncus pauciflorus</i>			2
Plantae	Flora	Juncaceae	3340	<i>Juncus planifolius</i>			5
Plantae	Flora	Juncaceae	3342	<i>Juncus prismatocarpus</i>			4
Plantae	Flora	Juncaceae	3343	<i>Juncus procerus</i>			4
Plantae	Flora	Juncaceae	JUNC	<i>Juncus</i> spp.		A Rush	1
Plantae	Flora	Juncaceae	3350	<i>Juncus usitatus</i>			4
Plantae	Flora	Juncaceae	3357	<i>Luzula flaccida</i>		Woodrush	1
Plantae	Flora	Juncaginaceae	3369	<i>Triglochin striata</i>		Streaked Arrowgrass	1
Plantae	Flora	Lamiaceae	3371	<i>Ajuga australis</i>		Austral Bugle	1
Plantae	Flora	Lamiaceae	3378	<i>Lavandula stoechas</i>	*	Italian Lavender	1
Plantae	Flora	Lamiaceae	6956	<i>Leonotis leonurus</i>	*	Lion's Ear	2
Plantae	Flora	Lamiaceae	3387	<i>Mentha satereioides</i>		Native Pennyroyal	1
Plantae	Flora	Lamiaceae	3397	<i>Plectranthus parviflorus</i>			4
Plantae	Flora	Lamiaceae	3412	<i>Prostanthera incana</i>		Velvet Mint-bush	1
Plantae	Flora	Lamiaceae	3413	<i>Prostanthera incisa</i>		Cut-leaved Mint-bush	2
Plantae	Flora	Lamiaceae	3415	<i>Prostanthera lasianthos</i>		Victorian Christmas Bush	2
Plantae	Flora	Lamiaceae	3423	<i>Prostanthera ovalifolia</i>			1
Plantae	Flora	Lamiaceae	7166	<i>Prostanthera violacea</i>		Violet Mint-bush	1
Plantae	Flora	Lamiaceae	3448	<i>Scutellaria mollis</i>		Soft Skullcap	1
Plantae	Flora	Lamiaceae	SCUT	<i>Scutellaria</i> spp.			1
Plantae	Flora	Lamiaceae	3459	<i>Westringia fruticosa</i>		Coastal Rosemary	6
Plantae	Flora	Lauraceae	9636	<i>Cassytha glabella</i> f. <i>dispar</i>			1
Plantae	Flora	Lauraceae	3469	<i>Cassytha pubescens</i>		Downy Dodder-laurel	9
Plantae	Flora	Lentibulariaceae	3507	<i>Utricularia dichotoma</i>		Fairy Aprons	1
Plantae	Flora	Liliaceae	3559	<i>Lilium formosanum</i>	*	Formosan Lily	1
Plantae	Flora	Lindsaeaceae	6406	<i>Lindsaea linearis</i>		Screw Fern	4
Plantae	Flora	Lindsaeaceae	6401	<i>Lindsaea microphylla</i>		Lacy Wedge Fern	2
Plantae	Flora	Loganiaceae	3588	<i>Logania albiflora</i>			3
Plantae	Flora	Loganiaceae	3595	<i>Mitrasacme polymorpha</i>			1
Plantae	Flora	Lomandraceae	6297	<i>Lomandra confertifolia</i>		Matrush	1
Plantae	Flora	Lomandraceae	7546	<i>Lomandra confertifolia</i> subsp. <i>leptostachya</i>			4
Plantae	Flora	Lomandraceae	6302	<i>Lomandra filiformis</i>		Wattle Matt-rush	2

Plantae	Flora	Lomandraceae	7931	<i>Lomandra filiformis</i> subsp. <i>filiformis</i>		3
Plantae	Flora	Lomandraceae	6512	<i>Lomandra filiformis</i> subsp. <i>flavior</i>	Wattle Matt-rush	2
Plantae	Flora	Lomandraceae	6304	<i>Lomandra glauca</i>	Pale Mat-rush	3
Plantae	Flora	Lomandraceae	6308	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	21
Plantae	Flora	Lomandraceae	8802	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat-rush	7
Plantae	Flora	Loranthaceae	3607	<i>Amyema pendula</i>		4
Plantae	Flora	Loranthaceae	7308	<i>Amyema pendula</i> subsp. <i>pendula</i>		2
Plantae	Flora	Loranthaceae	3620	<i>Muellerina eucalyptoides</i>		3
Plantae	Flora	Luzuriagaceae	6015	<i>Eustrephus latifolius</i>	Wombat Berry	6
Plantae	Flora	Luzuriagaceae	6016	<i>Geitonoplesium</i> <i>cymosum</i>	Scrambling Lily	12
Plantae	Flora	Lythraceae	11362	<i>Lagerstroemia indica</i>	*	1
Plantae	Flora	Magnoliaceae	11593	<i>Liriodendron tulipifera</i>	*	1
Plantae	Flora	Malaceae	11594	<i>Pyrus communis</i>	*	1
Plantae	Flora	Malvaceae	6130	<i>Commersonia fraseri</i>	Brush Kurrajong	1
Plantae	Flora	Malvaceae	6142	<i>Lasiopetalum</i> <i>macrophyllum</i>	Shrubby Velvet-bush	5
Plantae	Flora	Malvaceae	LASI	<i>Lasiopetalum</i> spp.		1
Plantae	Flora	Malvaceae	3660	<i>Modiola caroliniana</i>	*	1
Plantae	Flora	Malvaceae	3673	<i>Sida rhombifolia</i>	*	2
Plantae	Flora	Meliaceae	3680	<i>Melia azedarach</i>	White Cedar	1
Plantae	Flora	Meliaceae	11178	<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	Scentless Rosewood	1
Plantae	Flora	Meliaceae	8839	<i>Toona ciliata</i>	Red Cedar	1
Plantae	Flora	Menispermaceae	3688	<i>Sarcopetalum</i> <i>harveyanum</i>	Pearl Vine	7
Plantae	Flora	Menispermaceae	3690	<i>Stephania japonica</i>	Snake vine	1
Plantae	Flora	Menispermaceae	8428	<i>Stephania japonica</i> var. <i>discolor</i>	Snake Vine	12
Plantae	Flora	Monimiaceae	3914	<i>Hedycarya angustifolia</i>	Native Mulberry	1
Plantae	Flora	Moraceae	3924	<i>Ficus rubiginosa</i>	Port Jackson Fig	1
Plantae	Flora	Moraceae	3930	<i>Morus alba</i>	*	1
Plantae	Flora	Myoporaceae	7906	<i>Myoporum acuminatum</i>	Boobialla	2
Plantae	Flora	Myoporaceae	3954	<i>Myoporum insulare</i>	Common Boobialla	1
Plantae	Flora	Myrtaceae	3968	<i>Acmena smithii</i>	Lilly Pilly	13
Plantae	Flora	Myrtaceae	3971	<i>Angophora floribunda</i>	Rough-barked Apple	12
Plantae	Flora	Myrtaceae	3984	<i>Backhousia myrtifolia</i>	Grey Myrtle	1
Plantae	Flora	Myrtaceae	4015	<i>Callistemon salignus</i>	Willow Bottlebrush	1
Plantae	Flora	Myrtaceae	9687	<i>Corymbia gummifera</i>	Red Bloodwood	22
Plantae	Flora	Myrtaceae	4037	<i>Eucalyptus agglomerata</i>	Blue-leaved Stringybark	8
Plantae	Flora	Myrtaceae	4042	<i>Eucalyptus</i> <i>angaphoroides</i>	Apple-topped Gum	2
Plantae	Flora	Myrtaceae	7189	<i>Eucalyptus baueriana</i>	Blue Box	3
Plantae	Flora	Myrtaceae	4053	<i>Eucalyptus baxteri</i>	Brown Stringybark	1
Plantae	Flora	Myrtaceae	4059	<i>Eucalyptus bosistoana</i>	Coast Grey Box	10
Plantae	Flora	Myrtaceae	4060	<i>Eucalyptus botryoides</i>	Bangalay	1
Plantae	Flora	Myrtaceae	4073	<i>Eucalyptus considiana</i>	Yertchuk	2
Plantae	Flora	Myrtaceae	4075	<i>Eucalyptus cypellocarpa</i>	Monkey Gum	29
Plantae	Flora	Myrtaceae	4086	<i>Eucalyptus elata</i>	River Peppermint	9
Plantae	Flora	Myrtaceae	4097	<i>Eucalyptus globoides</i>	White Stringybark	10
Plantae	Flora	Myrtaceae	4118	<i>Eucalyptus longifolia</i>	Woollybutt	26
Plantae	Flora	Myrtaceae	7953	<i>Eucalyptus maidenii</i>	Maiden's Gum	3
Plantae	Flora	Myrtaceae	4132	<i>Eucalyptus muelleriana</i>	Yellow Stringybark	18
Plantae	Flora	Myrtaceae	4146	<i>Eucalyptus ovata</i>	Swamp Gum	3
Plantae	Flora	Myrtaceae	4155	<i>Eucalyptus pilularis</i>	Blackbutt	9
Plantae	Flora	Myrtaceae	4165	<i>Eucalyptus punctata</i>	Grey Gum	1
Plantae	Flora	Myrtaceae	7338	<i>Eucalyptus radiata</i> subsp. <i>radiata</i>		1
Plantae	Flora	Myrtaceae	4182	<i>Eucalyptus sieberi</i>	Silvertop Ash	17
Plantae	Flora	Myrtaceae	4184	<i>Eucalyptus smithii</i>	Ironbark Peppermint	6
Plantae	Flora	Myrtaceae	EUCA	<i>Eucalyptus</i> spp.		3
Plantae	Flora	Myrtaceae	9304	<i>Eucalyptus tricarpa</i>		7
Plantae	Flora	Myrtaceae	4197	<i>Eucalyptus viminalis</i>	Ribbon Gum	14
Plantae	Flora	Myrtaceae	10025	<i>Eucalyptus yangoura</i>	Southern White Stringybark	1
Plantae	Flora	Myrtaceae	4208	<i>Kunzea ericoides</i>	Burgan	4
Plantae	Flora	Myrtaceae	7970	<i>Leptospermum</i> <i>continentale</i>	Prickly Teatree	1
Plantae	Flora	Myrtaceae	4218	<i>Leptospermum</i> <i>emarginatum</i>	Twin-flower Tea-tree	1
Plantae	Flora	Myrtaceae	4223	<i>Leptospermum</i> <i>lanigerum</i>	Woolly Teatree	P 1
Plantae	Flora	Myrtaceae	10036	<i>Leptospermum</i> <i>macrocarpum</i>		1
Plantae	Flora	Myrtaceae	4232	<i>Leptospermum</i> <i>obovatum</i>		1

Plantae	Flora	Myrtaceae	8197	<i>Leptospermum polygalifolium</i> subsp. <i>polygalifolium</i>			1
Plantae	Flora	Myrtaceae	8486	<i>Leptospermum trinervium</i>		Slender Tea-tree	3
Plantae	Flora	Myrtaceae	11117	<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>		Bracelet Honey-myrtle	15
Plantae	Flora	Myrtaceae	6391	<i>Melaleuca ericifolia</i>		Swamp Paperbark	8
Plantae	Flora	Myrtaceae	4254	<i>Melaleuca hypericifolia</i>		Hillock bush	1
Plantae	Flora	Myrtaceae	4257	<i>Melaleuca linariifolia</i>		Flax-leaved Paperbark	2
Plantae	Flora	Myrtaceae	13751	<i>Sannantha pluriflora</i>			16
Plantae	Flora	Myrtaceae	4297	<i>Tristanopsis laurina</i>		Kanooka	2
Plantae	Flora	Ochnaceae	4306	<i>Ochna serrulata</i>	*	Mickey Mouse Plant	1
Plantae	Flora	Oleaceae	10913	<i>Jasminum polyanthum</i>	*	White Jasmine	1
Plantae	Flora	Oleaceae	4318	<i>Notelaea longifolia</i>		Large Mock-olive	1
Plantae	Flora	Oleaceae	6423	<i>Notelaea longifolia</i> f. <i>longifolia</i>			1
Plantae	Flora	Oleaceae	4322	<i>Notelaea venosa</i>		Veined Mock-olive	20
Plantae	Flora	Onagraceae	4326	<i>Epilobium billardierianum</i>			1
Plantae	Flora	Onagraceae	7952	<i>Epilobium billardierianum</i> subsp. <i>cinereum</i>			1
Plantae	Flora	Onagraceae	8808	<i>Oenothera stricta</i> subsp. <i>stricta</i>	*		1
Plantae	Flora	Orchidaceae	4373	<i>Caladenia carnea</i>		Pink Fingers	P 1
Plantae	Flora	Orchidaceae	6703	<i>Caladenia catenata</i>		White Caladenia	P 1
Plantae	Flora	Orchidaceae	4389	<i>Caleana major</i>		Large Duck Orchid	P 1
Plantae	Flora	Orchidaceae	10289	<i>Chiloglottis valida</i>		Large Bird Orchid	P 1
Plantae	Flora	Orchidaceae	4407	<i>Corybas fimbriatus</i>		Fringed Helmet Orchid	P 2
Plantae	Flora	Orchidaceae	4416	<i>Cryptostylis leptochila</i>		Small Tongue Orchid	P 1
Plantae	Flora	Orchidaceae	4432	<i>Dendrobium speciosum</i>		Rock Lily	P 1
Plantae	Flora	Orchidaceae	7887	<i>Dipodium punctatum</i>			P 1
Plantae	Flora	Orchidaceae	9155	<i>Dipodium roseum</i>			P 1
Plantae	Flora	Orchidaceae	7888	<i>Dipodium variegatum</i>			P 1
Plantae	Flora	Orchidaceae	4544	<i>Pterostylis concinna</i>		Trim Greenhood	P 1
Plantae	Flora	Orchidaceae	PTER	<i>Pterostylis</i> spp.		Greenhood	P 2
Plantae	Flora	Orchidaceae	11639	<i>Thelymitra peniculata</i>			P 1
Plantae	Flora	Orchidaceae	THEL	<i>Thelymitra</i> spp.			P 1
Plantae	Flora	Oxalidaceae	4612	<i>Oxalis chnoodes</i>			3
Plantae	Flora	Oxalidaceae	4613	<i>Oxalis corniculata</i>	*	Creeping Oxalis	2
Plantae	Flora	Oxalidaceae	4621	<i>Oxalis perennans</i>			4
Plantae	Flora	Oxalidaceae	4625	<i>Oxalis rubens</i>			2
Plantae	Flora	Oxalidaceae	OXAL	<i>Oxalis</i> spp.			5
Plantae	Flora	Passifloraceae	4643	<i>Passiflora edulis</i>	*	Common Passionfruit	1
Plantae	Flora	Phylodraceae	7065	<i>Philydrum lanuginosum</i>		Frogmouth	1
Plantae	Flora	Phormiaceae	3540	<i>Dianella caerulea</i>		Blue Flax-lily	9
Plantae	Flora	Phormiaceae	6700	<i>Dianella caerulea</i> var. <i>caerulea</i>			3
Plantae	Flora	Phormiaceae	7337	<i>Dianella caerulea</i> var. <i>producta</i>			1
Plantae	Flora	Phormiaceae	7783	<i>Dianella longifolia</i>		Blueberry Lily	1
Plantae	Flora	Phormiaceae	7580	<i>Dianella revoluta</i> var. <i>revoluta</i>		A Blue Flax Lily	1
Plantae	Flora	Phrymaceae	14731	<i>Thyridia repens</i>		Creeping Monkey-flower	1
Plantae	Flora	Phyllanthaceae	2695	<i>Breynia oblongifolia</i>		Coffee Bush	2
Plantae	Flora	Phyllanthaceae	7866	<i>Glochidion ferdinandi</i>		Cheese Tree	1
Plantae	Flora	Phyllanthaceae	2746	<i>Phyllanthus gunnii</i>			3
Plantae	Flora	Phyllanthaceae	8216	<i>Phyllanthus hirtellus</i>		Thyme Spurge	7
Plantae	Flora	Phyllanthaceae	2753	<i>Poranthera corymbosa</i>			5
Plantae	Flora	Phyllanthaceae	7395	<i>Poranthera microphylla</i>		Small Poranthera	8
Plantae	Flora	Phytolaccaceae	4658	<i>Phytolacca octandra</i>	*	Inkweed	3
Plantae	Flora	Pinaceae	4661	<i>Pinus radiata</i>	*	Radiata Pine	1
Plantae	Flora	Pittosporaceae	12179	<i>Billardiera mutabilis</i>		Climbing Apple Berry	1
Plantae	Flora	Pittosporaceae	4671	<i>Billardiera scandens</i>		Hairy Apple Berry	14
Plantae	Flora	Pittosporaceae	4674	<i>Bursaria spinosa</i>		Native Blackthorn	2
Plantae	Flora	Pittosporaceae	11017	<i>Bursaria spinosa</i> subsp. <i>lasiophylla</i>		Native Blackthorn	2
Plantae	Flora	Pittosporaceae	11018	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>			2
Plantae	Flora	Pittosporaceae	11204	<i>Pittosporum multiflorum</i>		Orange Thorn	2
Plantae	Flora	Pittosporaceae	4683	<i>Pittosporum revolutum</i>		Rough Fruit Pittosporum	14
Plantae	Flora	Pittosporaceae	4685	<i>Pittosporum undulatum</i>		Sweet Pittosporum	28
Plantae	Flora	Pittosporaceae	8623	<i>Rhytidosporum procumbens</i>			1
Plantae	Flora	Plantaginaceae	6996	<i>Plantago coronopus</i> subsp. <i>commutata</i>	*		1
Plantae	Flora	Plantaginaceae	4691	<i>Plantago debilis</i>		Shade Plantain	4
Plantae	Flora	Plantaginaceae	4699	<i>Plantago lanceolata</i>	*	Lamb's Tongues	5

Plantae	Flora	Plantaginaceae	6003	<i>Veronica calycina</i>	Hairy Speedwell	1
Plantae	Flora	Plantaginaceae	13395	<i>Veronica derwentiana</i> subsp. <i>derwentiana</i>		1
Plantae	Flora	Plantaginaceae	6009	<i>Veronica plebeia</i>	Trailing Speedwell	6
Plantae	Flora	Plumbaginaceae	4706	<i>Limonium australe</i>	Native Sea Lavender	3
Plantae	Flora	Poaceae	4721	<i>Agrostis capillaris</i>	* Browntop Bent	1
Plantae	Flora	Poaceae	4738	<i>Ammophila arenaria</i>	* Marram Grass	4
Plantae	Flora	Poaceae	4748	<i>Andropogon virginicus</i>	* Whisky Grass	1
Plantae	Flora	Poaceae	4749	<i>Anisopogon avenaceus</i>	Oat Speargrass	6
Plantae	Flora	Poaceae	4750	<i>Anthoxanthum</i> <i>odoratum</i>	* Sweet Vernal Grass	1
Plantae	Flora	Poaceae	4773	<i>Aristida vagans</i>	Threeawn Speargrass	2
Plantae	Flora	Poaceae	6594	<i>Austrofestuca littoralis</i>	Beach Fescue	1
Plantae	Flora	Poaceae	10390	<i>Austrostipa flavescens</i>		6
Plantae	Flora	Poaceae	10393	<i>Austrostipa mollis</i>	Soft Speargrass	1
Plantae	Flora	Poaceae	9603	<i>Austrostipa pubescens</i>		1
Plantae	Flora	Poaceae	10400	<i>Austrostipa pubinodis</i>		3
Plantae	Flora	Poaceae	10398	<i>Austrostipa rudis</i> subsp. <i>nervosa</i>	A Speargrass	3
Plantae	Flora	Poaceae	AUSO	<i>Austrostipa</i> spp.	A Speargrass	2
Plantae	Flora	Poaceae	10372	<i>Austrostipa stipoides</i>	Coast Spear-grass	4
Plantae	Flora	Poaceae	10387	<i>Austrostipa stiposa</i>		4
Plantae	Flora	Poaceae	11194	<i>Axonopus fissifolius</i>	* Narrow-leaved Carpet Grass	1
Plantae	Flora	Poaceae	4800	<i>Briza maxima</i>	* Quaking Grass	4
Plantae	Flora	Poaceae	4801	<i>Briza minor</i>	* Shivery Grass	1
Plantae	Flora	Poaceae	7813	<i>Bromus catharticus</i>	* Prairie Grass	1
Plantae	Flora	Poaceae	14903	<i>Cenchrus clandestinus</i>	* Kikuyu Grass	4
Plantae	Flora	Poaceae	4831	<i>Chloris gayana</i>	* Rhodes Grass	1
Plantae	Flora	Poaceae	4833	<i>Chloris truncata</i>	Windmill Grass	1
Plantae	Flora	Poaceae	4841	<i>Cymbopogon refractus</i>	Barbed Wire Grass	1
Plantae	Flora	Poaceae	6540	<i>Cynodon dactylon</i>	Common Couch	6
Plantae	Flora	Poaceae	4846	<i>Dactylis glomerata</i>	* Cocksfoot	4
Plantae	Flora	Poaceae	4891	<i>Deyeuxia quadriseta</i>		4
Plantae	Flora	Poaceae	4897	<i>Dichelachne crinita</i>	Longhair Plumegrass	2
Plantae	Flora	Poaceae	8748	<i>Dichelachne</i> <i>inaequilumis</i>		2
Plantae	Flora	Poaceae	4899	<i>Dichelachne rara</i>		3
Plantae	Flora	Poaceae	4929	<i>Echinopogon caespitosus</i>	Bushy Hedgehog-grass	4
Plantae	Flora	Poaceae	7593	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	Tufted Hedgehog Grass	2
Plantae	Flora	Poaceae	4934	<i>Echinopogon ovatus</i>	Forest Hedgehog Grass	8
Plantae	Flora	Poaceae	4937	<i>Ehrharta erecta</i>	* Panic Veldtgrass	10
Plantae	Flora	Poaceae	4946	<i>Entolasia marginata</i>	Bordered Panic	7
Plantae	Flora	Poaceae	4947	<i>Entolasia stricta</i>	Wiry Panic	12
Plantae	Flora	Poaceae	7578	<i>Eragrostis benthamii</i>		1
Plantae	Flora	Poaceae	7921	<i>Eragrostis brownii</i>	Brown's Lovegrass	1
Plantae	Flora	Poaceae	4952	<i>Eragrostis curvula</i>	* African Lovegrass	3
Plantae	Flora	Poaceae	4960	<i>Eragrostis leptostachya</i>	Paddock Lovegrass	1
Plantae	Flora	Poaceae	7871	<i>Hemarthria uncinata</i> var. <i>uncinata</i>		1
Plantae	Flora	Poaceae	5002	<i>Hierochloa rariflora</i>	Scented Holygrass	1
Plantae	Flora	Poaceae	5005	<i>Holcus lanatus</i>	* Yorkshire Fog	4
Plantae	Flora	Poaceae	5010	<i>Hordeum glaucum</i>	* Northern Barley Grass	1
Plantae	Flora	Poaceae	6803	<i>Imperata cylindrica</i>	Blady Grass	15
Plantae	Flora	Poaceae	11394	<i>Lachnagrostis aemula</i>	Blowngrass	1
Plantae	Flora	Poaceae	11387	<i>Lachnagrostis billardierei</i> subsp. <i>billardierei</i>		2
Plantae	Flora	Poaceae	5022	<i>Lagurus ovatus</i>	* Hare's Tail Grass	1
Plantae	Flora	Poaceae	5032	<i>Lolium perenne</i>	* Perennial Ryegrass	1
Plantae	Flora	Poaceae	5037	<i>Microlaena stipoides</i>	Weeping Grass	5
Plantae	Flora	Poaceae	7707	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass	10
Plantae	Flora	Poaceae	5044	<i>Oplismenus aemulus</i>		1
Plantae	Flora	Poaceae	5045	<i>Oplismenus imbecillis</i>		13
Plantae	Flora	Poaceae	5066	<i>Panicum simile</i>	Two-colour Panic	2
Plantae	Flora	Poaceae	5086	<i>Paspalum dilatatum</i>	* Paspalum	3
Plantae	Flora	Poaceae	5087	<i>Paspalum distichum</i>	Water Couch	1
Plantae	Flora	Poaceae	5093	<i>Paspalum urvillei</i>	* Vasey Grass	1
Plantae	Flora	Poaceae	5113	<i>Phragmites australis</i>	Common Reed	6
Plantae	Flora	Poaceae	5120	<i>Poa affinis</i>		1
Plantae	Flora	Poaceae	5127	<i>Poa ensiformis</i>	Purple-sheathed Tussock-grass	2
Plantae	Flora	Poaceae	11196	<i>Poa labillardierei</i> var. <i>labillardierei</i>	Tussock	7
Plantae	Flora	Poaceae	5134	<i>Poa melionectes</i>		14
Plantae	Flora	Poaceae	11143	<i>Poa poiformis</i> var. <i>poiformis</i>		1
Plantae	Flora	Poaceae	5138	<i>Poa pratensis</i>	* Kentucky Bluegrass	1
Plantae	Flora	Poaceae	8744	<i>Poa sieberiana</i> var. <i>hirtella</i>		1
Plantae	Flora	Poaceae	POA	<i>Poa</i> spp.		2

Plantae	Flora	Poaceae	5145	<i>Polypogon monspeliensis</i>	*	Annual Beardgrass	1
Plantae	Flora	Poaceae	7878	<i>Rostraria cristata</i>	*	Annual Cat's Tail	5
Plantae	Flora	Poaceae	14305	<i>Rytidosperma caespitosum</i>		Ringed Wallaby Grass	1
Plantae	Flora	Poaceae	14312	<i>Rytidosperma longifolium</i>		Long-leaved Wallaby Grass	7
Plantae	Flora	Poaceae	14314	<i>Rytidosperma pallidum</i>		Redanther Wallaby Grass; Silvertop Wallaby Grass	4
Plantae	Flora	Poaceae	14315	<i>Rytidosperma penicillatum</i>		Slender Wallaby Grass	1
Plantae	Flora	Poaceae	14317	<i>Rytidosperma racemosum</i>		Wallaby Grass	4
Plantae	Flora	Poaceae	14321	<i>Rytidosperma semiannulare</i>		Tasmanian Wallaby Grass	1
Plantae	Flora	Poaceae	RYTI	<i>Rytidosperma</i> spp.			1
Plantae	Flora	Poaceae	14323	<i>Rytidosperma tenuius</i>		A Wallaby Grass	2
Plantae	Flora	Poaceae	SETA	<i>Setaria</i> spp.			1
Plantae	Flora	Poaceae	7843	<i>Spinifex sericeus</i>		Hairy Spinifex	12
Plantae	Flora	Poaceae	5176	<i>Sporobolus africanus</i>	*	Parramatta Grass	3
Plantae	Flora	Poaceae	5179	<i>Sporobolus creber</i>		Slender Rat's Tail Grass	1
Plantae	Flora	Poaceae	5184	<i>Sporobolus virginicus</i>			4
Plantae	Flora	Poaceae	9224	<i>Sporobolus virginicus</i> var. <i>minor</i>		Marine Couch	1
Plantae	Flora	Poaceae	5185	<i>Stenotaphrum secundatum</i>	*	Buffalo Grass	4
Plantae	Flora	Poaceae	5217	<i>Tetrarrhena juncea</i>		Wiry Ricegrass	5
Plantae	Flora	Poaceae	7770	<i>Themeda triandra</i>			7
Plantae	Flora	Poaceae	5243	<i>Zoysia macrantha</i>		Prickly Couch	8
Plantae	Flora	Podocarpaceae	5248	<i>Podocarpus spinulosus</i>		Spiny-leaf Podocarp	1
Plantae	Flora	Polygalaceae	5253	<i>Comesperma ericinum</i>		Pyramid Flower	2
Plantae	Flora	Polygalaceae	5256	<i>Comesperma sphaerocarpum</i>			1
Plantae	Flora	Polygalaceae	5257	<i>Comesperma volubile</i>			4
Plantae	Flora	Polygalaceae	5261	<i>Polygala myrtifolia</i>	*		1
Plantae	Flora	Polygonaceae	5263	<i>Acetosa sagittata</i>	*	Rambling Dock	1
Plantae	Flora	Polygonaceae	5265	<i>Acetosella vulgaris</i>	*	Sheep Sorrel	1
Plantae	Flora	Polygonaceae	5269	<i>Muehlenbeckia adpressa</i>		Climbing Lignum	9
Plantae	Flora	Polygonaceae	7568	<i>Persicaria decipiens</i>		Slender Knotweed	2
Plantae	Flora	Polygonaceae	5281	<i>Persicaria hydropiper</i>		Water Pepper	1
Plantae	Flora	Polygonaceae	PERC	<i>Persicaria</i> spp.		Knotweed	1
Plantae	Flora	Polygonaceae	7312	<i>Persicaria subseriifolia</i>		Hairy Knotweed	1
Plantae	Flora	Polygonaceae	5296	<i>Rumex brownii</i>		Swamp Dock	4
Plantae	Flora	Polygonaceae	5298	<i>Rumex crispus</i>	*	Curled Dock	1
Plantae	Flora	Posidoniaceae	5327	<i>Posidonia australis</i>		Seagrass	2
Plantae	Flora	Potamogetonaceae	7023	<i>Potamogeton tricornatus</i>		Floating Pondweed	1
Plantae	Flora	Potamogetonaceae	5718	<i>Ruppia polycarpa</i>			1
Plantae	Flora	Primulaceae	14614	<i>Lysimachia arvensis</i>	*	Scarlet Pimpernel	1
Plantae	Flora	Primulaceae	11948	<i>Myrsine howittiana</i>		Brush Muttonwood	10
Plantae	Flora	Primulaceae	5337	<i>Samolus repens</i>		Creeping Brookweed	1
Plantae	Flora	Proteaceae	5343	<i>Banksia integrifolia</i>		Coast Banksia	8
Plantae	Flora	Proteaceae	6603	<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>		Coastal Banksia	12
Plantae	Flora	Proteaceae	5344	<i>Banksia marginata</i>		Silver Banksia	1
Plantae	Flora	Proteaceae	5346	<i>Banksia paludosa</i>			2
Plantae	Flora	Proteaceae	5348	<i>Banksia serrata</i>		Old-man Banksia	6
Plantae	Flora	Proteaceae	5349	<i>Banksia spinulosa</i>		Hairpin Banksia	2
Plantae	Flora	Proteaceae	7488	<i>Banksia spinulosa</i> var. <i>spinulosa</i>			2
Plantae	Flora	Proteaceae	9956	<i>Grevillea baueri</i> subsp. <i>baueri</i>			1
Plantae	Flora	Proteaceae	5379	<i>Grevillea lanigera</i>		Woolly Grevillea	1
Plantae	Flora	Proteaceae	10957	<i>Grevillea rosmarinifolia</i> subsp. <i>rosmarinifolia</i>		Rosmary Grevillea	1
Plantae	Flora	Proteaceae	5409	<i>Hakea dactyloides</i>		Finger Hakea	1
Plantae	Flora	Proteaceae	9762	<i>Hakea decurrens</i> subsp. <i>physocarpa</i>			1
Plantae	Flora	Proteaceae	9764	<i>Hakea decurrens</i> subsp. <i>platytaenia</i>			2
Plantae	Flora	Proteaceae	5412	<i>Hakea eriantha</i>			1
Plantae	Flora	Proteaceae	5443	<i>Lomatia ilicifolia</i>		Holly Lomatia	5
Plantae	Flora	Proteaceae	5444	<i>Lomatia myricoides</i>		River Lomatia	3
Plantae	Flora	Proteaceae	5462	<i>Persoonia levis</i>		Broad-leaved Geebung	3
Plantae	Flora	Proteaceae	5463	<i>Persoonia linearis</i>		Narrow-leaved Geebung	12
Plantae	Flora	Proteaceae	PERS	<i>Persoonia</i> spp.			1
Plantae	Flora	Pteridaceae	8007	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>		Rock Fern	1
Plantae	Flora	Pteridaceae	8176	<i>Pteris umbrosa</i>		Jungle Brake	1
Plantae	Flora	Ranunculaceae	5493	<i>Clematis aristata</i>		Old Man's Beard	7
Plantae	Flora	Ranunculaceae	5495	<i>Clematis glycinoides</i>		Headache Vine	8
Plantae	Flora	Ranunculaceae	6903	<i>Clematis glycinoides</i> var. <i>glycinoides</i>			1
Plantae	Flora	Ranunculaceae	13520	<i>Clematis leptophylla</i>			2
Plantae	Flora	Ranunculaceae	5508	<i>Ranunculus lappaceus</i>		Common Buttercup	1

Plantae	Flora	Ranunculaceae	5518	<i>Ranunculus plebeius</i>	Forest Buttercup	2
Plantae	Flora	Restionaceae	5532	<i>Empodisma minus</i>		1
Plantae	Flora	Restionaceae	5533	<i>Hypolaena fastigiata</i>		1
Plantae	Flora	Rhamnaceae	5571	<i>Pomaderris aspera</i>	Hazel Pomaderris	17
Plantae	Flora	Rhamnaceae	6979	<i>Pomaderris brogoensis</i>		1
Plantae	Flora	Rhamnaceae	5579	<i>Pomaderris ferruginea</i>		1
Plantae	Flora	Rhamnaceae	5581	<i>Pomaderris lanigera</i>	Woolly Pomaderris	4
Plantae	Flora	Rhamnaceae	5591	<i>Pomaderris prunifolia</i>	Plum-leaf Pomaderris	1
Plantae	Flora	Rhamnaceae	5600	<i>Spyridium parvifolium</i>	Dusty Miller	1
Plantae	Flora	Ripogonaceae	6018	<i>Ripogonum album</i>	White Supplejack	4
Plantae	Flora	Rosaceae	5604	<i>Acaena novae-zelandiae</i>	Bidgee-widgee	5
Plantae	Flora	Rosaceae	11303	<i>Rubus fruticosus</i> sp. agg.	* Blackberry complex	3
Plantae	Flora	Rosaceae	11236	<i>Rubus moluccanus</i> var. <i>trilobus</i>	Molucca Bramble	3
Plantae	Flora	Rosaceae	5642	<i>Rubus parvifolius</i>	Native Raspberry	9
Plantae	Flora	Rosaceae	5645	<i>Rubus rosifolius</i>	Rose-leaf Bramble	2
Plantae	Flora	Rosaceae	5646	<i>Rubus ulmifolius</i>	* Blackberry	1
Plantae	Flora	Rubiaceae	5675	<i>Coprosma quadrifida</i>	Prickly Currant Bush	9
Plantae	Flora	Rubiaceae	5681	<i>Galium binifolium</i>		3
Plantae	Flora	Rubiaceae	5684	<i>Galium gaudichaudii</i>	Rough Bedstraw	1
Plantae	Flora	Rubiaceae	13838	<i>Galium lelocarpum</i>		2
Plantae	Flora	Rubiaceae	5688	<i>Galium propinquum</i>	Maori Bedstraw	3
Plantae	Flora	Rubiaceae	GALI	<i>Galium</i> spp.		1
Plantae	Flora	Rubiaceae	14922	<i>Gynochthodes jasminoides</i>	Sweet Morinda	14
Plantae	Flora	Rubiaceae	6758	<i>Leptostigma reptans</i>		1
Plantae	Flora	Rubiaceae	5697	<i>Opercularia aspera</i>	Coarse Stinkweed	8
Plantae	Flora	Rubiaceae	5698	<i>Opercularia diphylla</i>	Stinkweed	2
Plantae	Flora	Rubiaceae	5699	<i>Opercularia hispida</i>	Hairy Stinkweed	1
Plantae	Flora	Rubiaceae	5701	<i>Opercularia varia</i>	Variable Stinkweed	1
Plantae	Flora	Rubiaceae	5703	<i>Pomax umbellata</i>	Pomax	7
Plantae	Flora	Rubiaceae	5706	<i>Psychotria loniceraoides</i>	Hairy Psychotria	1
Plantae	Flora	Rubiaceae	5711	<i>Richardia brasiliensis</i>	* Mexican Clover	1
Plantae	Flora	Rutaceae	5722	<i>Acronychia oblongifolia</i>	White Aspen	3
Plantae	Flora	Rutaceae	12257	<i>Boronia anemonifolia</i> subsp. <i>anemonifolia</i>	P	1
Plantae	Flora	Rutaceae	CHOI	<i>Choisya</i> spp.	* Choisya	1
Plantae	Flora	Rutaceae	10046	<i>Correa alba</i> var. <i>alba</i>	White Correa	1
Plantae	Flora	Rutaceae	5772	<i>Correa reflexa</i>	Native Fuschia	4
Plantae	Flora	Rutaceae	8801	<i>Correa reflexa</i> var. <i>reflexa</i>	Native Fuschia	2
Plantae	Flora	Rutaceae	10797	<i>Correa reflexa</i> var. <i>speciosa</i>		2
Plantae	Flora	Rutaceae	5774	<i>Crowea exalata</i>	P	3
Plantae	Flora	Rutaceae	10600	<i>Philotheca trachyphylla</i>	P Rock Waxflower	2
Plantae	Flora	Rutaceae	9606	<i>Zieria littoralis</i>		4
Plantae	Flora	Rutaceae	5847	<i>Zieria smithii</i>	Sandfly Zieria	2
Plantae	Flora	Salicaceae	8726	<i>Populus deltoides</i>	*	1
Plantae	Flora	Salicaceae	5849	<i>Populus nigra</i>	* Lombardy Poplar	1
Plantae	Flora	Salicaceae	5851	<i>Salix babylonica</i>	* Weeping Willow	1
Plantae	Flora	Salicaceae	10652	<i>Salix fragilis</i> var. <i>fragilis</i>	* Crack Willow	1
Plantae	Flora	Santalaceae	5858	<i>Choretrum pauciflorum</i>	Dwarf Sour Bush	1
Plantae	Flora	Santalaceae	5860	<i>Exocarpos cupressiformis</i>	Cherry Ballart	9
Plantae	Flora	Santalaceae	5864	<i>Exocarpos strictus</i>	Dwarf Cherry	5
Plantae	Flora	Santalaceae	5865	<i>Leptomeria acida</i>	Sour Currant Bush	3
Plantae	Flora	Santalaceae	5867	<i>Omphacomeria acerba</i>		1
Plantae	Flora	Santalaceae	5870	<i>Santalum obtusifolium</i>	Sandalwood	1
Plantae	Flora	Sapindaceae	1014	<i>Acer negundo</i>	* Box Elder	1
Plantae	Flora	Sapindaceae	5875	<i>Alectryon subcinereus</i>	Wild Quince	1
Plantae	Flora	Sapindaceae	5911	<i>Dodonaea triquetra</i>	Large-leaf Hop-bush	5
Plantae	Flora	Sapindaceae	5912	<i>Dodonaea truncatiales</i>	Angular Hop-bush	1
Plantae	Flora	Sapindaceae	5913	<i>Dodonaea viscosa</i>	Sticky Hop-bush	1
Plantae	Flora	Sapindaceae	7690	<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>		2
Plantae	Flora	Scrophulariaceae	8718	<i>Gratiola peruviana</i>	Australian Brooklime	1
Plantae	Flora	Scrophulariaceae	5981	<i>Mazus pumilio</i>	Swamp Mazus	3
Plantae	Flora	Smilacaceae	7592	<i>Smilax australis</i>	Lawyer Vine	11
Plantae	Flora	Smilacaceae	6022	<i>Smilax glyciphylla</i>	Sweet Sarsparilla	1
Plantae	Flora	Solanaceae	6058	<i>Physalis peruviana</i>	* Cape Gooseberry	3
Plantae	Flora	Solanaceae	7043	<i>Solanum americanum</i>	Glossy Nightshade	1
Plantae	Flora	Solanaceae	6065	<i>Solanum aviculare</i>	Kangaroo Apple	3
Plantae	Flora	Solanaceae	6071	<i>Solanum chenopodioides</i>	* Whitetip Nightshade	1
Plantae	Flora	Solanaceae	6087	<i>Solanum laciniatum</i>	Large-flowered Kangaroo Apple	1
Plantae	Flora	Solanaceae	6090	<i>Solanum mauritianum</i>	* Wild Tobacco Bush	1

Plantae	Flora	Solanaceae	6091	<i>Solanum nigrum</i>	*	Black-berry Nightshade	1
Plantae	Flora	Solanaceae	6100	<i>Solanum prinophyllum</i>		Forest Nightshade	1
Plantae	Flora	Solanaceae	6102	<i>Solanum pungetium</i>		Eastern Nightshade	7
Plantae	Flora	Solanaceae	6115	<i>Solanum vescum</i>			2
Plantae	Flora	Stackhousiaceae	6120	<i>Stackhousia monogyna</i>		Creamy Candles	1
Plantae	Flora	Stylidiaceae	6157	<i>Stylidium graminifolium</i>		Grass Triggerplant	3
Plantae	Flora	Theaceae	11595	<i>Camellia japonica</i>	*	Camellia	1
Plantae	Flora	Theaceae	11596	<i>Camellia sasanqua</i>	*	Sasanqua Camellia	1
Plantae	Flora	Thymelaeaceae	7731	<i>Pimelea axiflora</i> subsp. <i>axiflora</i>			10
Plantae	Flora	Thymelaeaceae	6179	<i>Pimelea humilis</i>		Dwarf Rice-flower	1
Plantae	Flora	Thymelaeaceae	6182	<i>Pimelea linifolia</i>		Slender Rice Flower	2
Plantae	Flora	Thymelaeaceae	6814	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>			7
Plantae	Flora	Typhaceae	6217	<i>Typha orientalis</i>		Broad-leaved Cumbungi	1
Plantae	Flora	Ulmaceae	6761	<i>Trema tomentosa</i> var. <i>aspera</i>		Native Peach	3
Plantae	Flora	Ulmaceae	11222	<i>Ulmus parvifolia</i>	*	Chinese Elm	1
Plantae	Flora	Urticaceae	6237	<i>Urtica incisa</i>		Stinging Nettle	3
Plantae	Flora	Uvulariaceae	3566	<i>Schelhammera undulata</i>			6
Plantae	Flora	Verbenaceae	6248	<i>Lantana camara</i>	*	Lantana	2
Plantae	Flora	Verbenaceae	6256	<i>Verbena bonariensis</i>	*	Purpletop	1
Plantae	Flora	Violaceae	12061	<i>Melicytus dentatus</i>		Tree Violet	1
Plantae	Flora	Violaceae	6272	<i>Viola hederacea</i>		Ivy-leaved Violet	12
Plantae	Flora	Violaceae	VIOL	<i>Viola</i> spp.			1
Plantae	Flora	Viscaceae	6279	<i>Notothixos subaureus</i>		Golden Mistletoe	2
Plantae	Flora	Vitaceae	6282	<i>Cissus antarctica</i>		Water Vine	1
Plantae	Flora	Vitaceae	6283	<i>Cissus hypoglauca</i>		Giant Water Vine	11
Plantae	Flora	Xanthorrhoeaceae	6321	<i>Xanthorrhoea resinosa</i>			1
Plantae	Flora	Zosteraceae	13649	<i>Zostera muelleri</i> subsp. <i>capricorni</i>			1
Animalia	Mammalia	Miniopteridae	3330	<i>Miniopterus arianae</i> <i>oceanensis</i>		Large Bent-winged Bat	10





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Appendix C. Key Threatening Processes under the BC Act

A threat may be listed as a key threatening process under the *NSW Biodiversity Conservation Act 2016* if it:

- ❖ adversely affects threatened species, populations of a species or ecological communities
- ❖ could cause species, populations of a species or ecological communities to become threatened.

Key threatening processes are managed under the Biodiversity Conservation Program or with threat abatement plans under the Saving our Species program.

Key threatening processes are the things that threaten - or could threaten - the survival or evolutionary development of species, populations, or ecological communities. They are listed in the Threatened Species Conservation Act, and include:

- ❖ Pest animals. Introduced animal species can compete with, and prey upon, native animals. They can also damage native plants and degrade natural habitats.
- ❖ Weeds. Weeds compete with native plants for resources such as light and nutrients. They can aggressively invade areas, displacing native plants and animals.
- ❖ Diseases. Exotic fungal infections, viruses and other pathogens can weaken and kill native species.
- ❖ Habitat loss/change. From large-scale land clearing to the gathering of bushrock for suburban gardens, humans have degraded many native environments across the state.

There are 39 Key Threatening Process under the BC Act as listed below:

1. Alteration to the natural flow regimes of rivers, streams, floodplains & wetlands
2. Bushrock Removal
3. Clearing of native vegetation
4. Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners *Manorina melanocephala*
5. Alteration of habitat following subsidence due to longwall mining
6. Competition and grazing by the feral European rabbit
7. Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758
8. Competition from feral honeybees
9. Death or injury to marine species following capture in shark control programs on ocean beaches
10. Ecological consequences of high frequency fires
11. Entanglement in, or ingestion of anthropogenic debris in marine and estuarine environments
12. Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners
13. Habitat degradation and loss by Feral Horses (brumbies, wild horses), *Equus caballus*



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14. Herbivory and environmental degradation caused by feral deer
15. Human-caused Climate Change
16. Importation of red imported fire ants into NSW
17. Infection by Psittacine circoviral (beak and feather) disease affecting endangered psittacine species
18. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis
19. Infection of native plants by *Phytophthora cinnamomi*
20. Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae
21. Introduction of the large earth bumblebee (*Bombus terrestris*)
22. Invasion and establishment of exotic vines and scramblers
23. Invasion and establishment of Scotch Broom (*Cytisus scoparius*)
24. Invasion and establishment of the Cane Toad
25. Invasion of native plant communities by exotic perennial grasses
26. Invasion of native plant communities by bitou bush & boneseed
27. Invasion of native plant communities by African Olive *Olea europaea subsp. cuspidata* (Wall. ex G. Don) Cif.
28. Invasion of the yellow crazy ant (*Anoplolepis gracilipes*) into NSW
29. Invasion, establishment and spread of Lantana (*Lantana camara* L. sens. lat)
30. Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants
31. Loss and/or degradation of sites used for hill-topping by butterflies
32. Loss of Hollow-bearing Trees
33. Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*
34. Predation by feral cats
35. Predation by the European Red Fox
36. Predation by the Plague Minnow (*Gambusia holbrooki*)
37. Predation by the Ship Rat (*Rattus rattus*) on Lord Howe Island
38. Predation, habitat degradation, competition and disease transmission by Feral Pigs (*Sus scrofa*)
39. Removal of dead wood and dead trees

(DPIE 2019).

No KTPs associated with terrestrial environments will be associated with the proposal.

KTPs associated with the marine environment have already been identified and discussed in the Cattle Bay Marina Marine Ecology Report 2019.

DPIE (2019). <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/about-threatened-species/key-threatening-processes>



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Appendix D. Test of Significance under s7.3 of the BC Act

The threatened species test of significance is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. It is applied as part of the Biodiversity Offsets Scheme entry requirements and for Part 5 activities under the *Environmental Planning and Assessment Act 1979*.

The Test of Significance is set out in s.7.3 of the *Biodiversity Conservation Act 2016*.

If the activity is likely to have a significant impact or will be carried out in a declared Area Of Outstanding Biodiversity Value (refer to **Appendix A**), the proponent must either apply the Biodiversity Offsets Scheme or prepare a species impact statement (SIS).

A Test Significance under the BC Act 2016 for threatened terrestrial flora and fauna has been undertaken below based on the proposed works at the site.

The test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats requires the assessing of the proposal against five criteria as follows:

Criteria 1 - In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Considering the proposed land based works at the site, and the site's attributes (~1 ha concrete slab with the nearest native bushland located ~100 m in one direction and 50 m in the other), the proposal will not result in an adverse effect on the lifecycle of any threatened or protected species such that a viable local population is likely to be placed at risk of extinction.

Criteria 2 - In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

No terrestrial EECs or endangered EECs occur at the study site and will not be impacted by the proposed works. The proposed land based works will not place any EEC at risk of extinction or modify the composition of any ecological community so that its local occurrence is placed at risk of extinction.

Criteria 3 - In relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and



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(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.

The terrestrial study area in which works are proposed does not provide habitat for threatened species or ecological communities. No native habitat will be removed or modified as a result of the proposal. No native habitat will become fragmented or isolated from other areas of habitats as a result of the proposal. The concrete slab on which all land based works are proposed is not considered important to the long-term survival of any threatened species or ecological communities in the locality.

Criteria 4 - Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

The proposed development / activity will not have any adverse impact on any declared AOBV. No AOBVs are located within the study site or in proximity to the site (refer to **Appendix A**).

Criteria 5 - Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposed activity is not a KTP and will not increase the impact of a KTP (refer to further detail in **Appendix C**).

There are not expected to be any significant impacts on any threatened fauna or on any EECs as a result of the proposal, therefore a SIS will not be necessary and entry into the BOS under the BC Act 2016 will not be required.



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Appendix E.

Biodiversity Conservation Regulation 2017

Part 6 - Division 6.1 - Clause 6.1

6.1 Additional biodiversity impacts to which scheme applies (sections 6.3 and 6.6 (2))

(1) The impacts on biodiversity values of the following actions are prescribed (subject to subclause (2)) as biodiversity impacts to be assessed under the biodiversity offsets scheme:

(a) the impacts of development on the following habitat of threatened species or ecological communities:

(i) karst, caves, crevices, cliffs and other geological features of significance,

(ii) rocks,

(iii) human made structures,

(iv) non-native vegetation,

No impacts on any of the above will occur as a result of the proposal.

(b) the impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range,

The proposal will not impact the connectivity of different areas of habitat for threatened species.

(c) the impacts of development on movement of threatened species that maintains their lifecycle,

The proposal will not impact the movement of threatened species such that their lifecycle is not maintained.

(d) the impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development),

Impacts of the proposal on the water quality of Cattle Bay / Twofold Bay have been addressed in the Cattle Bay Marina Marine Ecology Report 2019. No significant impacts on any threatened species or ecological communities are expected to occur resulting from water quality impacts. No hydrological processes will change as a result of the proposal. No impacts on any freshwater waterbodies will occur as they do not occur at the site.

(e) the impacts of wind turbine strikes on protected animals,

The proposal does not include wind turbine development or use so this does not have the potential to occur.



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(f) the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.

Vehicle strike is highly unlikely to occur as a result of the minor land based works at the site, particularly considering the nature of the site and that the area is currently accessible to vehicles for persons using Cattle Bay Beach and the existing Cattle Bay Jetty. Vehicles using this small access road would do so at slow speeds. Vessel strike on marine fauna has been addressed in the Cattle Bay Marina Marine Ecology Report 2019 and no significant impacts are expected.

(2) The additional biodiversity impacts prescribed by this clause:

(a) are prescribed for the purposes of assessment and biodiversity assessment reports under the Act, but are not additional biodiversity impacts for the purposes of calculating the number and class of biodiversity credits that are required under a biodiversity assessment report to be retired to offset the residual impact on biodiversity values of proposed development, proposed clearing of native vegetation or proposed biodiversity certification of land, and

(b) may be taken into account in the determination of the biodiversity credits required to be retired (or other conservation measures required to be taken) under a planning approval or vegetation clearing approval or under a biodiversity certification of land.

Due to the lack of impacts identified above, these do not apply.

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Date: 10 September 2019
Your reference:
Our reference: PA1042-104_ip20190823-DPIE
Classification: Project related

Contact name: Greg Britton
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Dear Andrew

**CATTLE BAY MARINA – DA 2019.208
SUBMISSION BY DEPARTMENT OF PLANNING INDUSTRY & ENVIRONMENT (BIODIVERSITY
AND CONSERVATION DIVISION)**

I refer to your email of 18 August 2019 which included a submission on the proposed Cattle Bay Marina by the Department of Planning Industry & Environment (Biodiversity and Conservation Division) (DPIE[BCD]) dated 5 August 2019 and a request that I respond to that section of the submission dealing with coastal processes and hazards. I am pleased to provide a response, details of which are set out below.

DPIE (BCD) raise the following matters under coastal processes and hazards:

- both the Eden Safe Harbour wave attenuator and the Cattle Bay Marina wave attenuator should be incorporated in the wave modelling;
- extreme coastal events have not been considered for Cocora Beach;
- the impacts of coastal hazards on the land based component of the proposal have not been considered, noting Bega Valley Shire Council's Coastal Processes and Hazards Definition Study (2015);
- further investigations are required on the impact of coastal erosion on beach amenity and assets at Cattle Bay;
- a longer term monitoring program should be established at Cocora Beach to determine if impact predictions are accurate and how any negative impacts shown by the monitoring would be mitigated.

The above matters are addressed in turn in the following sections.

Incorporation of both the Eden Safe Harbour wave attenuator and the proposed Cattle Bay wave attenuator in the wave modelling

DPIE (BCD) made the following specific points:

- wave modelling for the Cattle Bay wave attenuator should incorporate the adjacent approved Eden Safe Harbour wave attenuator to identify impacts on coastal erosion and how they should be managed; and
- both wave attenuators should be incorporated into the modelling to determine any interaction on coastal processes and impacts on the surrounding area.

Response

A wave impact statement for the proposed Cattle Bay wave attenuator for purposes of the EIS was prepared by the writer in a letter dated 21 February 2019, which was included as Appendix 13 to the EIS. This statement took into account wave modelling for the Cattle Bay wave attenuator and the Eden Safe Harbour wave attenuator as presented in the following three documents:

- Cattle Bay Marina, Eden – Wave Modelling, report prepared for RHDHV by Cardno, dated 28 July 2014;
- Cattle Bay Marina – Response to Submissions on EIS, Supplementary Statement on Wave Attenuator and Potential Impacts, letter prepared for AW Planning by RHDHV dated 8 April 2015; and
- the Addendum Review of Environmental Factors (AREF) prepared for the Department of Industry (DoI) by Advisian (2018), which set out the alignment and selected results of wave modelling for the currently approved Eden Safe Harbour Wave attenuator, being so-called Option 21.

The wave impact statement concluded, based on review of the above documents, that the proposed Cattle Bay wave attenuator:

- would not cause significant changes to swell wave direction and energy along Cocora Beach;
- would create more sheltered wave conditions along Cattle Bay Beach and a clockwise rotation of the beach (while retaining a sandy beach); and
- would have only minimal effects on wave heights, wave directions and wave energy at the location of the mussel farm.

As part of the preparation of this response to the submission from DPIE (BCD), I have made further contact with Mr Andrew Dooley of DoI who, as you know, has been responsible for the Eden Safe Harbour project. Mr Dooley has kindly made available to me the wave modelling report prepared by Cardno (2018) that supports the AREF for the currently approved Eden Safe Harbour wave attenuator, Option 21. It is evident from this report that:

- wave modelling included a scenario that incorporated both the approved Eden Safe Harbour attenuator and the proposed Cattle Bay wave attenuator, ie. addressed the matter raised by DPIE (BCD);
- wave modelling was undertaken for both local sea waves generated by winds blowing across Twofold Bay, as well as for the propagation of Tasman Sea swell waves into the study area;

- the energy-weighted mean wave directions for local sea and swell waves on Cocora Beach show minimal change due to the combined Eden Safe Harbour wave attenuator and Cattle Bay wave attenuator, thus supporting the conclusions made by the writer in the wave impact statement dated 21 February 2019 included as Appendix 13 in the EIS.

Extreme coastal events at Cocora Beach

DPIE (BCD) made the following specific points:

- extreme coastal events have not been included in the wave modelling report;
- the wave modelling has only considered up to a 50 year ARI event. To understand the impacts from larger coastal events, particularly for Cocora Beach, the model should be run for larger events, such a 100 year ARI.

Response

Wave modelling studies by Cardno (2014), Cardno (2017) and Cardno (2018) have demonstrated that:

- the behaviour of Cocora Beach such as beach alignment and incident wave conditions is predominantly a result of ocean swell;
- the eastern section of the Cattle Bay wave attenuator is aligned (purposely) such that reflected swell wave energy is directed away from (south of) Cocora Beach;
- the western section of the Cattle Bay wave attenuator is aligned (purposely) such that there is no reflection of swell waves as they travel towards Cocora Beach;
- the position of the Eden Safe Harbour wave attenuator is such that it is largely protected from swell by the existing Eden Harbour breakwater and consequently swell wave reflection towards Cocora Beach is minimal; and
- the implementation of the Cattle Bay wave attenuator and Eden Safe Harbour wave attenuator would have minimal impact on Cocora Beach up to the modelled 50 year ARI wave conditions.

There is no reason to believe that implementation of the Cattle Bay wave attenuator and Eden Safe Harbour wave attenuator would introduce significant impacts to Cocora Beach for coastal events larger than 50 year ARI. This is because the extreme coastal storm waves that potentially impact on Cocora Beach emanate from the south east sector, the direction and energy of these waves as they enter Twofold Bay and Snug Cove and approach Cocora Beach are controlled by existing natural features (headlands and water depth) and man-made features (Eden Breakwater), , and the particular alignment and positioning adopted for the two attenuators do not significantly affect wave energy and wave direction approaching Cocora Beach.

It is evident that the Eden Safe Harbour wave attenuator, which was modelled in combination with the Cattle Bay wave attenuator, and which was the subject of an AREF distributed to agencies by DoI for review, was subsequently approved based on consideration of wave modelling up to 50 year ARI only, which is considered reasonable.

Impacts of coastal hazards on land based component of the proposal

DPIE (BCD) made the following points:

- the EIS has not considered the impacts of coastal hazards on the land based component of the Cattle Bay marina development;
- Bega Valley Shire Council's Coastal Processes and Hazards Definition Study (2015) identifies hazard lines at Cattle Bay that indicate both immediate and longer term risks but the EIS has not considered the effects of coastal hazards including beach erosion and coastal inundation on the land based component of the proposal. The EIS should outline why it has not been considered, for example if the proponent is using a short term temporary structure prior to approval being sought for a tourist facility.

Response

Firstly, it can be stated that the proposed land based facilities are temporary in nature. They comprise a temporary (portable) building to house marina administration and toilets, a temporary car park, and temporary services arrangements. The temporary facilities on the land base will be replaced by a tourist facility which is the subject of a Part 3A Concept Plan Approval, when developed in the future.

The Bega Valley Shire Council's Coastal Processes and Hazards Definition Study (2015), prepared by BMT WBM, has been examined, specifically to identify the Erosion Map and Inundation Map for Cattle Bay Beach.

Figure 1 is a copy of the Erosion Map for Cattle Bay Beach. It shows the predicted position of the crest of the erosion escarpment for three planning periods; namely 'immediate' (over the next few years) which is plotted for 2010, and at years 2050 and 2100. The predicted position of the immediate erosion escarpment following the design 'storm bite' is shown to be more than 50m landward of the seawall at the back of Cattle Bay Beach.



Figure 1 Erosion Map for Cattle Bay Beach

The Erosion Map for Cattle Bay Beach cannot be relied upon, in my view. The erosion escarpment is not known to have extended landward of the seawall, which is understood to date from the late 1940s, even though a number of severe coastal storms have occurred over this time, including the June 2016 East Coast Low which is referred to in the submission by DPIE (BCD).

The problem with the Erosion Map is that it has adopted too high a value for storm bite having regard to the limited wave energy that can actually reach Cattle Bay Beach¹. Furthermore, the Erosion Map ignores the existence of the seawall, which is contradictory to the BMT WBM report itself which states in Section 4.6.13 (page 121) that 'It is noted that the erosion hazards along Cattle Bay are based on the assumption that seawalls along the embayment are of a sufficient standard to limit shoreline erosion along this section of the shoreline'.

Further commentary could be included if required in relation to the conservative values also adopted for future shoreline recession, eg. the underlying recession rate, where there would appear to be no strong evidence for net sediment loss in the historical record or a physical mechanism to explain such a loss.

A seawall can be expected to exist along Cattle Bay into the foreseeable future to protect the foreshore reserve owned by Bega Valley Shire Council. This seawall will thereby provide adequate protection for the proposed temporary land based component of the development.

¹ A value of 120 -150m³/m was adopted, corresponding to an estimated value (based on photogrammetry) for Aslings Beach, which is situated in a much more exposed semi open coast area.

There would not appear to be an Inundation Map for Cattle Bay Beach within the BMT WBM report. Table 4.9 of the report sets out an estimated inundation level (wave runup level) for the immediate planning period equal to 2.6mAHD. This estimate is considered reasonable.

Notwithstanding the estimated wave runup level is considered reasonable, the level would not be realised in practice due to the existence of the seawall (crest level approximately 2mAHD) and the relatively flat land behind the seawall. The wave runup would 'fold over' the crest of the seawall and proceed as a shallow sheet flow across the foreshore reserve, spreading and infiltrating thereby diminishing in elevation.

The proposed temporary (portable) marina building is located landward of the foreshore reserve, some 30m behind the seawall crest, at which distance the effects of wave runup would be expected to have fully dissipated. The floor of the temporary building is also elevated around 700mm above the existing ground level, accessed via steps and a ramp.

It is considered there is no significant risk to the temporary land based component of the proposal due to oceanic inundation. Well accepted adaption strategies exist to mitigate wave overtopping in the event the risk of inundation of the temporary structure becomes significant at a future time.

Impacts of coastal erosion on beach amenity and assets at Cattle Bay

DPIE (BCD) made the following point:

- in terms of coastal erosion, the modelling suggests there will be erosion associated with the reported clockwise rotation of Cattle Bay Beach. As such, further investigations are required on the impact of the coastal erosion on beach amenity and assets at Cattle Bay.

Response

The alignment of Cattle Bay Beach is driven by both swell and local sea waves. Given the beach is situated within the lee of the proposed Cattle Bay wave attenuator and marina, the wave energy conditions along the beach and the alignment of the beach would be affected by the proposal, as set out in the current EIS and in a previous letter dated 7 April 2015 I prepared in response to submissions on the original EIS. In summary:

- in terms of wave energy, the beach will become more sheltered and fluctuate less in response to ocean storms and episodes of strong wind waves from the south and south-south-west (reduced 'storm bite'). This is not viewed necessarily as an adverse impact, eg. there would be less risk to assets at Cattle Bay such as the old jetty and existing seawall; and
- in terms of beach alignment, a clockwise rotation of the beach is predicted as shown in Figure 2 (a copy of Figure 8.9 from Cardno, 2014). Importantly, no net erosion is predicted, a sandy beach width is expected to be retained (not lost), however it would be narrower at the western end and wider at the eastern end, evolving over time. As such, while there will be a change to Cattle Bay Beach the impact on beach amenity is not expected to be significant.

Longer term monitoring program at Cocora Beach

DPIE (BCD) made the following points:

- a longer term monitoring program should be established to determine if impact predictions from the modelling to Cocora Beach are accurate;
- the EIS should outline how the proponent will mitigate any negative impacts if shown by the longer term monitoring.

Response

It is noted that DoI has committed to a monitoring program for Cocora Beach in response to the submission from the then Office of Environment and Heritage (OEH) on the proposed Eden Safe Harbour wave attenuator – refer Mitigation Measure CP4 outlined in the Response to Submissions report prepared for DoI by Advisian (2018).

The proponent for Cattle Bay Marina should consult with DoI to establish a suitable joint monitoring program. In the event the monitoring identifies a negative impact (not predicted) it would be necessary to confirm the cause of the impact, eg.:

- recent dredging carried out for the cruise ship operations;
- Eden Safe Harbour wave attenuator;
- Cattle Bay wave attenuator;
- climate change.

Mitigation measures would depend on the nature of the impact and could be reasonably outlined in a final Operational Environmental Management Plan (OEMP) or the like, as a condition of any approval of the development application.



Figure 2 Beach Alignment Change Cattle Bay Beach

References

Advisian (2018), 'Response to Submissions Report – Eden Safe Harbour Project at Snug Cove, Eden NSW', prepared for the NSW Department of Industry, 13 April 2018

Cardno (2014), 'Cattle Bay Marina Wave Modelling', Report 59914148/R002, prepared for Royal HaskoningDHV, July 2014

Cardno (2017), 'Eden Wave Attenuator Wave Climate Study', Report 59914148/R003, prepared for Royal HaskoningDHV, October 2017

Cardno (2018), 'Design Basis Report – Final Report, Eden Wave Attenuator', Report 59918186/R001, prepared for Advisian, August 2018

I trust the above meets with your requirements. Please contact me should you require any clarification or additional information.

Yours faithfully



Greg Britton

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20 September 2019

RESPONSES TO AGENCY SUBMISSIONS REGARDING DEVELOPMENT APPLICATION 2019.208, CATTLE BAY MARINA, LOT 2 DP1138056 and LOT 4 DP1138056, CATTLE BAY ROAD EDEN

I refer to the submissions received from NSW Department of Primary Industries (DPI) (Fisheries) (dated 29th July 2019 and 19th August 2019) regarding the proposed Cattle Bay Marina. Below I provide my responses to comments made regarding issues relating to water quality, the marine environment and aquaculture.

NSW DEPARTMENT OF PRIMARY INDUSTRIES (DPI) (FISHERIES) - 29th July 2019

Construction Environmental Management Plan (CEMP)

The amendments to the CEMP required by DPI are suitable and would be included in the final CEMP. These amendments to the CEMP can be included as a Condition of Consent.

Any amendments regarding water quality raised by DPI Fisheries would also be included within the Water Quality Monitoring Program which would be required to be developed if the DA is approved and prior to construction (see these amendments below).

4.4 Water Quality

Daily turbidity monitoring during construction – This would be included within the Water Quality Monitoring Program; however, it is considered that daily turbidity monitoring would only be required while construction activities involving in-water works which have the potential to disturb the seabed (e.g. piling or the lowering of rock pinnacle) are being undertaken. Daily turbidity monitoring would be via a hand-held water quality meter measuring turbidity in NTU (not based on collection of field samples and lab analysis which would not allow for the immediate detection of issues and/or exceedances of trigger values during construction. Samples for lab analysis would only be taken if trigger value exceedances occurred).

Visual monitoring of turbid plumes – This would be included in the Water Quality Monitoring Program and conducted during construction, around the construction zone. This would be undertaken by the personnel collecting water quality data and should also be undertaken by the construction manager (or delegate).

The Water Quality Monitoring Program would outline turbidity trigger values as already proposed.

There would be a requirement in the CEMP that any construction vessel anchors, cables, barges, spuds etc are not located within areas of seagrass or rocky reef, with allowance made for any periods where HSE or emergency issues require otherwise. Habitat maps would be provided to contractors / included in the CEMP prior to works so they can duly plan the location of placement of this equipment prior to mobilising to site. This measure has already



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been included within mitigation to protect marine habitats in the Cattle Bay Marine Ecology Report 2019 (see Section 10.1.1).

An additional mitigation measure, as follows, would be added to the EIS / CEMP as requested by NSW DPI, if this measure is feasible for the contractor during all work stages – "Hydraulic lines on all plant operating on or adjacent to the water should be sleeved to contain any accidental leaks or bursts". This should be included as a Condition of Consent.

NSW DPI Permit for Dredging and Reclamation and to Harm Marine Vegetation

We are aware that these permits would be required for the project and the requirement for these permits has previously been noted. A Permit Application for both would be completed and approval sought from NSW DPI if the DA is approved. This should be included as a Condition of Consent.

Water Quality Monitoring Program

We are aware that a Water Quality Monitoring Program for implementation during construction and operation needs to be developed if the DA is approved, and prior to construction. This Program would be in accordance with the Water Quality Management Plan 2019, with further detail provided, along with all additional requirements relating to water quality received in the current SEARs. Note that most of these mitigation measures below are already included within the Cattle Bay Marina Marine Ecology Report 2019 and the Cattle Bay Marina Water Quality Management Plan 2019.

We confirm that the requirements for the Water Quality Monitoring Program received from NSW DPI which would be included are:

- ❖ Daily turbidity monitoring during construction – Daily monitoring of turbidity would only be required during construction periods involving in-water works such as piling / lowering of the rock pinnacle, which have potential to create turbidity issues. It is not considered to be necessary during other construction works which would not disturb the seafloor.
- ❖ Visual monitoring of turbidity plumes would be undertaken at the worksite during construction.
- ❖ Sleeves are to be placed around hydraulic lines.
- ❖ No placement of construction vessel anchors, cables, barges, spuds etc located within areas of seagrass or rocky reef.
- ❖ Debris and rubbish located in the vicinity of the existing jetty is to be removed.
- ❖ Spill kits suitable for containment of fuel and oil spills must be kept on site during construction.
- ❖ DPI Fisheries is to be notified immediately in the case of a fish kill in the vicinity of the works (1800 043 536). In such cases all works other than emergency response procedures are to cease until the issue is rectified and written approval to proceed is provided by DPI Fisheries.
- ❖ Testing for faecal coliforms is to be added within the Post Construction Water Quality Monitoring Program.



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General Comments – Aquaculture

Mussel aquaculture in Twofold Bay has already been described in Section 5.4 of the Cattle Bay Marina Marine Ecology Report 2019. The aquaculture areas noted by NSW DPI have been identified and the risks to aquaculture during construction and operation have also been included (Section 9.5). Required mitigation measures to avoid impacts to these areas as provided in the previous SEARs have also been included within the current mitigation measures (Section 10.4). Eden Mussels have been consulted previously regarding this project and their concerns at that time addressed.

The additional concerns raised by DPI and the NSW Food Authority in relation to an inadequate supply of onshore toilet and shower facilities in the current plans is warranted given the high proposed number of berths (154), potential vessel sizes (with super yacht berthing) and the associated high number of potential residents at any given time. Therefore, it is agreed to double the number of toilets in Stage 2 of the marina development in a Condition of Consent.

Operational Environment Management Plan

All DPI's proposed amendments to the OEMP would be made if the DA is approved and should be included as Conditions of Consent.

Testing for faecal coliforms is also relevant to water quality impacts and we confirm this would be included within the Operational Water Quality Monitoring Program. This would be developed if the DA is approved and this requirement should be included as a Condition of Consent.

Recreational Fishing

It is agreed that access for recreational fishers should be retained at the site as is already outlined in the EIS and supported by NSW DPI.

Proposed Conditions of Consent

All proposed Conditions of Consent raised by NSW DPI would be applied, noting that many of these are already outlined in our mitigation measures.

Introduced Marine Species Management Plan

There is a requirement in the proposed Conditions of Consent to produce an Introduced Marine Species Management Plan for Construction and Operation – we are aware that this has been required for other recent projects in Eden and if the DA is approved would be prepared prior to construction.

NSW DEPARTMENT OF PRIMARY INDUSTRIES (DPI) (FISHERIES) - 19th August 2019

Marine Pest Species

In their supplementary submission, NSW DPI (Fisheries) makes note of three pest species of concern which are known to occur in Twofold Bay; European Fan Worm, European Green



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Shore Crab and Pacific Oyster. Marine pests which are known to occur in Twofold Bay or have the potential to be introduced (including these species) have been described in Section 5.3 of the Cattle Bay Marina Marine Ecology Report 2019, along with potential impacts of marine pests associated with construction and operation (Section 9.4) and measures to manage / mitigate risks associated with marine pests during construction and operation (Section 10.3).

The Introduced Marine Species Management Plan which is required to be prepared if the DA is approved would include the following issues raised by NSW DPI, along with other appropriate information (including background, risk and mitigation/management):

- ❖ Consider any likely interaction that the activities of the development may have with the pest species European Fan Worm, European Green Shore Crab and Pacific Oyster.
- ❖ Describe how biosecurity risk would be mitigated.

SUMMARY OF REQUIRED PROGRAMS + PLANS IF DA 2019.208 IS APPROVED

We acknowledge that the following Programs / Plans and Permits relating to the marine environment would be required to be prepared if the DA 2019.208 is approved and prior to commencement of construction.

1. Water Quality Monitoring Program
2. NSW DPI Permit to Harm Marine Vegetation
3. Marine Mammal Protection Plan
4. Introduced Marine Species Management Plan

Please don't hesitate to call me for clarification on any of the above.

Regards

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Classification: Project related

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Dear Andrew

**CATTLE BAY MARINA – DA 2019.208
COMMENT BY DPI (NSW FISHERIES)**

I refer to your email of 9 September 2019 which included a comment on the proposed Cattle Bay Marina made by DPI (NSW Fisheries) and a request that I prepare a response. I am pleased to provide a response, details of which are set out below.

DPI (NSW Fisheries) Comment

Super Yacht Berthing

We note that the super-yacht berthing area is situated in relatively shallow water (adjacent to and within the 5m depth contour). The EIS provided states that no dredging of Cattle Bay or Twofold Bay is required or proposed associated with this DA. DPI Fisheries is concerned that this location will provide inadequate keel clearance for its intended purpose and believe that further evidence is needed to confirm that dredging will not be required in this location. We also have concerns about the capacity of the "muck truck" in relation to the sewage disposal requirements for "super yachts". The effectiveness of the "muck truck" as an effective sewage disposal method for "super yachts" or provision of alternative arrangements should be detailed.

Response on underkeel clearance

The proposed super-yacht occasional berthing area is situated adjacent to the seaward half of the main north-south marina walkway that would extend off the end of the existing jetty. The existing water depth in this area is greater than 6m relative to Twofold Bay Hydro Datum (Chart Datum), as shown in Figure 1 below.

The length overall (LOA) of super-yachts visiting Eden would not be expected to exceed 40 to 50m. A graph showing the draft of super-yachts versus LOA (refer Figure 2) indicates that the average draft of a

50m super-yacht would not be expected to exceed 2.8m and that 90% of drafts would not be expected to exceed 3.5m¹.

The information in Figure 1 and Figure 2 indicates that significant underkeel clearance would be available at Chart Datum for super-yachts up to 50m LOA, in the order of 2.5m to 3.2m, well in excess of requirements. Accordingly, it can be confirmed that dredging would not be required.

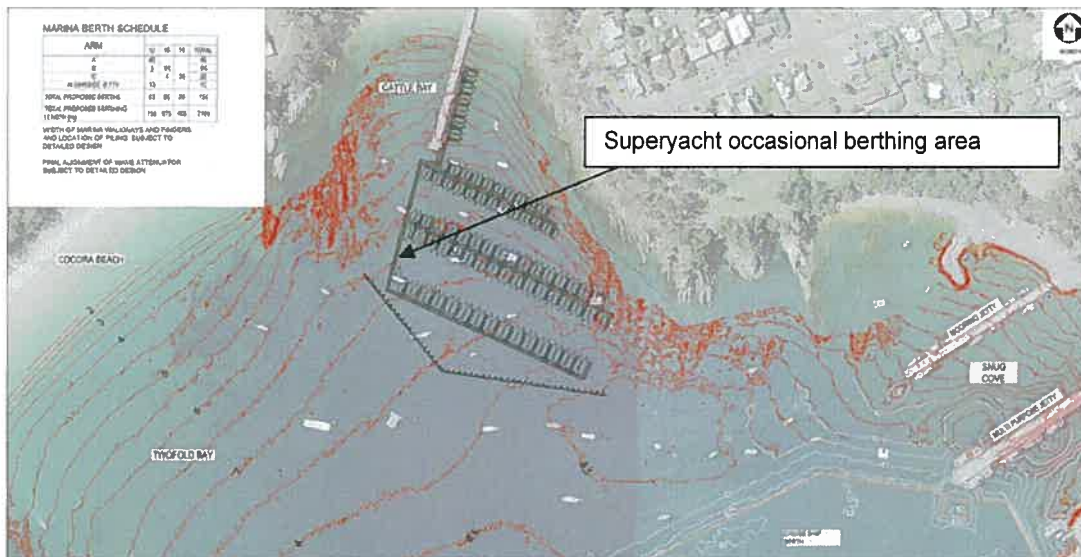


Figure 1 Existing water depths in Cattle Bay relative to the super-yacht occasional berthing area

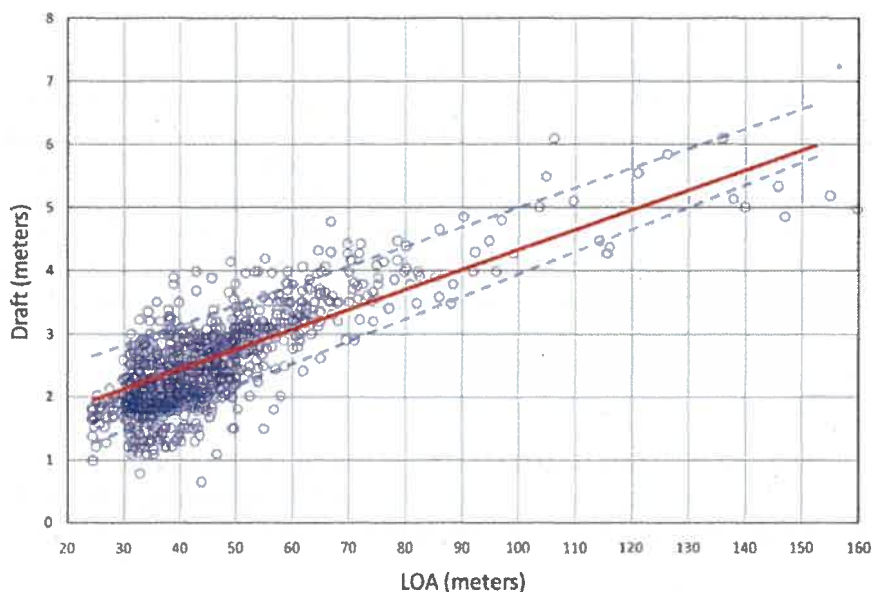


Figure 2 Super-yacht draft versus length overall (LOA), indicating the average draft value and 90% envelope

¹ Source: *The World Association of Waterborne Transport Infrastructure (2013), 'Design and Operational Guidelines for Superyacht Facilities', PIANC Report No. 134 Recreational Navigation Commission.*

Response on sewage disposal

The mobile sewage pump out trolleys ('muck trucks') would typically cater for vessels within the marina berths up to the maximum length of 18m. During the occasional visit by a super-yacht, sewage pump out, if required, would be managed by the super-yacht coming alongside a berth in Snug Cove, e.g. the Breakwater Wharf, and pumping out into a road tanker. When the super-yacht is berthed at the marina, the vessel would likely shut down its laundry and arrange for land based laundry services locally, as is common practice. This would cut down substantially on grey water and the need for pump out, in which case the mobile trolleys may be able to meet demand. In any case the alternative of pumping out to a road tanker elsewhere such as Snug Cove/Breakwater Wharf, as noted above, would be available.

I trust the above meets with your requirements. Please contact me should you require any clarification or additional information.

Yours faithfully



Greg Britton

Technical Director
Maritime & Aviation

