

APPENDIX E THREATENED SPECIES EVALUATIONS

The tables in this attachment present the habitat evaluation for threatened species, ecological communities and endangered populations listed in the Atlas of NSW Wildlife Bionet¹ database (Lord Howe Island LGA search area) and the Commonwealth EPBC *Protected Matters Search Tool*² (within a 10 kilometre radius of the site).

The likelihood of occurrence is based on presence of habitat, proximity of nearest records and mobility of the species (where relevant). The assessment of potential impact is based on the nature of the proposal, the ecology of the species and its likelihood of occurrence. The following categories and terms are used:

Presence of habitat:

Present: Potential or known habitat is present within the study area

Absent: No potential or known habitat is present within the study area

Likelihood of occurrence

Unlikely: Species known or predicted within the locality but unlikely to occur in the study area

Possible: Species could occur in the study area

Present: Species was recorded during the field investigations

Possible to be impacted

No: The proposal would not impact this species or its habitats. No Assessment of Significance (AoS) is necessary for this species or communities

Yes: The proposal could impact this species or its habitats. An AOS may be required for these species or communities.

The distribution and habitat information used in the evaluation has been sourced from species profiles in The LHI Biodiversity Management Plan (DECC 2007), OEH threatened species database or the Commonwealth Species Profiles and Threats database (SPRAT) unless otherwise stated.

OEH threatened species database: <http://www.threatenedspecies.environment.nsw.gov.au/index.aspx>

Commonwealth SPRAT: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

¹ The *Atlas of NSW Wildlife* is administered by the NSW Office of Environment and Heritage (OEH) and is an online database of fauna and flora records that contains over four million recorded sightings.

² This online tool is designed for the public to search for matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

E.1 EVALUATION OF THE LIKELIHOOD AND EXTENT OF IMPACT ON THREATENED FLORA SPECIES

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Possible impact?
Trees				
Coast Euodia <i>Melicope vitiflora</i> E TSC	A small tree with compound leaves in 3 leaflets growing in small populations in subtropical and littoral rainforest. Only LHI record in NSW Wildlife Atlas is on Roach Island. The species is not included in the census in Rodd and Pickard (1983) or in more recent literature.	Absent (based on known distribution)	Unlikely	No
Shrubs				
Knicker Nut <i>Caesalpinia bonduc</i> E TSC	A low, woody, scrambling shrub with sharp, recurved hooks on leaf stems and large pinnate leaves, growing on sandy, coral-derived soil close to the shoreline, in coastal scrub vegetation. Only found in the northern part of Lord Howe Island, in the vicinity of Ned's Beach and near Old Settlement Beach.	Absent	Unlikely	No
Lord Howe Island Broom <i>Carmichaelia exsul</i> E TSC	An endemic broom-like shrub, with leafless, flattened, ridged branches known from less than 20 locations in the southern mountains. Occurs between 300 - 500 m, often found at the base of cliffs, with Mountain Rose - Fitzgeraldii forest, Mountain Palm forest and mixed fern and herb vegetation.	Absent	Unlikely	No
Small-leaved Currant Bush <i>Coprosma inopinata</i> E TSC	A compact endemic shrub to 50 cm, with small, pointed leaves. Largely restricted to the narrow, exposed south-westerly or south-easterly ridges of Mounts Lidgbird and Gower, and nearby more sheltered pockets. All populations are reserved within the Permanent Park Preserve Only found in the southern mountains of Lord Howe Island.	Absent	Unlikely	No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Possible impact?
Hutton's Geniostoma <i>Geniostoma huttonii</i> E TSC E EPBC	Scrambling shrub to 1 m with paired glossy leaves. Grows in rainforest, Curly Palm forest and scrub, on south and east-facing shaded cliffs amongst open, stunted shrubs. Dominant associates include Blue Plum (<i>Chionanthus quadristamineus</i>), Mountain Rose (<i>Metrosideros nervulosa</i>) and Fitzgeraldii (<i>Dracophyllum fitzgeraldii</i>). Mainly found on remote ridges of Mount Gower and Mount Lidgbird in the southern mountains.	Absent	Unlikely	No
Little Mountain Palm <i>Lepidorrhachis mooreana</i> CE TSC CE EPBC	A short endemic palm with a sturdy trunk to 2 m tall. Occurs above approximately 740 m, and restricted to the cloud forest vegetation at the summits of Mt Gower and Mt Lidgbird.	Absent	Unlikely	No
Mountain Xylosma <i>Xylosma parvifolia</i> E TSC E EPBC	An upright endemic shrub with small, toothed leaves. Only found in the Permanent Park Preserve on exposed, remote parts of the southern mountains. Grows mostly in very steep and exposed terrain amongst dense, stunted vegetation on cliffs and ridges, and also in low numbers in Cloud Forest on Mts Lidgbird and Gower. Dominant associates include Mountain Rose (<i>Metrosideros nervulosa</i>), <i>Melicope polybotrya</i> , <i>Alyxia squamulosa</i> , <i>Olearia elliptica</i> and <i>Guioa coriacea</i> .	Absent	Unlikely	No
Herbs				
Lord Howe Island Morning Glory <i>Calystegia affinis</i> CE TSC CE EPBC	A thin-stemmed twiner with arrow head-shaped leaves. Occurs in two different habitats on LHI, in lowland areas in the north of the island on the lower slopes of Dawsons Ridge, and high in the southern mountains on Mt Lidgbird. The mountain habitat is an open, sunny, moist area near semi-permanent water flows. The lowland habitat is on a south facing slope in Blackbutt-Greybark forest, beside the Max Nicholls track with an introduced grass understorey (buffalo grass). Both habitats are on basalt.	Marginal	Unlikely (based on known distribution)	No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Possible impact?
Sand Spurge <i>Chamaesyce psammogeton</i> E TSC	A mat-forming herb growing on foredunes, pebbly strandlines and exposed headlands, often with Spinifex (<i>Spinifex sericeus</i>) and Prickly Couch (<i>Zoysia macrantha</i>). Restricted to Blinkie Beach dune on Lord Howe Island. The proposed barge landing access passes through marginal Coral Sand Beach and Dune community habitat.	Marginal	Unlikely (based on distributed and habitat quality)	No
Phillip Island Wheat Grass <i>Elymus multiflorus</i> subsp. <i>kingianus</i> CE TSC CE EPBC	A tufted perennial grass 30-100 cm in height, with narrow glaucous leaves 3-5 mm wide. On LHI it occurs at the intergrade between exposed basalt-derived rocky cliffs and a shrub zone that merges into littoral rainforest. Associates include <i>Dichelachne crinita</i> , <i>Poa poiformis</i> , <i>Senecio howeanus</i> , <i>Sporobolus virginicus</i> , <i>Tetragonia tetragonioides</i> , <i>Cassinia tenuifolia</i> , <i>Dodonaea viscosa</i> , <i>Leucopogon parviflorus</i> , <i>Melaleuca howeana</i> and <i>Melanthera biflora</i> . Restricted to two locations with an estimated mature population size of less than 50 plants.	Absent	Unlikely	No
Ferns				
Rock Shield Fern <i>Polystichum moorei</i> E TSC E EPBC	A small, hardy fern that grows on rocks, only found in the southern part of LHI. Grows on rocks in overhanging caves on basalt cliffs and on coral-derived sedimentary rock, mostly in the mountains, with one population close to the beach. Fewer than 30 mature plants are known from five locations.	Absent	Unlikely	No
EECs				
Gnarled Mossy Cloud Forest on Lord Howe Island CE TSC	An endemic forest 2-8 m tall, restricted to the summit plateau of Mt Gower and on the narrow summit ridge of Mt Lidgbird. On Mt Gower, the dominant species are <i>Zygogynum howeanum</i> and <i>Dracophyllum fitzgeraldii</i> . On Mt Lidgbird, the canopy is <i>Hedyscepe canterburyana</i> , <i>Cryptocarya gregsonii</i> , <i>Dysoxylum pachyphyllum</i> , <i>Negria rabdothamnoides</i> , <i>Pittosporum erioloma</i> and <i>Cyathea macarthurii</i> .	Absent	Unlikely	No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Possible impact?
Lagunaria Swamp Forest on Lord Howe Island CE TSC	<p>'Sallywood Swamp Forest' is dominated by Sallywood (<i>Lagunaria Patersonia</i>), sometimes growing with <i>Hibiscus tileaceus</i> and <i>Myoporum insulare</i>, sparse shrubs including <i>Aegiceras corniculatum</i>, <i>Cryptocarya triplinervis</i> and <i>Celtis conferta</i> subsp. <i>Amblyphylla</i>, and groundcover species <i>Cyperus brevifolius</i>, <i>Cyperus lucidus</i>, <i>Commelina cyanea</i> and <i>Hydrocotyle hirta</i>. Restricted to low-lying swampy areas at altitudes below 20 m. Originally restricted to five small patches in the mid island lowlands, some patches have since been destroyed. None are in the Permanent Park Preserve.</p> <p>Scattered individual <i>Lagunaria patersonia</i> plants do not form part of the community.</p>	Absent	Unlikely	No
V TSC - listed as Vulnerable under the NSW <i>Threatened Species Conservation Act 1995</i>			V EPBC - listed as Vulnerable under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>	
E TSC - listed as Endangered under the NSW <i>Threatened Species Conservation Act 1995</i>			E EPBC - listed as Endangered under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>	
CE TSC - listed as Critically Endangered under the NSW <i>Threatened Species Conservation Act 1995</i>			CE EPBC - listed as Critically Endangered under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>	

E.2 EVALUATION OF THE LIKELIHOOD AND EXTENT OF IMPACT ON THREATENED FAUNA

Species and Status	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for impact?
Birds				
Refer to the bird assessment (Ambrose Ecological Services 2016) in Appendix B for seabird and land bird evaluations.				
Reptiles				
Lord Howe Skink <i>Cyclodina (Oligosoma) lichenigera</i> V TSC V EPBC	Endemic skink found in a range of habitats including lowland rainforest, montane rainforest and <i>Poa poiformis</i> grassland. Requires rocks for shelter, and prefers sandy substrate. Nocturnal, shelters under under rocks, in rock cavities or tree crevices during the day and forages for arthropods in litter at night. The closest recent record to the subject site is on the lagoon foreshore at the Pinetrees boathouse (R. Bray unpub PhD research), 600 metres from the site.	Present (marginal)	Unlikely	No
Lord Howe Gecko <i>Christinus guentheri</i> V TSC V EPBC	Possibly an endemic species, distinct from Norfolk Island taxon (R. Bray, unpub PhD research). Inhabits a wide range of forest types from lowland rainforest to montane rainforest to <i>Poa poiformis</i> grassland. Nocturnal, shelters under under rocks, in rock cavities or tree crevices during the day and at night forages for arthropods in litter and in tree branches (where it is known to feed on Sallywood nectar). Occurs in Kentia Palm Closed Sclerophyll Forest and Lowland Mixed Closed Forest north and east of the subject site.	Present (marginal)	Unlikely	No
Invertebrates				
Lord Howe Wood-feeding Cockroach <i>Panesthia lata</i> E TSC	Endemic species locally extinct on the main island and are now confined to offshore islands.	Absent	Unlikely	No

Species and Status	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for impact?
Lord Howe Phasmid <i>Dryocelus australis</i> CE TSC CE EPBC	Endemic species locally extinct on the main island and are now confined to offshore islands.	Absent	Unlikely	No
Lord Howe Earthworm <i>Pericryptodrilus nanus</i> E TSC	Endemic species restricted to the northern ridge on Mount Gower.	Absent	Unlikely	No
Magnificent Helicarionid Land Snail <i>Gudeoconcha sophiae magnifica</i> CE TSC CE EPBC	Little known about the biology and ecology of this species. Early records indicate preferred habitat is forest with dead timber, bark and fallen palm leaves, on soil formed of the decomposed coral sand rock (Etheridge 1889). Geographic distribution is confined to the southern half of the island extending from the foothills west of Intermediate Hill in the centre of the island to the south of the summit of Mount Gower.	Absent	Unlikely	No
Whitelegge's Land Snail <i>Pseudocharopa whiteleggei</i> CE TSC CE EPBC	Little known about biology and ecology of this species; recorded living under and inside logs and in moss. Recent surveys suggest the species has disappeared from Mount Lidgbird and is now confined to Mount Gower.	Absent	Unlikely	No
Mount Lidgbird Charopid Land Snail <i>Pseudocharopa ledgbirdi</i> CE TSC CE EPBC	Little known about biology and ecology; recorded living on wet rock surfaces on the Mount Lidgbird summit. While the pre 1945 distribution of this species included Mount Gower, Mount Lidgbird and the Erskine Valley, it now appears confined to Mount Gower.	Absent	Unlikely	No
Lord Howe Flax Snail, Lord Howe Placostylus <i>Placostylus bivaricosus</i> E TSC	A large endemic land snail with 3 subspecies, inhabiting leaf litter under forest canopy cover, usually in damp shady locations, less common at higher elevations and avoiding open areas. Ponder and Chapman (1999) found live individuals sheltering	Marginal	Unlikely	Yes

Species and Status	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for impact?
E EPBC	<p>under well-developed moisture-retaining leaf litter in forest, often but not exclusively in the vicinity of Banyan trees and mostly on calcarenite-derived soils and sandy soils. Recent records are either Kentia Palm forest or Greybark– Blackbutt closed forest.</p> <p>Distribution is currently restricted to the northern, lower end of the island, from immediately south-east of the airport to North Bay (although small populations may survive in the southern Mountains).</p> <p>Board habitat modelling maps show potential Placostylus habitat (High Quality B) in forest at and adjacent to the subject site.</p>			
<p>Masters' Charopid Land Snail <i>Mystivagor mastersi</i> CE TSC CE EPBC</p>	<p>Little known about biology and ecology. Recorded from only a few sites on LHI, including the summit of Mount Lidgbird, Mt Gower, Blinky Beach and Boat Harbour. Now suspected to be restricted to Mount Lidgbird and Mount Gower.</p>	Absent	Unlikely	No
<p>V TSC - listed as Vulnerable under the NSW <i>Threatened Species Conservation Act 1995</i> E TSC - listed as Endangered under the NSW <i>Threatened Species Conservation Act 1995</i> CE TSC - listed as Critically Endangered under the NSW <i>Threatened Species Conservation Act 1995</i></p>			<p>V EPBC - listed as Vulnerable under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> E EPBC - listed as Endangered under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> CE EPBC - listed as Critically Endangered under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> C - CAMBA, J-= JAMBA, K - ROKAMBA (migratory bird agreements)</p>	