

▶ APPENDIX E

Likelihood of Occurrence Assessment

Appendix E Likelihood of occurrence assessment

A list of MNES with the potential to occur within the project region was generated through a search of protected matters using DoEE's online Protected Matters Search Tool (PMST, see Appendix B). The MNES included in this list were then assessed to determine their likelihood of occurrence within the project area. This assessment took into account:

- Results of studies undertaken within the vicinity of the Port Hay Point (as summarised in Jacobs 2016) and any existing data for the region more broadly.
- The habitat requirements and known distribution of species and ecological communities.
- Professional judgement from this assessment's authors.

The likelihood of occurrence assessment categorised MNES into five categories as follows:

- Known: the species or ecological community was or has been observed within the Project area
- Likely: a medium to high probability that a species or ecological community occurs within the Project area
- Potential: suitable habitat for a species or ecological community occurs within the Project area, but there is insufficient information to categorise the species or ecological community as likely to occur, or unlikely to occur
- Unlikely to occur: a very low to low probability that a species or ecological community occurs within the Project area
- Not occurring: habitat within the Project area and in the vicinity is unsuitable for the species or ecological community

The results of this assessment are provided in the tables below.

Table 18: Likelihood of occurrence – threatened species and ecological communities

Scientific Name	Common name	EPBC Act listing status	Likelihood of occurrence	Comment / justification
BIRDS				
<i>Calidris canutus</i>	Red Knot	Endangered, Migratory	Known	There are a number of significant shorebird feeding and roosting sites in the project area. The region is known to support over 23,000 shorebirds annually including this species.
<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically endangered, Migratory	Known	There are a number of significant shorebird feeding and roosting sites in the project area. The region is known to support over 23,000 shorebirds annually including this species. This species is frequently encountered along the coastline from Mackay Harbour to Armstrong Beach.
<i>Calidris tenuirostris</i>	Great Knot	Critically endangered, Migratory	Known	There are a number of significant shorebird feeding and roosting sites in the project area. The region is known to support over 23,000 shorebirds annually including this species.
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Vulnerable , Migratory	Known	As above
<i>Charadrius mongolus</i>	Lesser Sand Plover	Endangered, Migratory	Known	As above
<i>Erythrotriorchis radiates</i>	Red Goshawk	Vulnerable	No	Terrestrial species
<i>Fregetta grallaria grallaria</i>	White-bellied Storm-Petrel	Vulnerable	Unlikely	This species' pelagic distribution includes the Coral Sea, Tasman Sea and around its breeding islands (Lord Howe Island group). Individuals have been recorded foraging over near-shore waters off the Queensland coast.
<i>Geophaps scripta scripta</i>	Squatter Pigeon	Vulnerable	No	Terrestrial species
<i>Limosa lapponica baueri</i>	Bar-tailed Godwit (western Alaskan)	Vulnerable, Migratory	Potential	This is a sub-species of the Bar-tailed Godwit and is known to occur in northern Australia. There are no current records of its occurrence in the project area or region, however, there are many records of the

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				Bar-tailed Godwit and therefore there is also the potential for the western Alaskan sub-species to occur.
<i>Limosa lapponica menzbieri</i>	Northern Siberian Bar-tailed Godwit	Critically endangered, Migratory	Potential	This is a sub-species of the Bar-tailed Godwit and is known to occur in northern Australia. There are no current records of its occurrence in the project area or region, however, there are many records of the Bar-tailed Godwit and therefore there is also the potential for the northern Siberian sub-species to occur.
<i>Neochmia ruficauda ruficauda</i>	Star Finch	Endangered	No	Terrestrial species
<i>Macronectes giganteus</i>	Southern Giant-Petrel	Endangered	Unlikely	This species occurs primarily in Antarctic waters, where it breeds on the Antarctic Continent and sub-Antarctic islands. It may occur in sub-tropical areas.
<i>Peophila cincta cincta</i>	Black Throated Finch	Endangered	No	Terrestrial species
<i>Numenius madagascariensis</i>	Eastern Curlew	Critically endangered, Migratory	Known	There are a number of significant shorebird feeding and roosting sites in the project area. The region is known to support over 23,000 shorebirds annually including this species. This species is frequently encountered along the coastline from Mackay Harbour to Armstrong Beach.
<i>Pterodroma neglecta</i>	Kermadec Petrel	Vulnerable	Unlikely	This species' pelagic distribution is thought to be in subtropical and tropical waters from ~ 20° S to 35° S. It breeds around Lord Howe and Norfolk Islands.
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Unlikely	This species has been recorded in West Mackay, however it occupies freshwater wetland habitats.
<i>Tyto novaehollandiae kimerli</i>	Masked Owl (northern)	Vulnerable	No	Terrestrial species
FROGS				

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<i>Taudactylus eungellensis</i>	Eungella Day Frog	Vulnerable	No	Terrestrial species
MAMMALS				
<i>Balaenoptera musculus</i>	Blue Whale	Endangered Migratory	Unlikely	There are no known feeding or aggregation areas for the Blue Whale within offshore waters of Queensland. The species is wide ranging and widely distributed. It is unlikely that individuals would regularly pass through the offshore area adjacent to Hay Point.
<i>Dasyurus hallucatus</i>	Northern Quoll	Endangered	No	Terrestrial species
<i>Macroderma gigas</i>	Ghost Bat	Vulnerable	No	Terrestrial species
<i>Megaptera novaeangliae</i>	Humpback Whale	Vulnerable Migratory	Known	Humpback whales migrates through the project area from June to October, peaking in August. Whales use the waters off Hay Point during their migration and females with calves have been observed within the port limits.
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	Vulnerable	No	Terrestrial species
<i>Petauroides volans</i>	Greater Glider	Vulnerable	No	Terrestrial species
<i>Phascolarctos cinereus</i>	Koala	Vulnerable	No	Terrestrial species
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	No	Terrestrial species
<i>Rhinolophus robertsi</i>	Large-eared Horseshoe Bat	Endangered	No	Terrestrial species
<i>Xeromys myoides</i>	Water Mouse, False Water Rat	Vulnerable	Known	The region is considered a stronghold for this species. It inhabits the mangrove communities lining creeks and estuaries.
REPTILES				
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered Migratory	Known	Loggerhead turtles are known to foraging in the project area. There are occasional records of nesting in the region.

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<i>Chelonia mydas</i>	Green Turtle	Vulnerable Migratory	Known	Green turtles are the most frequently observed of all turtle species in the study area. The inshore areas of the Port of Hay Point support a small resident population of Green Turtles that forage on algae covered reefs and deepwater seagrass. Low density turtle nesting has been observed within the port limits and occurred from Nov - April.
<i>Denisonia maculata</i>	Ornamental Snake	Vulnerable	No	Terrestrial species
<i>Dermochelys coriacea</i>	Leatherback Turtle	Endangered Migratory	Known	This species has been recorded in the Hay Point region.
<i>Egernia rugosa</i>	Yakka Skink	Vulnerable	No	Terrestrial species
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Vulnerable Migratory	Known	This species has been recorded in the Hay Point region.
<i>Lepidochelys olivacea</i>	Olive Ridley Turtle	Endangered Migratory	Known	This species has been recorded in the Hay Point region.
<i>Natator depressus</i>	Flatback Turtle	Vulnerable Migratory	Known	This species is known to forage in the waters of the project area and nests in the region. Hay Point Beach and Salonika Beach are known to be the most heavily used nesting beaches. The region supports between 30 - 100 nesting turtles annually.
<i>Rheodytes leukops</i>	Fitzroy River Turtle	Vulnerable	No	Freshwater species
SHARKS				
<i>Carcharodon carcharias</i>	Great White Shark	Vulnerable	Unlikely	This species occurs from central Queensland around the south coast to north-west Western Australia. Mackay is the most northern record in Queensland.
<i>Pristis zijsron</i>	Green Sawfish	Vulnerable	Unlikely	Habitat within the project area may be suitable, however, there have been no reports of the Green Sawfish south of Cairns since 1960s. It

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				is therefore considered unlikely to occur within the near shore waters of Hay Point.
<i>Rhincodon typus</i>	Whale Shark	Vulnerable Migratory	Unlikely	The Whale Shark has not previously been recorded within the waters of Hay Point. It is most commonly seen in waters off northern Western Australia, Northern Territory and Queensland, with the main aggregation area at Ningaloo Reef in WA.
PLANTS				
<i>Cycas ophiolitica</i>		Endangered	No	Terrestrial species
<i>Bosistoa transversa</i>		Vulnerable	No	Terrestrial species
<i>Dichanthium setosum</i>	Bluegrass	Vulnerable	No	Terrestrial species
<i>Eucalyptus raveretiana</i>	Black Ironbox	Vulnerable	No	Terrestrial species
<i>Graptophyllum ilicifolium</i>	Holy-leaved Graptophyllum	Vulnerable	No	Terrestrial species
<i>Omphalea celata</i>		Vulnerable	No	Terrestrial species
<i>Phaius australis</i>	Lesser Swamp-orchid	Endangered	No	Terrestrial species
THREATENED ECOLOGICAL COMMUNITIES				
Broad leaf tea-tree (<i>Melaleuca viridiflora</i>) woodlands in high rainfall coastal north Queensland		Endangered	No	Terrestrial community
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia		Critically endangered	No	Terrestrial community

Table 19: Likelihood of occurrence – migratory species (in addition to those listed above)

Common name	Scientific name	EPBC Act listing status	Likelihood of occurrence	Comment / justification
MIGRATORY MARINE BIRDS				
<i>Anous stolidus</i>	Common Noddy	Migratory	Unlikely	Offshore or pelagic species
<i>Apus pacificus</i>	Fork-tailed Swift	Migratory	Unlikely	Aerial species - fly over only
<i>Ardenna carneipes</i>	Flesh-footed Shearwater	Migratory	Unlikely	Offshore or pelagic species
<i>Fregata ariel</i>	Lesser Frigatebird	Migratory	Unlikely	Offshore or pelagic species
<i>Fregata minor</i>	Greater Frigatebird	Migratory	Unlikely	Offshore or pelagic species
<i>Sternula albirfrons</i>	Little Tern	Migratory	Potential	This species inhabit sheltered coastal environments. There are no breeding colonies in the project area or region.
MIGRATORY MARINE SPECIES				
<i>Anoxypristis cuspidata</i>	Narrow Sawfish	Migratory	Unlikely	This species' Australian distribution is unclear though it is most common in the Gulf of Carpentaria with southward ranges extending to Broad Sound in Queensland.
<i>Balaenoptera edeni</i>	Bryde's Whale	Migratory	Unlikely	This species has not been recorded in the region. It is distributed in waters between 40° S and 40° N, primarily in temperatures exceeding 16.3 °C.
<i>Crocodylus porosus</i>	Salt-water Crocodile	Migratory	Known	This species is known to inhabit the creeks and estuaries of the project area.
<i>Dugong dugon</i>	Dugong	Migratory	Known	Dugongs are known to occur in the waters off Hay Point. They are not known to forage in the project area due to the low abundance of seagrass.
<i>Lamna nasus</i>	Porbeagle	Migratory	Unlikely	This species inhabits temperate, subarctic and subantarctic waters of the North Atlantic and Southern Hemisphere. In Australia, it occurs in waters from southern Queensland to south-west Australia

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<i>Manta alfredi</i>	Reef Manta Ray	Migratory	Potential	This species may occur in waters off Hay Point
<i>Manta birostris</i>	Giant Manta Ray	Migratory	Potential	This species may occur in waters off Hay Point
<i>Orcella brevirostris</i>	Irrawaddy Dolphin	Migratory	Potential	This species may occur in waters off Hay Point
<i>Orcinus orca</i>	Orca	Migratory	Unlikely	This species has not been observed in the project area. Concentrations of individuals occur in Tasmania.
<i>Sousa chinensis</i>	Indo-Pacific Humpback Dolphin	Migratory	Known	This species occurs in the waters off Hay Point.
MIGRATORY WETLAND BIRDS				
<i>Actitis hypoleucos</i>	Common Sandpiper	Migratory	Known	This species recorded between Repulse Bay and Cape Palmerston
<i>Arenaria interpres</i>	Ruddy Turnstone	Migratory	Known	As above
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Migratory	Known	As above
<i>Calidris alba</i>	Sanderling	Migratory	Known	As above
<i>Calidris melanotos</i>	Pectoral Sandpiper	Migratory	Potential	This species has not been recorded in the project area, however suitable habitat is present.
<i>Calidris ruficollis</i>	Red-necked Stint	Migratory	Known	This species recorded between Repulse Bay and Cape Palmerston
<i>Double-banded Plover</i>	<i>Charadrius bicinctus</i>	Migratory	Known	As above
<i>Charadrius veredus</i>	Oriental Plover	Migratory	Potential	This species has not been recorded in the project area, however suitable habitat is present.
<i>Gallinago hardwickii</i>	Latham's Snipe	Migratory	Known	This species recorded between Repulse Bay and Cape Palmerston
<i>Gallinago veredus</i>	Swinhoe's Snipe	Migratory	Unlikely	This species has been recorded infrequently in Australia between the Kimberley Divide and Cape York Peninsula
<i>Gallinago stenura</i>	Pin-tailed Snipe	Migratory	Unlikely	There are no known records of this species in Queensland
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	Migratory	Known	This species recorded between Repulse Bay and Cape Palmerston
<i>Limosa lapponica</i>	Bar-tailed Godwit	Migratory	Known	As above

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<i>Limosa limosa</i>	Black-tailed Godwit	Migratory	Known	As above
<i>Numenius minutus</i>	Little Curlew	Migratory	Known	As above
<i>Numenius phaeopus</i>	Whimbrel	Migratory	Known	As above
<i>Pandion haliaetus</i>	Osprey	Migratory	Likely	This species is likely to forage and nest in the project area and region
<i>Pluvialis fulva</i>	Pacific Golden Plover	Migratory	Known	This species recorded between Repulse Bay and Cape Palmerston
<i>Pluvialis squatarola</i>	Grey Plover	Migratory	Known	As above
<i>Tringa brevipes</i>	Grey-tailed Tattler	Migratory	Known	As above
<i>Tringa glareola</i>	Wood Sandpiper	Migratory		As above
<i>Tringa incana</i>	Wandering Tattler	Migratory	Known	As above
<i>Tringa nebularia</i>	Common Greenshank	Migratory	Known	As above
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Migratory	Known	As above
<i>Xenus cinereus</i>	Terek Sandpiper	Migratory	Known	As above
MIGRATORY TERRESTRIAL SPECIES				
<i>Cuculus optatus</i>	Oriental Cuckoo	Migratory	No	Terrestrial species
<i>Hirundapus caudacutus</i>	White-throated Needletail	Migratory	No	Terrestrial species
<i>Monarcha melanopsis</i>	Black-faced Monarch	Migratory	No	Terrestrial species
<i>Monarcha trivirgatus</i>	Spectacled Monarch	Migratory	No	Terrestrial species
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Migratory	No	Terrestrial species
<i>Rhipidura rufifrons</i>	Rufous Fantail	Migratory	No	Terrestrial species