Threatened species 'likelihood of occurrence' assessment

This 'likelihood of occurrence' assessment identifies which threatened species have potential to occur within the project footprint. The following procedure was used to determine the likelihood of occurrence of threatened species:

1) Identify potential habitat features within the project footprint using available desktop information (i.e. land unit mapping, existing vegetation mapping, aerial imagery, fire history etc.).
2) Identify:
    a. Matters of National Environmental Significance obtained using the Protected Matters Search Tool (undertaken January 2017).
    b. Bioregional threatened species records extracted from the NT flora and fauna atlases maintained by DENR.
3) Collate the following details for each of those species – conservation status (NT and Federal), habitat requirements, distribution and number of records within the bioregions.
4) Analyse the likelihood that each species will occur in the project footprint by applying the following likelihood classifications:
    a. HIGH – it is expected that this species will be within the project footprint because of the presence of core suitable habitat, and/or there are recent proximate records (i.e. post-2000).
    b. MEDIUM – this species may occur within the project footprint; however, there is evidence that lowers its likelihood of occurrence (i.e. lack of core habitat, no recent records with the search area, habitat degradation etc.).
    c. LOW – it is not expected that this species is supported within the project footprint, as there is no suitable habitat for the species and/or current threats in the region are known to have significantly impacted upon the species.
    d. NONE – there is strong evidence that this species will not occur within the project footprint.

Note: For many threatened species, the Atlas of Living Australia provides 'likely' and 'possible' modelled expert distributions. These distributions are referred to throughout this document and mostly come from the Species of National Environmental Significance Database maintained by the federal Department of the Environment.

The location of some threatened species records from the Atlas of Living Australia has been generalised to 0.1 degree (introducing a location variance of up to 11 km) due to concerns that revealing the actual location may lead to poaching. Spatially-generalised records have been considered in this assessment; however, use of these records has been noted where relevant.

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
FLORA				
a fern *Macrothelypteris torresiana*	-	EN	**Habitat:** Sheltered sandstone gorges associated with springs and groundwater seepages (Cowie & Westaway 2012). **Distribution:** Isolated populations in northern WA, eastern Qld, north-eastern NSW and the NT (two locations on Wollogorang Station in the Gulf region, adjacent to the Qld border) (Cowie & Westaway 2012). **Records:** Four from near the NT/Qld border, more than 350 km to the south-east.	**LOW** • There may be suitable habitat within the project footprint. • This species appears to have a very restricted range that is not proximate to the project footprint. • There is no *expert distribution* mapping. It is unknown how well this species has been surveyed for in suitable habitat across its potential range.
BIRDS				
***Carpentarian Grasswren** *Amytornis dorotheae*	EN	EN	**Habitat:** NT population is restricted to dissected, topographically complex, sandstone and conglomerate hills and plateaux with infrequent fires (Lewis & Woinarski 2006). The only recent observations were recorded in a site that had been burnt only twice in the preceding 12 years. All other historic sites with no recent observations had been burnt between three and eight times. **Distribution:** Gulf of Carpentaria hinterland – between Limmen River in the NT and Mount Isa in Qld. No records in the Borroloola area since 1986 despite several targeted surveys in the last decade (McKean & Martin 1989; Garnett et al. 2011). Within the NT, now restricted to a tiny isolated population approximately 6 km to the west of Calvert Hills Station in the Wollogorang area (TSSC 2016). **Records:** 47 for the Gull Falls and Uplands bioregion only. Clustered around Borroloola (~150 km to the south-east) and near NT/Qld border.	**NONE** • There may be suitable habitat within the project footprint. • This species has a very restricted range that is not proximate to the project footprint. • There is no *expert distribution* mapping. However, this species has been well surveyed for in suitable habitat across its potential range.
***Curlew Sandpiper** *Calidris ferruginea*	CR	VU	*Threatened migratory shorebirds have been assessed collectively for the NOI in the absence of sufficient population data.* **Habitat:** Coastal and estuarine with tidal mudflats. May roost during high tide on nearby beaches. May also be found at near-coastal swamps and lakes (apart from Red and Great Knot). **Distribution:** Mostly widespread around the northern Australian coast, less common in the south, with few inland records. Eastern Curlew is uncommon across. Every year these species breed in the northern hemisphere in the summer, and migrate to Australia for the southern hemisphere summer. Some birds remain in Australia during the winter. **Records:** There appears to be recent records for all of these shorebird species	**HIGH** • There is suitable habitat proximate to the port area of the project footprint. • There are recent records for the region, possibly including some within the project footprint. Some of these species may occur in nationally-significant numbers. It is unlikely there is sufficient historic data to identify which sub-species of Bar-tailed Godwit is present. • The project footprint is within the *expert distribution* mapping of these species.
***Red Knot** *Calidris canutus*	EN	VU		
***Great Knot** *Calidris tenuirostris*	CR	VU		
***Greater Sand Plover** *Charadrius leschenaultii*	VU	VU		
***Lesser Sand Plover** *Charadrius mongolus*	EN	VU		
***Bar-tailed Godwit (Western Alaska subsp.)** *Limosa lapponica*	VU	-		

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
baueri			within and proximate to the mouth of the Roper River, including within a kilometre of the proposed port footprint. Targeted shorebird surveys have been undertaken in the area, most comprehensively by Chatto (2003) between 1990 and 2001. Those surveys identified a roost of 2000+ shorebirds (relative abundance of species unknown) proximate to the port footprint. In 1996, Chatto counted 1,500 Red Knots near the mouth of the Roper River – making that location one of the three most important areas in the NT for Red Knots. The region is also one of the four important areas in the NT for Eastern Curlew. Within the region, Chatto did not record any particular shorebird species as occurring in internationally-significant numbers, but did record approximately ten species as occurring in nationally-significant numbers.	
***Bar-tailed Godwit (Northern Siberian subsp.)** *Limosa lapponica menzbieri*	CR	-		
***Eastern Curlew** *Numenius madagascariensis*	CR	-		
***Asian Dowitcher** *Limnodromus semipalmatus*	-	VU	**Habitat:** Coastal and estuarine with tidal mudflats. May roost during high tide on nearby beaches. May also be found at near-coastal swamps and lakes. **Distribution:** Mostly widespread around the northern Australian coast, less common in the south, with few inland records. Asian Dowitcher is rare across Australia. Every year, breed in the northern hemisphere in the summer, and migrate to Australia for the southern hemisphere summer. Some birds remain in Australia during the winter. **Records:** Two for the Gulf Coastal bioregion – from the mouth of the McArthur River, more than 200 km to the south-east.	**LOW** • There is suitable habitat proximate to the port area of the project footprint. • There are very few records for the region – despite comprehensive surveys – and none proximate. • The project footprint is within the *expert distribution* mapping.
***Red Goshawk** *Erythrotriorchis radiatus*	VU	VU	**Habitat:** Prefers tall, open Eucalypt forest and riparian areas. Nests in large trees, frequently the tallest and most massive in a tall stand, nest trees are invariably within 1 km of permanent water (Debus et al. 1988; Aumann et al. 1991). **Distribution:** Sparsely distributed across much of the northern Australia, from the Kimberley in WA to south-eastern Qld. Within this range, generally occurs in taller forests characteristic of higher rainfall areas, but there are some isolated records from central Australia. **Records:** 44 for the Gull Falls and Uplands bioregion only. Almost all from Borroloola area or Mataranka (both more than 150 km away).	**HIGH** • There is suitable habitat throughout the project footprint. • There are records for the region, but none proximate. • The project footprint is within the *expert distribution (likely).*
Gouldian Finch *Erythrura gouldiae*	EN	VU	**Habitat:** Prefers annual and perennial grasses (especially *Sorghum*), a nearby source of surface water and – in the breeding season – unburnt, hollow-bearing *Eucalyptus* trees (especially *E. tintinnans, E. brevifolia* and *E. leucophloia*) (Tidemann	**HIGH** • There is suitable habitat throughout the project footprint. • There are many records for the region, including some within the

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			1996; O'Malley 2006). **Distribution:** Sparsely across northern Australia from the Kimberley to north-central Qld (Dostine 1998; Franklin 1999; Barrett et al. 2003; Franklin et al. 2005). Non-breeding birds disperse widely (Garnett et al. 2011), greatly increasing the possible range of this species. **Records:** 109 across both bioregions, including some within the project footprint.	project footprint. • It is unknown whether suitable breeding habitat occurs within the project footprint. • Some of the project footprint is within the *expert distribution (likely),* the remainder is within *expert distribution (likely).*
***Grey Falcon** *Falco hypoleucos*	-	VU	**Habitat:** Areas of lightly-timbered lowland plains, typically on inland drainage systems, where the average annual rainfall is less than 500 mm (Ward 2012a). **Distribution:** Sparsely through much of the arid and semi-arid areas of Australia, but is recorded across the country. In the NT, the majority of records are from the southern half, but there are records all the way up to Darwin (Ward 2012). **Records:** Six records spread across the Gull Falls and Uplands bioregion only (most recent from 2002). Recorded at Deposit W in 2011 during surveys for the Sherwin EIS.	**HIGH** • There is suitable habitat throughout the project footprint, but the region is not considered core habitat for this species. • There are a few records for the region, but one within the project footprint. • The project footprint is within the generalised *expert distribution.*
Crested Shrike-tit (northern subsp.) *Falcunculus frontatus whitei*	VU	-	**Habitat:** Recorded in eight different woodland types in northern Australia, mainly those dominated by *Eucalyptus miniata, E. tetrodonta* or *E. bleeseri* (Robinson & Woinarski 1992). **Distribution:** North-western Australia from the Kimberley in WA, across the Top End of the NT to Borroloola (TSSC 2016). In the NT, recorded in very low densities in many isolated subpopulations (Garnett & Crowley 2000) between north-east Arnhem Land and semi-arid Victoria River District. Scarcity of records suggests that populations are at very low density (Woinarski 2004). Not known to have disappeared from any area where recorded historically (TSSC 2016). **Records:** Six in Borroloola area from 1913-17, and one near Sturt Hwy from 1952.	**MEDIUM** • There is suitable habitat throughout the project footprint. • There are no records for the region since 1952. The species has not been relocated in the Borroloola area since it was first recorded there in 1913. However, there have been no recent surveys targeting the species in this region (Ward 2009). • There is no *expert distribution* mapping.
***Partridge Pigeon (eastern subsp.)** *Geophaps smithii smithii*	VU	VU	**Habitat:** Occurs in open forests and woodlands with an understorey of grasses (Woinarski 2006). Prefers woodland dominated by *Eucalyptus tetrodonta* and *E. miniata* (Braithwaite 1985; Garnett & Crowley 2000; Higgins & Davies 1996). **Distribution:** Historically, across the Top End (from Kununurra in WA to Borroloola in NT). Since early 20th century, severe range contraction from the western, eastern and southern parts of the former distribution (Higgins & Davies 1996; Woinarski et al. 2007). Currently, distribution is limited to sub-coastal Northern Territory from Yinberrie Hill in the south, Litchfield NP in the west and (western) Arnhem Land in the east (Garnett et al. 2011).	**LOW** • There is suitable habitat throughout the project footprint. • There are no records for the region since 1952. This species has likely experienced a significant range contraction. • The project footprint is outside the *expert distribution.*

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			Records: 26 spread across Gulf Uplands and Falls bioregion only; all but one (from 1952) recorded pre-1924	
Painted Honeyeater *Grantiella picta*	VU	VU	**Habitat:** *Acacia* and *Eucalyptus*-dominated woodlands and open forest, preferring habitats with more mature trees that host more mistletoe. Breeding times and seasonal movements (south to north) likely governed by the fruiting of mistletoe (Garnett et al. 2011). **Distribution:** Across eastern and northern parts of the country – but nowhere very numerous (Ward 2012). Many birds move after breeding to semi-arid regions such as north-eastern SA, central and western Qld, and central NT (TSSC 2015). Few NT records – most from the Barkly Tablelands – but no evidence of a breeding population in the NT, and the records are likely irregular visitors from south-eastern Australia (Ward 2012). **Records:** Six from between 1914 and 1978 at least 200 km to the south-east, one from 2005 from Limmen NP (approximately 120 km south-east).	**LOW** • There is suitable habitat throughout the project footprint. • There are a few records for the region. This species is considered an irregular visitor to the NT. • The project footprint is outside the generalised *expert distribution.*
Australian Painted Snipe *Rostratula australis*	EN	VU	**Habitat:** Fringes of permanent and temporary wetlands, swamps and inundated grasslands (Taylor et al. 2013). **Distribution:** Nomadic and scattered across Australia with no predictable occurrence (Rogers 2001) but could occur at any wetland or inundated grassland across its distribution, including nearly all of the NT and Qld (Garnett et al. 2011). **Records:** Five (1985 and four from 1999), across both bioregions, all more than 100 km to the south-east.	**MEDIUM** • There is likely to be suitable habitat within the project footprint. • There are a few records for the region. • The project footprint between Ngukurr and Port Roper is within the *expert distribution (likely)*, the rest of the project footprint is within the *expert distribution (maybe).*
Masked Owl (northern subsp.) *Tyto novaehollandiae kimberli*	VU	VU	**Habitat:** Mainly in *Eucalyptus* tall open forests (especially those dominated by *Eucalyptus miniata* and *E. tetrodonta*), but also roosts in monsoon rainforests and forages in more open vegetation types, including grasslands (Woinarski & Ward 2006). **Distribution:** Poorly known, with few records from across a broad range in northern Australia. In the NT, records from the Top End, Kakadu, Coburg Peninsula (majority of records) and south-west Gulf country (Woinarski & Ward 2006). **Records:** Six around Borroloola area (1913, 1971 & 1977). Queensland Museum has a specimen dated 1910 collected from Port Roper. This may be a geo-spatial error – in analysing the metadata for that record, the Atlas of Living Australia determined the habitat to be incorrect for the species.	**MEDIUM** • There is suitable habitat throughout the project footprint. • There are a few old records for the region. The specimen dated 1910 collected from Port Roper is likely a geo-spatial error due to the location not constituting suitable habitat for the species. • There is no *expert distribution* mapping.
MAMMALS				

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
Fawn Antechinus *Antechinus bellus*	VU	EN	**Habitat:** Mostly in open forests and woodlands dominated by *Eucalyptus miniata* and/or *E. tetrodonta*, particularly where these forests have a relatively dense shrubby understorey (Friend 1985; Friend & Taylor 1985). Declines in areas with frequent intense fires (Corbett et al. 2003) but not necessarily common in areas where fire has been excluded for long periods (>20 years) (Woinarski et al. 2004). **Distribution:** Restricted to the Top End of the NT (Watson & Calaby 2008), with one record from Melville Island. Recent surveys have failed to record it across central and eastern Arnhem Land (TSSC 2015). **Records:** None for either bioregion. Nearest more than 200 km to the north-east and west.	**LOW** • There is suitable habitat throughout the project footprint. • There are no records for the region. This species has likely experienced a significant range contraction. • There is no *expert distribution* mapping.
†**Blue Whale** *Balaenoptera musculus*	EN	-	**Habitat:** Polar to tropical regions in coastal, continental shelf and oceanic waters (DoE 2017). **Distribution:** Global. Annual migration from Antarctic feeding areas, through Australian waters, to tropical breeding areas (DoE 2017). Most Australian waters have no particular significance to the whales and are used only for migration and opportunistic feeding (DoE 2017). The only known areas of significance in Australia are feeding areas around the southern continental shelf near in southern WA, SA and Victoria (DEH 2005). In the NT, known only from two beach-washed specimens at Cape Hotham near Darwin in 1980 and Port Essington on Cobourg Peninsula in 2003 (Woinarski & Chatto 2006). **Records:** None for the Gulf of Carpentaria.	**LOW** • There is suitable habitat within the marine section of the project footprint. • There are no records for the Gulf of Carpentaria and only two for other NT waters. • NT waters are mapped as a region where the species 'may' occur (DoE 2017).
Brush-tailed Rabbit-rat *Conilurus penicillatus*	VU	EN	**Habitat:** Largely restricted to mixed *Eucalypt* open forest and woodland, or on dunes with *Casuarina* – seeming to prefer habitats that are not burnt annually, that have an understorey of predominantly perennial grasses and a sparse-to-moderate middle storey (Firth et al. 2006; Firth 2007; Kemper & Firth 2008). **Distribution:** Formerly widespread across northern Australia, but has declined extensively from Qld and lower rainfall areas of the Kimberley in WA and the Top End in the NT. No recent records from much of the historically recorded NT range between near the mouth of Victoria River (in the west) and Sir Edward Pellew island group (in east). Most recently known from Cobourg Peninsula, Tiwi Islands, Groote Eylandt and a small area within Kakadu National Park (Woinarski 2007). **Records:** Six in 1967 from the Sir Edward Pellew island group, three undated from near	**NONE** • There is suitable habitat throughout the project footprint. • There are three (undated) records proximate to the project footprint. This species has likely experienced a significant range contraction. • There is no *expert distribution* mapping.

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			Ngukurr.	
Northern Quoll *Dasyurus hallucatus*	EN	CR	**Habitat:** Wide range of habitats – especially coastal *Eucalypt* tall open forests – but since Cane Toads the most suitable habitats are rocky areas (Van Dam et al. 2002). Prime habitat in NT consists of rocky sandstone escarpments (Braithwaite & Griffiths 1994). **Distribution:** Dramatic range contraction associated with Cane Toad invasion. Now occurs across northern Australia in five regional populations – including the Top End in the NT. Records indicate this species occurs from Borroloola in the south-east as far west as the NT/WA border (Woinarski et al. 2007). **Records:** Seven from Sir Edward Pellew island group (2003 and 1988) and seven from the mainland, including proximate to the project area (most recently 2002, then 1986, with 3 undated).	**LOW** • There is suitable habitat throughout the project footprint. • There is a 2002 record proximate to the project footprint. This species has experienced a significant reduction in population sizes and ranges since the invasion of the Top End by Cane Toads. This occurred circa 1995 for the Roper River area. • The project footprint is within the *expert distribution (likely).*
Northern Leaf-nosed bat *Hipposideros stenotis*	-	VU	**Habitat:** Prefers rocky outcrops – often associated with large sandstone escarpments – roosting in shallow caves, boulder piles and old mine sites (Milne 2012). Forages in a wide range of habitats including monsoon vine thickets, woodlands and open grasslands (Milne 2012). **Distribution:** Locally in parts of the Kimberley in WA, the NT and near Mt Isa in Qld (Milne 2012). There are 31 records from the NT, and since 2000 has only been definitely recorded four times (Milne 2012). Known to have disappeared from at least two sites where previously occurred – Red Bank mine and Pine Creek (Milne 2012). **Records:** 13 records, all from near Wollogorang Station approximately 350 km to the south-east.	**MEDIUM** • There may be suitable habitat within or proximate to the project footprint. • There are no records proximate to the project area. • There is no *expert distribution* mapping.
***Golden Bandicoot** *Isoodon auratus*	VU	EN	**Habitat:** Mainly in heathland and shrubland on sandstone sheets, avoiding vegetation with greater tree cover (Palmer et al. 2012; Southgate et al. 1996) **Distribution:** Formerly across most of northern, central and western Australia (across a broad range of habitats), but now only recorded population on mainland Australia is within the Kimberley. Within the NT, the species is confined to the offshore islands of Arnhem Land. The only records from mainland NT are from the north-east corner of Arnhem Land between 1950 and 1980 (Palmer et al. 2012). Now extinct on the mainland except in a few locations in the north-west Kimberley (TSSC 2015). **Records:** Six, all undated.	**NONE** • There is suitable habitat within the project footprint. • There are six undated old records for the region; however, this species is considered extinct from mainland NT. • The project footprint is not within the *expert distribution.*
Ghost Bat *Macroderma gigas*	VU	-	**Habitat:** Ranging from the arid Pilbara to tropical savannah woodlands and north Qld rainforests (TSSC 2016). Permanent roost sites are generally deep natural caves or	**LOW** • There is suitable habitat throughout the project footprint.

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			disused mines (TSSC 2016). **Distribution:** Geographically-disjunct colonies occur in the Pilbara and Kimberley in WA, NT north of approximately 17º latitude (including Elcho Island and Groote Eylandt), the Gulf of Carpentaria, eastern Qld from Cape York to near Rockhampton, and western Qld (including Riversleigh and Camooweal districts) (TSSC 2016). Distribution likely influenced by the availability of suitable caves and mines for roost sites (Ward & Milne 2016). Only 14 breeding sites known (Worthington Wilmer 2012). In arid Australia, including southern NT until the early 1960s (Ward & Milne 2016). **Records:** None from either bioregion. Nearest are scattered through central Arnhem Land.	There may be suitable roost sites. • There are no records for the region. • There is no *expert distribution* mapping.
***Greater Bilby** *Macrotis lagotis*	VU	VU	**Habitat:** In the NT, hummock grasslands on sandy soils with a preference for palaeo-drainage lines (Southgate 1990). Has large foraging area and will move home range in search for food (Johnson 2008). In Qld, it occurs on clay plains dominated by Mitchell Grass. **Distribution:** Historically widespread in arid Australia. Currently arid WA, the Tanami Desert in the NT and south-western Qld (Woinarski et al. 2014). **Records:** None for either bioregion. Nearest are more than 200 km to the south-west.	**NONE** • There is no suitable habitat within the project footprint. • There are no records for the region. • There is no *expert distribution* mapping.
†**Humpback Whale** *Megaptera novaeangliae*	VU	-	**Habitat:** All major oceans, mostly in coastal and continental shelf waters (Reeves et al. 2002). **Distribution:** Global. Annual migration from Antarctic feeding areas, through Australian waters to tropical breeding areas off the Kimberley coast in WA, and central Qld coast (DoE 2017). In the NT, only known from one beach-washed specimen on the Napier Peninsula (east Arnhem Land) in 1881 and a pair sighted west of Darwin in 2002 (Woinarski et.al 2012). **Records:** None for the Gulf of Carpentaria.	**LOW** • There is suitable habitat within the marine section of the project footprint. • There are no records for the Gulf of Carpentaria and only two for other NT waters. • NT waters from Cobourg Peninsula westwards are mapped as 'likely' habitat; eastwards to Cape York (Qld) is attributed a likelihood as habitat (DoE 2017).
†**Black-footed Tree-rat (Kimberley and mainland Northern Territory subsp.)** *Mesembriomys gouldii gouldii*	EN	VU	**Habitat:** In the NT, found in tropical woodlands and open forests in coastal areas. Shelters in tree hollows and *Pandanus* stands during the day (Hill 2012). **Distribution:** Kimberley in WA and Top End of the NT – but mainland only (TSSC 2015). **Records:** Three for Gulf Coastal bioregion only – two undated, one from 1911 – all more than 200 km to the south-east.	**LOW** • There may be suitable habitat within the parts of the project footprint closer to the coast. • There are only three old records for the region, none proximate to the project footprint. This species has likely experienced a significant range contraction. • There is no *expert distribution* mapping.
†**Northern**	VU	VU	**Habitat:** Most often sandy substrates,	**LOW**

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
Hopping-mouse *Notomys aquilo*			seemingly favouring coastal sand dunes and sand sheets with a cover of tussock grass or heath. Also shrubland, Eucalypt open forest, and the margins of coastal rainforest thickets (Woinarski 2004; Woinarski & Flannery 2008). **Distribution:** Restricted to the NT – mostly Groote Eylandt, but also central north-east Arnhem Land. No confirmed records from the Australian mainland for at least 10 years (Woinarski et al. 2014). **Records:** One across both bioregions – from 1930 approximately 10 km south of Port Roper.	• There may be suitable habitat within the parts of the project footprint closer to the coast. • There is one old record proximate to the project footprint. This is the only mainland record for hundreds of kilometres. This species has likely experienced a significant range contraction. • The project footprint is at the southern limit of the *expert distribution (maybe).*
†**Northern Brush-tailed Phascogale** *Phascogale pirata*	VU	EN	**Habitat:** Tall open forests dominated by *Eucalyptus miniata* and *E. tetrodonta* (Woinarski et.al 2012). **Distribution:** Restricted to the Top End of the NT. Few records exist. Historically West Island, east Arnhem Land, Coburg Peninsula, Kakadu, Litchfield and the Tiwi Islands. Only recorded in Kakadu, Coburg Peninsula and the Tiwi Islands in the last 10 years (Woinarski et.al, 2012). **Records:** Ten, all from 1988 on the Sir Edward Pellew island group (more than 150 km to the south-east).	**LOW** • There may be suitable habitat within the project footprint. • There are no proximate records to the project footprint. This species has likely experienced a significant range contraction. • The project footprint is at the southern limit of the *expert distribution (maybe).*
Carpentarian Antechinus *Pseudantechinus mimulus*	VU	-	**Habitat**: In NT, sloping sandstone hills with boulders, pavement, outcrops and rocky surface, with open woodland of *Eucalyptus tetrodonta* and *E. aspera*, and a dense understorey and ground cover of *Plectrachne pungens* (DoE 2017). **Distribution:** In the NT, the Sir Edward Pellew island group and Pungalina-Seven Emu (mainland reserve south-west of Borroloola (Woinarski & Ward 2012). Also a few records around Mount Isa in Qld (DoE 2017). **Records:** None proximate. Nearest mainland records are more than 300 km to south-east.	**NONE** • There may be suitable habitat within the project footprint. • This species has a very restricted range that is not proximate to the project footprint. • The project footprint is not within the *expert distribution.*
†**Canefield Rat** *Rattus sordidus*	-	CR	**Habitat:** NT records all from coastal dunes and low-lying open woodlands with grassy understorey (Woinarski & Ward 2012). **Distribution:** Through north-eastern Australia, northern NSW and west to Normanton in Queensland (Woinarski & Ward 2012). In the NT, known only from the Sir Edward Pellew island group. **Records:** None on mainland, seven from Sir Edward Pellew island group more than 150 km to the south-east.	**NONE** • There are no mainland NT records. • There is no *expert distribution* mapping.
Pale Field-rat *Rattus tunneyi*	-	VU	**Habitat:** Historically occurred in a wide range of habitats, but now primarily in dense vegetation along creeks (Aplin et al. 2008). **Distribution:** Higher rainfall areas of northern Australia, extending from Kimberley	**MEDIUM** • There may be suitable habitat within the project footprint (particularly along the Roper River and associated creeks).

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			in WA to south-eastern Qld, including the Top End of the NT (Braithwaite & Griffiths 1996). **Records:** 197 – mostly from the Edward Pellow island group, with a few from Limmen River (approximately 70 km south-east). Two proximate to project area from 1982 and 1997.	• There are two proximate records (most recently 1997). • There is no *expert distribution* mapping.
Bare-rumped Sheath-tailed Bat *Saccolaimus saccolaimus nudicluniatus*	VU	-	**Habitat:** Mostly in lowland areas, in a range of woodland, forest and open environments (DoE 2017). In the NT, known from *Pandanus* woodland fringing the sedgelands of the South Alligator River and Eucalypt tall open forests (Friend & Braithwaite 1986; Churchill 1998). **Distribution:** India through south-eastern Asia to the Solomon Islands, and north-eastern Qld and the NT (Milne & Woinarski 2006). Few scattered records in the NT. Most records are near-coastal (TSSC 2016). **Records:** One, a specimen collected at Port Roper in 2001.	**HIGH** • There is suitable habitat throughout the project footprint. • There was a specimen of this species collected from Port Roper in 2001. • There is no *expert distribution* mapping.
†**Water Mouse or False Water Rat** *Xeromys myoides*	VU	-	**Habitat:** In the NT, not well documented due to a low number of records. Appears to utilise both intertidal and freshwater habitats, with most records from mangrove forests, saltmarsh, sedgelands, clay pans and freshwater melaleuca wetlands (DoE 2017). **Distribution:** Three regions of coastal Australia: the NT, central south Qld and south-east Qld (DoE 2017). In the NT, known only from coastal Top End with ten records at six sites – South Alligator River in 1903, Daly River floodplain in 1972, two sites on the Tomkinson River in 1975, Melville Island in 1975 and Glyde River floodplain in 1998 and 1999 (Woinarski 2006). **Records:** None for either bioregion. Nearest about 300 km to the north.	**MEDIUM** • There may be suitable habitat around the port section of the project footprint. • There are no records for the region. • The project footprint is within the *expert distribution (maybe).*
***Carpentarian Rock-rat** *Zyzomys palatalis*	EN	CR	**Habitat:** Restricted to sandstone gorges and escarpments containing a core of dry or wet rainforest vegetation, mixed with woodland, scree slopes and permanent water, surrounded by savannah woodlands (Puckey & Woinarski 2006). **Distribution:** Restricted to the NT, where known only from five locations within a radius of 35 km (Puckey 2003) at Wollogorang Station in the Gulf of Carpentaria (Kitchener 1989). **Records:** All records are from Wollogorang Station approximately 350 km to the south-east.	**NONE** • There may be suitable habitat within the project footprint. • This species has a very restricted range that is not proximate to the project footprint. • The project footprint is not within the *expert distribution.*
REPTILES				
***Plains Death Adder** *Acanthophis hawkei*	VU	VU	**Habitat:** Floodplains and cracking soil plains (Webb et al. 2002). **Distribution**: Habitat mapping suggests the potential geographic range extends from	**NONE** • There is no suitable habitat within the project footprint. • There are no proximate records

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			western Qld, across the north of the NT to north-eastern WA. Fragmented populations occur in the Mitchell Grass Downs of western Qld, the Barkly Tablelands on the NT/Qld border and east of Darwin in the NT (TSSC 2012). **Records:** Two (1976 and 1980), nearest more than 240 km to the south-east.	from the region. • The project footprint is within the *expert distribution (maybe).*
†**Loggerhead Turtle** *Caretta caretta*	EN	VU	**Habitat:** Pelagic in tropical, sub-tropical and temperate waters. Nests mainly on sub-tropical sandy beaches (Marquez 1990). **Distribution:** Global, including the Australian coast (DoE 2017) where nesting is concentrated in southern Qld and from Shark Bay to the North West Cape in WA (DoE 2017). No breeding known to occur in the NT but records in NT waters (Taylor et al. 2006). **Records:** Three (1985) – Bing Bong near McArthur River. Only a few for the Gulf of Carpentaria.	**LOW** (foraging) **NONE** (breeding) • There is suitable habitat within the marine section of the project footprint. • There are only a few records for the Gulf of Carpentaria, and none of nesting. • There is no *expert distribution* mapping.
†**Green Turtle** *Chelonia mydas*	VU	-	**Habitat:** Pelagic in tropical and subtropical waters, although individuals may also stray into temperate waters (Cogger et al. 1993). In the NT, nesting mainly on wide beaches backed by large dune systems (Chatto 1998). **Distribution:** Global. Nests, forages and migrates across tropical northern Australia, with main breeding sites being the Great Barrier Reef of Qld, the north-west shelf of WA, Wellesley Island group in the southern Gulf of Carpentaria and the Top End coast (DoE 2017). Many nesting sites in the NT, mostly from the western end of Melville Island to near NT/Qld border (Chatto 1998). **Records:** 42 – to the north and east of Roper River mouth.	**HIGH** (foraging) **MEDIUM** (breeding) • There is suitable habitat within the marine section of the project footprint. • There are many records for the Gulf of Carpentaria. Chatto (2008) recorded high breeding activity in the Gulf of Carpentaria (second highest of the eight regions within the NT) – but not near the Roper River • The project footprint is within the *expert distribution (likely).*
†**Leatherback Turtle** *Dermochelys coriacea*	EN	CR	**Habitat:** Pelagic in tropical, subtropical and temperate waters (DoE 2017). **Distribution:** Global, including the northern and eastern seaboards of Australia (DoE 2017). No major nesting recorded in Australia. In the NT, only a few records in the waters off northern Arnhem Land and the Gulf of Carpentaria (Taylor et al. 2013). **Records:** Only a few for the Gulf of Carpentaria.	**MEDIUM** (foraging) **NONE** (breeding) • There is suitable habitat within the marine section of the project footprint. • There are only a few records for the Gulf of Carpentaria, and none of nesting. • The project footprint is within the *expert distribution (likely).*
Gulf Snapping Turtle *Elseya lavarackorum*	EN	-	**Habitat:** Large rivers and their associated overflow lagoons and oxbow lakes (Cogger 2000; Woinarski 2006). Found in deeper permanent pools most often with muddy, sandy or rocky bottoms. Also found in the middle reaches of rivers, upstream of saline regions and downstream of escarpments, including plunge pools. Steep rocky gorges, and river reaches with intact river banks seem to be preferred habitats (Thomson et	**NONE** • There is suitable habitat throughout the project footprint (the Roper River). • There are no records from the Roper River. A closely-related species occurs instead. • The project footprint is incorrectly assigned as being within the

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			al. 1997). **Distribution:** Rivers in far eastern NT and far western Qld that discharge into the Gulf of Carpentaria. In the NT, this includes the Roper, Limmen Bight, Robinson and Nicholson Rivers (DoE 2017). **Records:** Seven (2006 to 2010) – one from about 150 km to the south-east, the remainder a further 150 km. However, DoE (2017) state that there are records for the Roper River.	*expert distribution (likely).*
†**Hawksbill Turtle** *Eretmochelys imbricata*	VU	-	**Habitat:** Tropical, sub-tropical and temperate waters (DoE 2017). In the NT, most nesting occurs on islands rather than mainland beaches. (Taylor et al. 2012). **Distribution:** Global. In the NT, principal nesting sites are concentrated around north-eastern Arnhem land and Groote Eylandt (Chatto 1998). **Records:** Very few for southern Gulf of Carpentaria.	**MEDIUM** (foraging) **LOW** (breeding) • There is suitable habitat within the marine section of the project footprint. • There are many records for the Gulf of Carpentaria; however, Chatto (2008) recorded relatively low breeding activity (second lowest of the eight regions within the NT). • The project footprint is within the *expert distribution (likely).*
†**Olive Ridley Turtle** *Lepidochelys olivacea*	EN	VU	**Habitat:** Tropical and subtropical waters, preferring shallow protected waters (DoE 2017). In the NT, breeds at a wide range of sites on island and, less commonly, mainland beaches (Chatto 1998). **Distribution:** Global. In the NT, second most widespread nesting species (after Flatbacks) (Chatto & Baker 2008). Vast majority of the nesting population recorded from Melville Island to Groote Eylandt (Chatto 1998). **Records:** One near NT/Qld border. Very few records for southern or eastern Gulf of Carpentaria.	**HIGH** (foraging) **LOW** (breeding) • There is suitable habitat within the marine section of the project footprint. • There are very few records for the Gulf of Carpentaria and Chatto (2008) recorded very low breeding activity (the lowest of the eight regions within the NT). • The project footprint is within the *expert distribution (likely).*
†**Flatback Turtle** *Natator depressus*	VU	-	**Habitat:** Prefers shallow, soft-bottomed seabed habitats away from reefs (DoE 2017). In the NT, nests on a wide variety of beach types around the entire coastline (Chatto & Baker 2008) **Distribution:** Northern Australia and New Guinea, with all known breeding sites occurring only in Australia (DoE 2017). In the NT, the most widely spread marine turtle species, nesting around the entire coastline (Chatto 2008). **Records:** 61 – mostly to the north and east of Roper River mouth.	**HIGH** (foraging) **LOW** (breeding) • There is suitable habitat within the marine section of the project footprint. • There are many records for the Gulf of Carpentaria; however, Chatto (2008) recorded relatively low breeding activity (second lowest of the eight regions within the NT). • The project footprint is within the *expert distribution (likely).*
Mertens' Water Monitor *Varanus mertensi*	-	VU	**Habitat:** Semi-aquatic, occupying edges of watercourses and lagoons, but seldom seen far from water (Christian 2004). **Distribution:** Across far northern Australia from the western Cape York Peninsula in Qld	**HIGH** • There is suitable habitat throughout the project footprint. • There are records from the region, including one from 2012 proximate

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			to the Kimberley in WA (Christian 2004). Widespread in the NT, occupying all of the Top End river systems (Ward et al. 2006). **Records:** 33 throughout both bioregions, most recently from 2002. Recorded at LD Creek 60km south-east of Deposit C in 2012 during surveys for the Sherwin EIS.	to the project footprint. The arrival of Cane Toads in the mid-1990's led to a drastic decline in the occurrence of monitor species (due to poisoning by ingestion) from which there has been some recovery by this species. • There is no *expert distribution* mapping.
Mitchell's Water Monitor *Varanus mitchelli*	-	VU	**Habitat:** Semi-aquatic and arboreal, inhabiting margins of watercourses, swamps and lagoons (Ward 2012). **Distribution:** Top End of the NT and Kimberley in WA (Schultz & Doody 2004). In the NT, recorded in most catchments flowing into the Timor Sea, Arafura Sea and the Gulf of Carpentaria (Ward 2012). **Records:** 13 throughout both bioregions, most recently from 2003.	**HIGH** • There is suitable habitat throughout the project footprint. • There are records from the region, but none from the past decade. The arrival of Cane Toads in the mid-1990's led to a drastic decline in the occurrence of monitor species (due to poisoning by ingestion) from which there has been some recovery by this species. • There is no *expert distribution* mapping.
Floodplain Monitor *Varanus panoptes*	-	VU	**Habitat:** Broad range of habitats from coastal beaches to savannah woodlands (Christian 2004). Also common throughout floodplains grasslands and a variety of native woodlands (Ward et.al 2012). **Distribution:** Across northern Australia from the Kimberley in WA to Cape York Peninsula, and southwards through most of Queensland. In the NT, recorded across most of the Top End and the Gulf Region (Christian 2004). **Records:** 15 from Gulf Coastal bioregion, most recently from 2003.	**MEDIUM** • There is suitable habitat throughout the project footprint. • There are records from the region, but none from the past decade. The arrival of Cane Toads in the mid-1990's led to a drastic decline in the occurrence of monitor species (due to poisoning by ingestion) from which there may not have been significant recovery by this species. • There is no *expert distribution* mapping.
FISH				
†**Great White Shark** *Carcharodon carcharias*	VU	**-**	**Habitat:** Marine, anywhere between close inshore habitats (such are shallow coastal bays or reefs) and the outer continental shelf and slope areas (DoE 2017). **Distribution:** Globally in all seas in both hemispheres. In Australia, from central Qld the south coast to north-west WA (DoE 2017). There have been no verified sightings in the NT (DoE 2017). **Records:** None for the Gulf of Carpentaria.	**LOW** • There is suitable habitat within the marine section of the project footprint. • There are no records for the Gulf of Carpentaria or other NT waters. • The project footprint is <u>not</u> within the *expert distribution (maybe).*
Speartooth Shark *Glyphis glyphis*	CR	VU	**Habitat:** Tropical fresh water and marine environments (Bradshaw et al. 2008). May be restricted to low salinity environments such as freshwater or brackish areas of rivers (DOE, 2016). **Distribution:** Papua New Guinea and Northern Australia. Considered to be very rare in Australia as few specimens have	**MEDIUM** • There is suitable habitat within the port and marine sections of the project footprint. • There are no records for the Gulf of Carpentaria. • The project footprint is within the

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
			been collected (Cavenagh et al. 2003). Three distinct geographical locations in NT and northern Qld (DoE 2015). In the NT, recorded in the Alligator River region across to Adelaide River, and the Bizant River (Ward and Larson 2006). **Records:** None for the Gulf of Carpentaria.	*expert distribution (maybe).*
Dwarf Sawfish *Pristis clavata*	VU	VU	**Habitat:** Tropical marine and estuarine habitats, entering estuarine or fresh waters to breed during the wet season and moving into marine waters following the wet season (Peverell 2005). **Distribution:** Indonesia, South-East Asia and northern Australia (Cavenagh et al. 2003). In NT, known to occur around Darwin (including Buffalo Creek and Rapid Creek), in Kakadu National Park (Alligator River), and Keep River and Victoria River (Thornburn et al. 2003). **Records:** One for the Gulf of Carpentaria (Qld side) from 1969.	**MEDIUM** • There is suitable habitat within the port and marine sections of the project footprint. • There is only one record for the Gulf of Carpentaria. • The project footprint is within the generalised *expert distribution.*
Freshwater or Largetooth Sawfish *Pristis pristis* (previously known as *Pristis microdon*)	VU	VU	**Habitat:** Tropical marine and estuarine habitats, entering estuarine or fresh waters to breed during the wet season and moving into marine waters following the wet season (Peverell 2005). **Distribution:** Circumtropical, with distinct populations in the eastern Atlantic, western Atlantic, eastern Pacific and Indo-West Pacific – including northern Australia (TSSC 2014). In the NT, reported in Adelaide, Victoria, Daly, East and South Alligator, Goomadeer, Roper, McArthur, Wearyan and Robinson Rivers (TSSC 2014). **Records:** Two records for rivers draining into the Gulf of Carpentaria – one a specimen from Port Roper in 2010.	**HIGH** • There is suitable habitat within the port and marine sections of the project footprint. • There is a record from the Roper River. • The project footprint is within the *expert distribution (likely).*
Green Sawfish *Pristis zijsron*	VU	VU	**Habitat:** Tropical waters including marine inshore waters, estuaries, lagoons and freshwater. However, the majority of records are from marine or estuarine waters (Thornburn et al. 2003). The species enters estuarine or fresh waters to breed during the wet season and moves back into marine waters following the wet season (Peverell 2005). **Distribution:** Northern Australia, South-East Asia and the Indian Ocean (Cavenagh et al. 2003). Most frequently encountered of the sawfish species in Australian waters (Last & Stevens 1994). Most commonly known from the Gulf of Carpentaria (Stevens et al. 2005). In the NT, specimens have only been collected from Buffalo Creek in Darwin (Stirrat et al. 2006). **Records:** Four records for the NT side of the Gulf of Carpentaria (1997, two from 1980 and 1969)	**HIGH** • There is suitable habitat within the port and marine sections of the project footprint. • Fishing catch records show that the species inhabits all regions of the Gulf of Carpentaria, in low numbers and with a highly variable frequency of occurrence (Peverell 2005). • The project footprint is within the *expert distribution (likely).*
†**Whale Shark**	VU	-	**Habitat:** Pelagic, in both oceanic and	**LOW**

THREATENED SPECIES LIKELIHOOD ANALYSIS				
Name	**Status**		**Summary**	**Likelihood of occurrence**
	Cth	**NT**		
Rhincodon typus			coastal areas in tropical to warm-temperate waters. Most common in offshore open waters; however, often seen close to shore, and known to enter lagoons and atolls (DOE 2016). **Distribution:** Records from NSW, Qld, NT and WA, occasionally sighted in Victoria and SA. Most common off the north-western WA coast (Ningaloo Reef) (DOE, 2016). Status and distribution within the NT is not well known, with only a few unconfirmed sightings (Woinarski & Larson 2006). **Records:** None for the Gulf of Carpentaria.	• There is suitable habitat within the marine section of the project footprint. • Unconfirmed to occur within NT waters (Woinarski & Larson 2006) and no records for the Gulf of Carpentaria. • The project footprint is within the *expert distribution (maybe).*

** Habitat occurs only in the Gulf Falls and Uplands bioregion*

† Habitat occurs only in the Gulf Coastal bioregion

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