

20th May 2017



Dear 

Corunna Downs Road and Limestone-Marble Bar Road Intersection: Fauna Desktop Assessment

As requested and outlined in the approved proposal (MWH Ref: ATLS-FD-17001) MWH (now part of Stantec) has performed an assessment of the potential impacts to terrestrial vertebrate fauna of Atlas Iron Limited’s proposed clearing of native vegetation at the Corunna Downs Road and Limestone-Marble Bar Road intersection (the Application Area). The Application Area occurs just east of Marble Bar, in the Pilbara region of Western Australia. The Proposed Disturbance Area comprises approximately 0.79 ha within the 2.24 ha Application Area.

The assessment was performed based on the Proposed Disturbance Area which occurs entirely within the clearing permit Application Area (**Appendix A: Figure 1**). The Application Area is adjacent to the Study Area for the Corunna Downs Public Road Upgrade (PRU) Level 1 Level 1 Fauna Assessment (MWH 2017) and approximately 20 km north of the Study Area for the Corunna Downs Level 2 fauna survey and impact assessment (MWH 2016a, b). The habitats and fauna species with potential to occur within the close proximity to the Application Area and the surrounding region were well documented as part of these surveys. The Application Area which occurs adjacent to, but outside the PRU Study Area was assessed here through spatial analysis, using aerial imagery to determine habitat type and connectivity in the landscape as well as the use of habitat reference photographs taken at the Application Area (**Appendix B**). The areas of each habitat within the Application Area and Proposed Disturbance Area are presented in **Table 1**.

Table 1: Areas of each habitat within the Application Area and Proposed Disturbance Area.

Habitats	Application Area (ha)	Proposed Disturbance Area (ha)
Calcrete	0.28	0.07
Stoney Rises	0.58	0.15
Cleared	1.37	0.57
Total	2.24	0.79

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As requested this assessment was performed with reference to the Ten Clearing Principles (Western Australian *Environmental Protection Act 1986*: Schedule 5). Of these, only Principles (a) and (b) are relevant to terrestrial vertebrate fauna within the Application Area. Principle (a) states that – Native vegetation should not be cleared if it comprises a high level of biological diversity and Principle (b) states that - Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The results of our assessment of the proposed disturbance area are summarised as follows:

- The Application Area is comprised of a mix of Stony Rises and Calcrete habitat as well as degraded / cleared habitat associated with the existing road (**Figure 1, Appendix A**), as determined by aerial surveillance, site photographs (**Appendix B**) and previous studies undertaken in the area (MWH 2016a, 2017);
- The Stony Rises and Calcrete habitats are widespread in the immediate vicinity of the Application Area, in the general locality of Marble Bar area and in the Pilbara bioregion overall;
- The Application Area is only 2.24 ha in size, a portion of the habitat has already been cleared and developed for the Limestone-Marble Bar Road, the habitat that still remains is not considered to comprise a high level of Biological Diversity; and
- Of the 325 species of vertebrate fauna identified as being previously recorded and/or having the potential to occur, 32 are considered to be of conservation significance, comprising nine mammals, 19 birds and four reptiles. None of the 32 conservation significant species are likely to be dependent on the habitat contained within the proposed Application Area.

Previous survey conducted in the vicinity of the Application Area (MWH 2016a, b) identified a total of 325 species of terrestrial vertebrate fauna with the potential to occur within the Application Area. Of these, at least 172 have been confirmed in the area based on the recent survey work. These recent survey results indicate that 32 species of conservation significance potentially occur in the Application Area and/or its vicinity (**Table 2, Appendix C**). The likelihood of occurrence for each species was assessed using the criteria in **Appendix D** with the findings of the assessment presented in **Table 3, Appendix E**. Based on this assessment, it was determined that none of the conservation significant species were considered likely to occur, however seven conservation significant species may possibly occur. The remaining conservation significant species are considered unlikely to occur within the Application Area.

Given the relatively small area of vegetation clearing that is proposed to occur within the Application Area (0.22 ha) it is unlikely that any of these species will be adversely affected by clearing activity, based on current

knowledge of the distributions of these species and based on existing capture records. Furthermore, none of these species would be entirely dependent on the area of habitat present within the Application Area.

Comprises High Level of Biological Diversity

Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity

The fauna habitat that occurs within the Application Area (Stony Rise and Calcrete) is common within the Pilbara and is well represented outside of the Application Area. These habitats have not been found to support a high diversity of fauna in recent surveys in the area (MWH 2016a, b). In addition a portion of the Application Area has already been developed for the Limestone-Marble Bar Road. The remaining intact habitat appears to have been degraded. Therefore the Application Area is not considered to comprise an unusually high level of biological diversity for this region and therefore is **unlikely** to be at variance with Principle (a).

Potential Impact to any Significant Habitat for Fauna Indigenous to Western Australia

Principle (b) - Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia

A total of 172 terrestrial vertebrate fauna species have been recorded in nearby studies surrounding the Application Area, including 32 species of conservation significance. Of these conservation significant species, none are considered likely to occur and only seven species were considered to possibly occur although none were found to be dependent upon habitat within the Application Area (**Appendix E**). The remaining species are considered unlikely to occur within the Application Area.

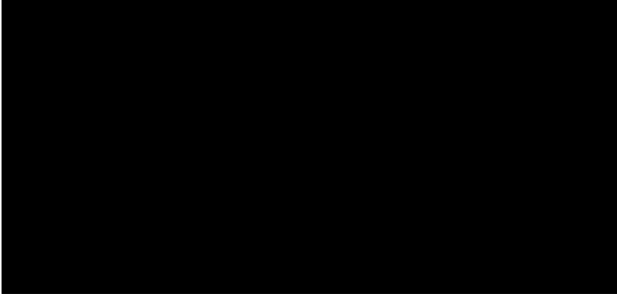
Due to the continuous and widespread nature of the two habitats in the Pilbara bioregion, the mobile nature of the fauna of conservation significance with potential to reside in these habitats and the small scale of the Application Area, habitat within the Application Area is not considered to be of significance. Additionally, it should be noted that the Application Area is located adjacent to the existing Marble Bar road and the Corunna Downs Road and is less likely to support fauna as a result of road traffic, historical clearing and secondary impacts of the highway such as noise, light and edge effects. Therefore, the development and clearing activity within the Application Area is considered **unlikely** to be at variance with Principle (b).

Assessment against the Clearing Principles

Based on the above, we conclude that Atlas Iron Limited's proposed clearing of native vegetation within the Application Area, as per the information provided to us, is unlikely to be at variance with Principle (a) or Principle (b) of the Ten Clearing Principles.

Please do not hesitate to contact me if you require any further information.

Kind regards,



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Appendix A: Application Area, Proposed Disturbance Area and fauna habitats

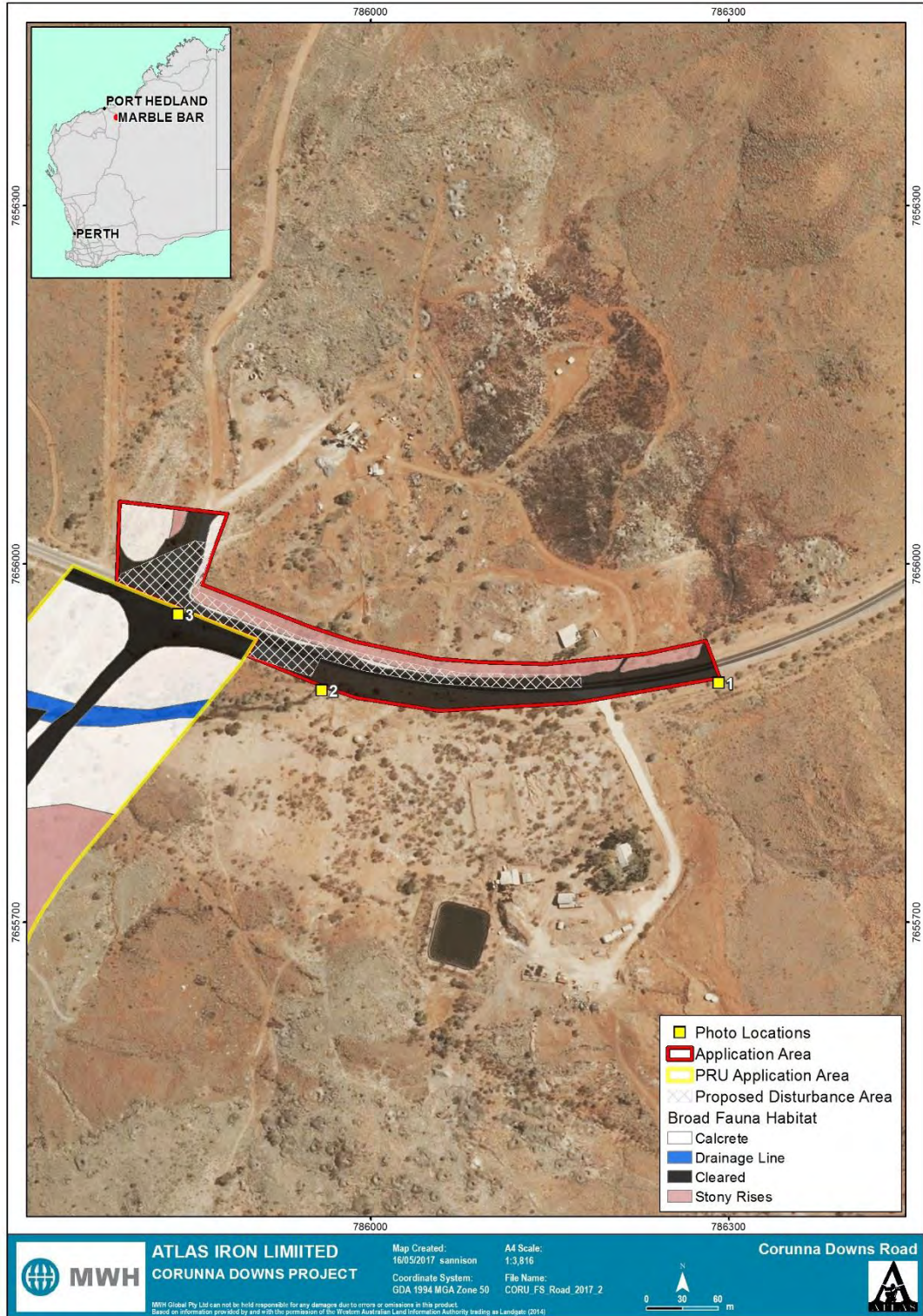


Figure 1: Application Area, Proposed Disturbance Area and fauna habitats

Appendix B: Habitat Photo References



Figure 2: Photo Reference Location 1 – Calcrete



Figure 3: Photo Reference Location 2 - Calcrete

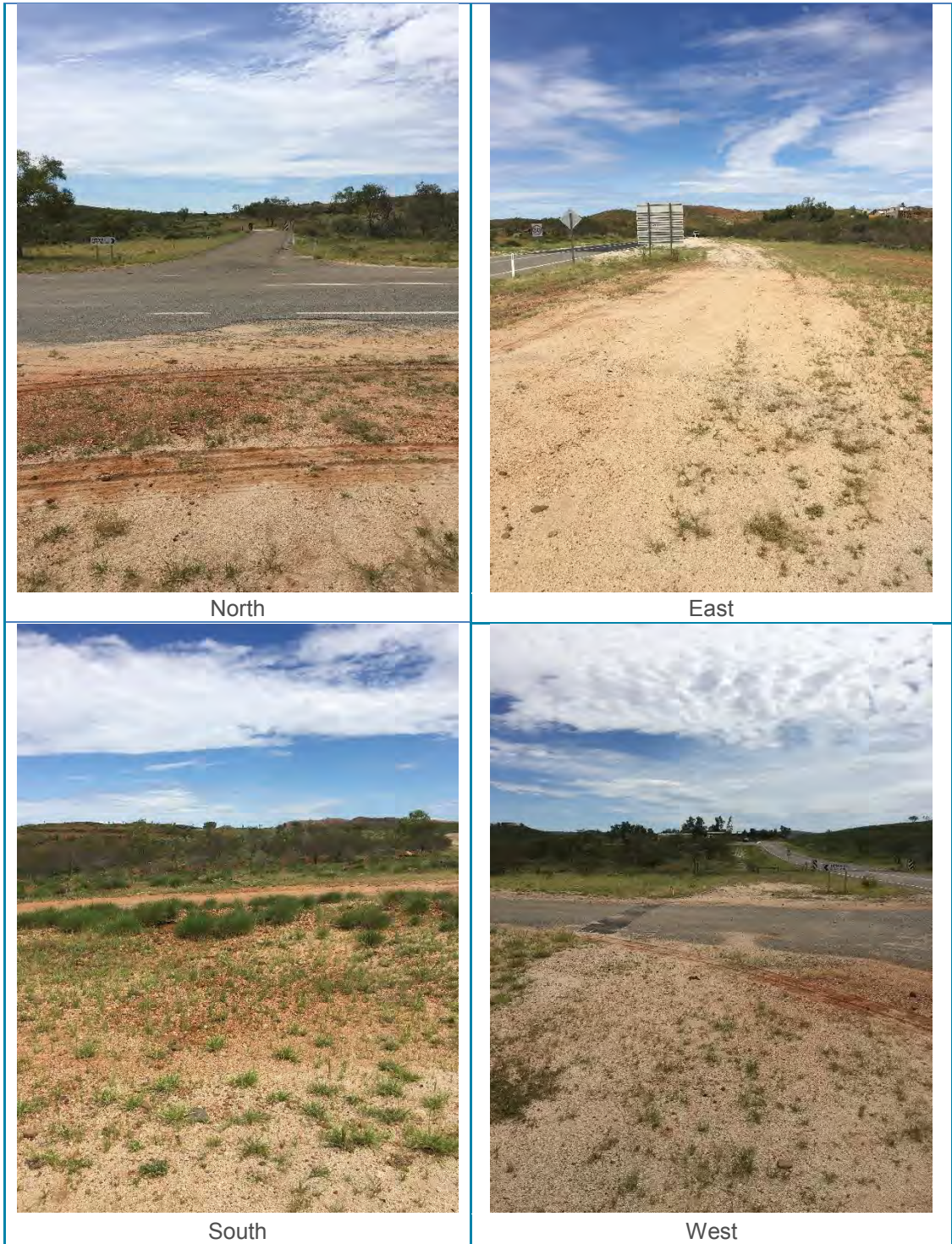


Figure 4: Photo Reference Location 3 - Calcrete

Appendix C

Table 2: Conservation Significant fauna with potential to occur in the Application Area or its Vicinity

Species		Conservation Status	
		EPBC Act	WC Act
Curllew Sandpiper	<i>Calidris ferruginea</i>	Cr, Mi	S3, S5
Northern Quoll	<i>Dasyurus hallucatus</i>	En	S2
Night Parrot	<i>Pezoporus occidentalis</i>	En	S1
Australian Painted Snipe	<i>Rostratula australis</i>	En	S2
Greater Bilby	<i>Macrotis lagotis</i>	Vu	S3
Ghost Bat	<i>Macroderma gigas</i>	Vu	S3
Pilbara Leaf-nosed Bat	<i>Rhinonictes aurantius</i>	Vu	S3
Pilbara Olive Python	<i>Liasis olivaceus barroni</i>	Vu	S3
Grey Falcon	<i>Falco hypoleucos</i>	-	S3
Peregrine Falcon	<i>Falco peregrinus</i>	-	S7
-	<i>Anilius ganei</i>	-	P1
-	<i>Ctenotus nigrilineatus</i>	-	P1
-	<i>Ctenotus uber johnstonei</i>	-	P2
Spectacled Hare-wallaby	<i>Lagorchestes conspicillatus leichardti</i>	-	P3
Brush-tailed Mulgara	<i>Dasyercus blythi</i>	-	P4
Long-tailed Dunnart	<i>Sminthopsis longicaudata</i>	-	P4
Short-tailed Mouse	<i>Leggadina lakedownensis</i>	-	P4
Western Pebble-mound Mouse	<i>Pseudomys chapmani</i>	-	P4
Fork-tailed Swift	<i>Apus pacificus</i>	Mi	S5
Oriental Plover	<i>Charadrius veredus</i>	Mi	S5
Oriental Pratincole	<i>Glareola maldivarum</i>	Mi	S5
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Mi	S5
Wood Sandpiper	<i>Tringa glareola</i>	Mi	S5
Common Sandpiper	<i>Actitis hypoleucos</i>	Mi	S5
Common Greenshank	<i>Tringa nebularia</i>	Mi	S5
Glossy Ibis	<i>Plegadis falcinellus</i>	Mi	S5
Barn Swallow	<i>Hirundo rustica</i>	Mi	S5
Grey Wagtail	<i>Motacilla cinerea</i>	Mi	S5
Yellow Wagtail	<i>Motacilla flava</i>	Mi	S5
Cattle Egret	<i>Ardea ibis</i>	-	S5
Eastern Great Egret	<i>Ardea modesta</i>	-	S5
Rainbow Bee-eater	<i>Merops ornatus</i>	-	S5

Appendix D: Likelihood of Conservation Listed Vertebrate Species Occurring over the Application Area

Species of conservation significance rankings were assigned using the following definitions:

- **Confirmed** – the presence of the species in the Study Area has been recorded unambiguously during the last ten years (i.e. during recent surveys of the Study Area or from recent records obtained via database searches);
- **Very Likely** – the Study Area lies within the known distribution of the species and contains suitable habitat(s), plus the species generally occurs in suitable habitat and has been recorded nearby within the last 20 years;
- **Likely** – the Study Area lies within the known distribution of the species and the species has been recorded nearby within the last 20 years; however, either:
 - a. the Study Area contains only a small area of suitable habitat, or habitat that is only marginally suitable; or
 - b. the species is generally rare and patchily distributed in suitable habitat;
- **Possible** – there is an outside chance of occurrence, because:
 - a. the Study Area is just outside the known distribution of the species, but it does contain suitable and sufficient habitat (the species may be common, rare, or patchily distributed); or
 - b. the Study Area lies within the known distribution of the species, but the species is very rare and/or patchily distributed; or
 - c. the Study Area lies on the edge of, or within, the known distribution and has suitable habitat, but the species has not been recorded in the area for over 20 years; or
- **Unlikely** – the Study Area lies outside the known distribution of the species, the Study Area does not contain suitable habitat, and the species has not been recorded in the area for over 20 years.

Appendix E: Likelihood of Occurrence

Table 3: Likelihood of Conservation Listed Vertebrate Fauna Species Occurring within the Application Area

Common name (Scientific name)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Curlew Sandpiper <i>Calidris ferruginea</i>	Cr, Mi	S3, S5	The Curlew Sandpiper occurs in intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters (Geering <i>et al.</i> 2007).	Unlikely Nearest DPaW (2016a) record located ~250 km south of the Study Area, at Ophthalmia Dam and very few inland records of the species. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.
Northern Quoll <i>Dasyurus hallucatus</i>	En	S2	In the Pilbara, ironstone ridges, scree slopes of sandstone or ironstone and granite boulders and outcrops (Cramer <i>et al.</i> 2016, Molloy <i>et al.</i> 2016).	Unlikely Although northern Quolls have been recorded in the region (MWH 2016a, 2017) the Application Area does not contain appropriate habitat for the species. Consequently, the species is considered unlikely to occur.
Night Parrot <i>Pezoporus occidentalis</i>	En	S1	Known to inhabit treeless or sparsely wooded long unburnt spinifex hummock plains often interspersed with chenopods (Davis and Metcalf 2008, Pyke and Ehrlich 2014).	Unlikely Nearest DPaW (2016a) record located ~135 km south-west from near the Fortescue Marsh (Davis and Metcalf 2008). Species was recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records. Habitat (based on photographs in Appendix B) show that the Application Area has been recently burned. The Night Parrot is believed to require mature spinifex (greater than 15 years unburned). Based on this information, it is unlikely that the Night Parrot occurs within the Application Area.

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Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Australian Painted Snipe <i>Rostratula australis</i>	En	S2	Shallow, well-vegetated temporary or infrequently filled inland wetlands (Garnett <i>et al.</i> 2011, Knuckey <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~170 km south of the Application Area, near Fortescue Marsh, but otherwise very few records within the Pilbara region (Knuckey <i>et al.</i> 2013). Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records. Suitable habitat does not occur within the Application Area.
Greater Bilby <i>Macrotis lagotis</i>	Vu	S3	Variety of habitats including spinifex hummock grassland and <i>Acacia</i> shrubland, on soft soils (Burrows <i>et al.</i> 2012). In the Pilbara often associated with major drainage line sandy terraces (How <i>et al.</i> 1991).	Unlikely Populations of the species are scattered and rare within its distribution (van Dyck and Strahan 2008). Nearest DPaW (2016b) records located ~30 km south-west of the Application Area and ~45 km south-east at McPhee Creek (Outback Ecology 2014). Species requires sandy substrates for burrowing. Habitat within the Application Area is not appropriate for the species.
Ghost Bat <i>Macroderma gigas</i>	Vu	S3	The species roosts within deep humid caves, rock crevice and abandoned mines (Armstrong and Anstee 2000). The species will forage in most habitat types and will travel 2 km from a roost to hunt (Churchill 2008).	Possible The species has been recorded in surrounding study areas (MWH 2016a). The species may overfly the Application Area, but no suitable roosting habitat is present.
Pilbara Leaf-nosed Bat <i>Rhinonicteris aurantia</i>	Vu	S3	Species roosts within caves and abandoned mines with high humidity (95%) and temperature (32 °C). Species forages in caves and along waterbodies with fringing vegetation (Armstrong 2001, DoE 2016).	Possible The species has been recorded in surrounding study areas (MWH 2016a). The species may overfly the Application Area, but no suitable roosting habitat is present.
Pilbara Olive Python <i>Liasis olivaceus barroni</i>	Vu	S3	Species commonly recorded along watercourses and areas of permanent water, particularly in rocky gorges, escarpments and gullies (Pearson 1993).	Unlikely The species has been confirmed in the region (MWH 2016a) and may occur in Rocky Ridge and Gorge habitat and utilise Drainage Line and Riverine habitats for foraging and dispersal. None of these habitats occur within the Application Area and consequently, the species is considered unlikely to occur.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Grey Falcon <i>Falco hypoleucos</i>	-	S3	Timbered lowlands, particularly Acacia shrubland and along inland drainage systems. Also frequent spinifex and tussock grassland (Burbidge <i>et al.</i> 2010, Olsen and Olsen 1986).	Possible Nearest DPaW (2016b) records located ~45 km east from 1994, ~45 km north from 2005 and ~60 km north-east from 1999. The Application Area lies within the known distribution of the Grey Falcon (Morcombe 2003), but the species is patchily distributed and sightings are rare (Barrett <i>et al.</i> 2003). The species were to occur, it is likely to be only on an intermittent basis due to its nomadic nature.
Peregrine Falcon <i>Falco peregrinus</i>	-	S7	The species occurs along coastal cliffs, rivers and ranges as well as wooded watercourses and lakes nesting on cliffs, granite outcrops, quarries (Johnstone and Storr 1998).	Possible One individual was observed 20 km southwest of the Study Area in 2014 (MWH 2016a). The species was also recorded at Abydos-Woodstock Reserve by (How <i>et al.</i> 1991). The Application Area lies within the known distribution of the species (Barrett <i>et al.</i> 2003). The species may fly over the Application Area on an irregular basis, but is not dependent on habitats within the Application Area.
- <i>Anilius ganei</i>	-	P1	This species is endemic to the Pilbara and known from a relatively small number of specimens. Records are sparse and widespread, but it is thought to be linked to moist gorge and gully habitats (Doughty <i>et al.</i> 2011, Wilson and Swan 2014).	Unlikely Nearest DPaW (2016a) records located ~200 km south of the Application Area within the Hamersley Ranges. The species was however recorded during three surveys conducted within 30 km of the Application Area, in habitats equivalent to Rocky Ridge and Gorge (Outback Ecology 2010, 2013, 2014). These habitats do not occur in the Application Area and consequently, this species is considered unlikely to occur.
- <i>Ctenotus nigrilineatus</i>	-	P1	Little is known about the habitat preferences of the species. Previous records have however been collected from spinifex plains at the base of granite outcrops (How <i>et al.</i> 1991).	Unlikely Nearest DPaW (2016a) record located ~65 km west of the Application Area, from Abydos-Woodstock Reserve in 1990 (How <i>et al.</i> 1991), and ~85 km south near Nullagine. Specific habitat requirements of the species are not confirmed but appear to be associated with spinifex plains at the base of granite outcrops. This habitat does not occur within the Application Area and consequently the species is considered unlikely to occur.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
- <i>Ctenotus uber johnstonei</i>	-	P2	The habitat requirements of the species are largely unknown although it is believed the species is associated compacted clayey soil with sparse plant cover (Wilson and Swan 2014).	Unlikely Nearest DPaW (2016a) record located ~15 km south of the Application Area. The species was also recorded at Mt Webber Outback Ecology (2014). Its habitat preferences are poorly understood, and in the absence of additional information it is considered unlikely to occur in the Application Area.
Spectacled Hare-wallaby <i>Lagorchestes conspicillatus leichardti</i>	-	P3	The Spectacled Hare-wallaby in tussock and hummock grasslands and <i>Acacia</i> shrublands (Ingleby and Westoby 1992).	Unlikely An abandoned shelter site, with scats, was recorded within the Stony Rises habitat at Corunna Downs, 20 km south of the Application Area in 2014 (MWH 2016a). The species requires mature spinifex for cover. The lack of suitable habitat means that the species is unlikely to occur within the Application Area.
Brush-tailed Mulgara <i>Dasycercus blythi</i>	-	P4	Sand plains and gibber plains with moderately dense spinifex with 'runways' between clumps (van Dyck and Strahan 2008).	Unlikely Nearest DPaW (2016a) record located ~15 km east of the Application Area from 1959. However, due to the absence of suitable habitat, specifically spinifex sandplains, the species is considered unlikely to occur.
Long-tailed Dunnart <i>Sminthopsis longicaudata</i>	-	P4	Typically occurs on plateaus near breakaways and scree slopes, and on rugged boulder-strewn scree slopes (Gibson and McKenzie 2009). Once considered rare but now shown to be relatively common and widespread in rocky habitats (van Dyck and Strahan 2008).	Unlikely Nearest DPaW (2016b) records located ~35 km east of the Application Area. The species was recently recorded at McPhee Creek (Outback Ecology 2012), located 45 km from the Application Area. However due to the absence of suitable habitat within the Application Area, the species is considered unlikely to occur.
Short-tailed Mouse <i>Leggadina lakedownensis</i>	-	P4	Tussock and hummock grassland, <i>Acacia</i> shrubland, and savannah woodland, on cracking clays and alluvial clays (Kutt and Kemp 2005, Moro and Morris 2000).	Unlikely The nearest is approximately 20 km west of the Application Area (DPaW 2016b). However suitable habitat for the species does not occur within the Application Area.

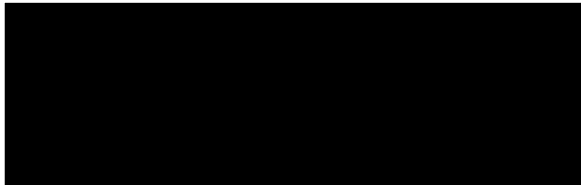
Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Western Pebble-mound Mouse <i>Pseudomys chapmani</i>	-	P4	Spurs and rocky hills with many small pebbles vegetated by spinifex islands (Anstee 1996, Anstee and Armstrong 2001, Anstee <i>et al.</i> 1997).	Possible The species was recorded on 13 occasions 20 km south of the Application Area in 2014 (MWH 2016a). Nine of the records were recorded within Stony Rises habitat, three within Ironstone Ridgetop habitat and one within Spinifex Stony Plain. Additionally, the species was recorded on 11 occasions 4 km west of the Application Area in 2016 (MWH 2017). Given the frequency of records and potential habitat (Stony Rises) occurring within the Application Area, it is possible that this species occurs.
Fork-tailed Swift <i>Apus pacificus</i>	Mi	S5	The Fork-tailed Swift is an aerial specialist that overflies numerous habitats (Pizzey and Knight 2012).	Possible Nearest DPaW (2016a) record is located ~75 km north-west of the Application Area from 2011. The species may flyover the Application Area on an irregular basis, but is not dependent on habitats within the Application Area.
Oriental Plover <i>Charadrius veredus</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species predominantly occurs within near-coastal samphire and grass flats, also beaches, tidal creeks, saltwork ponds and sewage ponds (Johnstone <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area. Preferred habitat for the species does not occur within the Application Area and the species is generally uncommon in the region.
Oriental Pratincole <i>Glareola maldivarum</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species favours open grassy plains (including airfields and sports ovals), samphire and open mudflats and beaches (Johnstone <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~150 km north-west of the Application Area, from Port Hedland and no inland records of the species. Suitable habitat does not occur within the Application Area
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species favours flooded samphire flats and grasslands, mangrove creeks, mudflats, beaches, river pools, saltwork ponds (where commonly located on hypersaline ponds) sewage ponds, and freshwater soaks (Johnstone <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area, from freshwater pools east of Marble Bar. The Application Area does not contain any habitat suitable for the species.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Wood Sandpiper <i>Tringa glareola</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Occurs mainly in river pools, sewage ponds, flooded claypans, freshwater lagoons and bore overflows (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area, from freshwater pools east of Marble Bar. The Application Area does not contain any habitat suitable for the species.
Common Sandpiper <i>Actitis hypoleucos</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species favours tidal and reef flats, beaches, saltwork ponds, river pools, flooded claypans, freshwater soaks and ephemeral waters (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) records located ~25 km north-east of the Application Area at Marble Bar from 2005. The Application Area does not contain any habitat suitable for the species.
Common Greenshank <i>Tringa nebularia</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Occurs mainly in Tidal mudflats, mangrove creeks, flooded samphire flats, beaches, river pools, and saltwork and sewage ponds (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area, from freshwater pools east of Marble Bar. The Application Area does not contain any habitat suitable for the species.
Glossy Ibis <i>Plegadis falcinellus</i>	Mi	S5	Freshwater wetlands, irrigated areas, margins of dams, floodplains, brackish and saline wetlands, tidal mudflats, pastures, lawns and public gardens (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) record located ~50 km north of the Application Area, from the Coongan Riverine system. The Application Area does not contain any habitat suitable for the species.
Barn Swallow <i>Hirundo rustica</i>	Mi	S5	Open country in coastal lowlands, often near water, towns and cities. Also over freshwater wetlands, paperbark woodland, mesophyll shrub thickets and grasslands (Pizzey and Knight 2012).	Unlikely Nearest DPaW (2016a) record located ~150 km north-west of the Application Area, from Port Hedland and no inland records of the species. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.
Grey Wagtail <i>Motacilla cinerea</i>	Mi	S5	Little is known about the biology of the Grey Wagtail. This species occurs near fast-flowing water(Pizzey and Knight 2012).	Unlikely Nearest DPaW (2016a) record located ~550 km north-west of the Application Area, from Broome. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Yellow Wagtail <i>Motacilla flava</i>	Mi	S5	Little is known about the biology of the Yellow Wagtail. This species occurs near salt works, paddocks and marshes (Pizzey and Knight 2012).	Unlikely No previous surveys in the vicinity of the Application Area have recorded the species and it was reported only by the DoE Protected Matters database, which is based on estimated species distributions rather than actual field records.
Cattle Egret <i>Ardea ibis</i>		S5	Occurs in a wide range of habitats including, marshes, reservoirs, lakes, swamps, and riverside woodlands and often forage in fields with grazing livestock (Pizzey and Knight 2012).	Unlikely Nearest DPaW (2016a) record located ~160 km south of the Application Area, from the Fortescue Marsh and generally very few inland records of the species. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.
Eastern Great Egret <i>Ardea modesta</i>		S5	Forages in a wide range of wetland habitats including, flooded claypans, flooded samphire (inundated by rain or high tides), river pools, sewage ponds, mangrove creeks and saltwork ponds (Johnstone et al. 2013). Breeding recorded in treed drainages lines and inland islands (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016b) records located ~8 km east of the Application Area within Emu Creek. However the Application Area does not contain habitat suitable for the species.
Rainbow Bee-eater <i>Merops ornatus</i>		S5	Lightly wooded, often sandy country, preferring areas near water (Johnstone et al. 2013).	Possible The species was recorded from 61 records approximately 20 km south of the Application Area (MWH 2016a) and from two records 10 km SW of the Application Area (MWH 2017). The species may be recorded from various habitats in the landscape, but is more common along drainage features in the landscape. Although more likely to occur in the Riverine and Drainage Line habitat, it is possible that the species may occur within the Application Area.

Appendix G Marble Bar Town Sculptures: Fauna Desktop Assessment

20th May 2017



Dear 

Marble Bar Town Sculptures: Fauna Desktop Assessment

As requested and outlined in the approved proposal (MWH Ref: ATLS-FD-17001) MWH (now part of Stantec) has performed an assessment of the potential impacts to terrestrial vertebrate fauna of Atlas Iron Limited's (Atlas) proposed clearing of native vegetation at the Marble Bar town sculptures (the Application Area). The Application Area occurs just east of Marble Bar, in the Pilbara region of Western Australia. The Proposed Disturbance Area comprises approximately 0.94 ha within the 1.99 ha Application Area. The purpose of the clearing is to provide room for tourists to pull off the road to take photos of the Marble Bar Town Sculptures in a safe area away from trucks transporting ore from the Corunna Downs Project.

The assessment was performed based on the Proposed Disturbance Area which occurs entirely within the clearing permit Application Area (**Appendix A: Figure 1**). The Application Area occurs 1.5 km east the Study Area for the Corunna Downs Public Road Upgrade (PRU) Level 1 Level 1 Fauna Assessment (MWH 2017) and approximately 20 km north of the Study Area for the Corunna Downs Level 2 fauna survey and impact assessment (MWH 2016a, b). The habitats and fauna species with potential to occur within the close proximity to the Application Area and the surrounding region were well documented as part of these surveys. The Application Area which occurs in close proximity to the PRU Study Area was assessed here through spatial analysis, using aerial imagery to determine habitat type and connectivity in the landscape as well as the use of habitat reference photographs taken at the Application Area (**Appendix B**). The areas of each habitat within the Application Area and Proposed Disturbance Area are presented in **Table 1**.

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Table 1: Areas of each habitat within the Application Area and Proposed Disturbance Area.

Habitats	Application Area (ha)	Proposed Disturbance Area (ha)
Stoney Rises	1.02	1.02
Cleared	0.97	0.00
Total	1.98	1.02

As requested this assessment was performed with reference to the Ten Clearing Principles (Western Australian *Environmental Protection Act 1986*: Schedule 5). Of these, only Principles (a) and (b) are relevant to terrestrial vertebrate fauna within the Application Area. Principle (a) states that – Native vegetation should not be cleared if it comprises a high level of biological diversity and Principle (b) states that - Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The results of our assessment of the Proposed Disturbance area are summarised as follows:

- The Application Area is comprised of Stony Rise habitat and degraded / cleared habitat associated with the existing road (**Figure 1, Appendix A**), as determined by aerial surveillance, site photographs (**Appendix B**) and previous studies undertaken in the area (MWH 2016a, 2017);
- The Stony Rise habitat type is widespread in the immediate vicinity of the Application Area, in the general locality of Marble Bar area and in the Pilbara bioregion overall;
- The Application Area is only 1.98 ha in size, a significant portion of the area within the Proposed Disturbance area (0.97 ha) has already been cleared and developed for the Limestone-Marble Bar Road, the habitat that still remains is not considered to comprise a high level of Biological Diversity; and
- Of the 325 species of vertebrate fauna identified as being previously recorded and/or having the potential to occur, 32 are considered to be of conservation significance, comprising nine mammals, 19 birds and four reptiles. None of the 32 conservation significant species are likely to be dependent on the habitat contained within the proposed Application Area.

Previous surveys conducted in the vicinity of the Application Area (MWH 2016a, b, 2017) identified a total of 325 species of terrestrial vertebrate fauna with potential to occur within the Application Area. Of these, at least 172 have been confirmed in the area based on the recent survey work. These recent survey results indicate that 32 species of conservation significance potentially occur in the Application Area and/or its vicinity (**Table 2, Appendix C**). The likelihood of occurrence for each species was assessed using the criteria in **Appendix D** with the findings of the assessment presented in **Table 3, Appendix E**. Based on this assessment, it was determined that none of the conservation significant species were considered likely to

occur, however seven conservation significant species may possibly occur. The remaining conservation significant species are considered unlikely to occur within the Application Area.

Given the relatively small area of vegetation clearing that is proposed to occur within the Application Area (1.02 ha) it is unlikely that any of these species will be adversely affected by clearing activity, based on current knowledge of the distributions of these species and based on existing capture records. Furthermore, none of these species would be entirely dependent on the area of habitat present within the Application Area.

Comprises High Level of Biological Diversity

Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity

The fauna habitat that occurs within the Application Area (Stony Rise) is common within the Pilbara and is well represented outside of the Application Area. This habitat has not been found to support a high diversity of fauna in recent surveys in the area (MWH 2017) (MWH 2016a, b). In addition a portion of the Application Area has already been developed for the Limestone-Marble Bar Road. The remaining intact habitat appears to have been degraded. Therefore the Application Area is not considered to comprise an unusually high level of biological diversity for this region and therefore is **unlikely** to be at variance with Principle (a).

Potential Impact to any Significant Habitat for Fauna Indigenous to Western Australia

Principle (b) - Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia

A total of 172 terrestrial vertebrate fauna species have been recorded in nearby studies surrounding the Application Area, including 32 species of conservation significance. Of these conservation significant species, none are considered likely to occur and only seven species were considered to possibly occur although none were found to be dependent upon habitat within the Application Area (**Appendix E**). The remaining species are considered unlikely to occur within the Application Area.

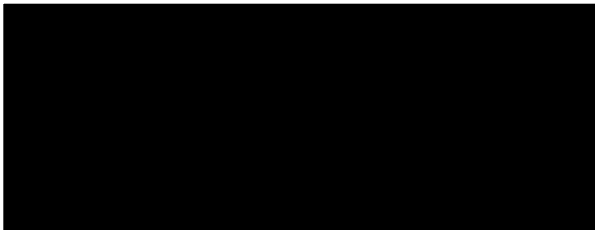
Due to the continuous and widespread nature of the Stony Rise habitat in the Pilbara bioregion, the mobile nature of the fauna of conservation significance with potential to reside in this habitat and the small scale of the Application Area, habitat within the Application Area is not considered to be of significance. Additionally, it should be noted that the Application Area is located adjacent to the existing Limestone-Marble Bar Road and is less likely to support fauna as a result of road traffic, historical clearing and secondary impacts of the highway such as noise, light and edge effects. Therefore, the development and clearing activity within the Application Area is considered **unlikely** to be at variance with Principle (b).

Assessment against the Clearing Principles

Based on the above, we conclude that Atlas Iron Limited's proposed clearing of native vegetation within the Application Area, as per the information provided to us, is unlikely to be at variance with Principle (a) or Principle (b) of the Ten Clearing Principles.

Please do not hesitate to contact me if you require any further information.

Kind regards,



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Appendix A: Application Area, Proposed Disturbance Area and fauna habitats

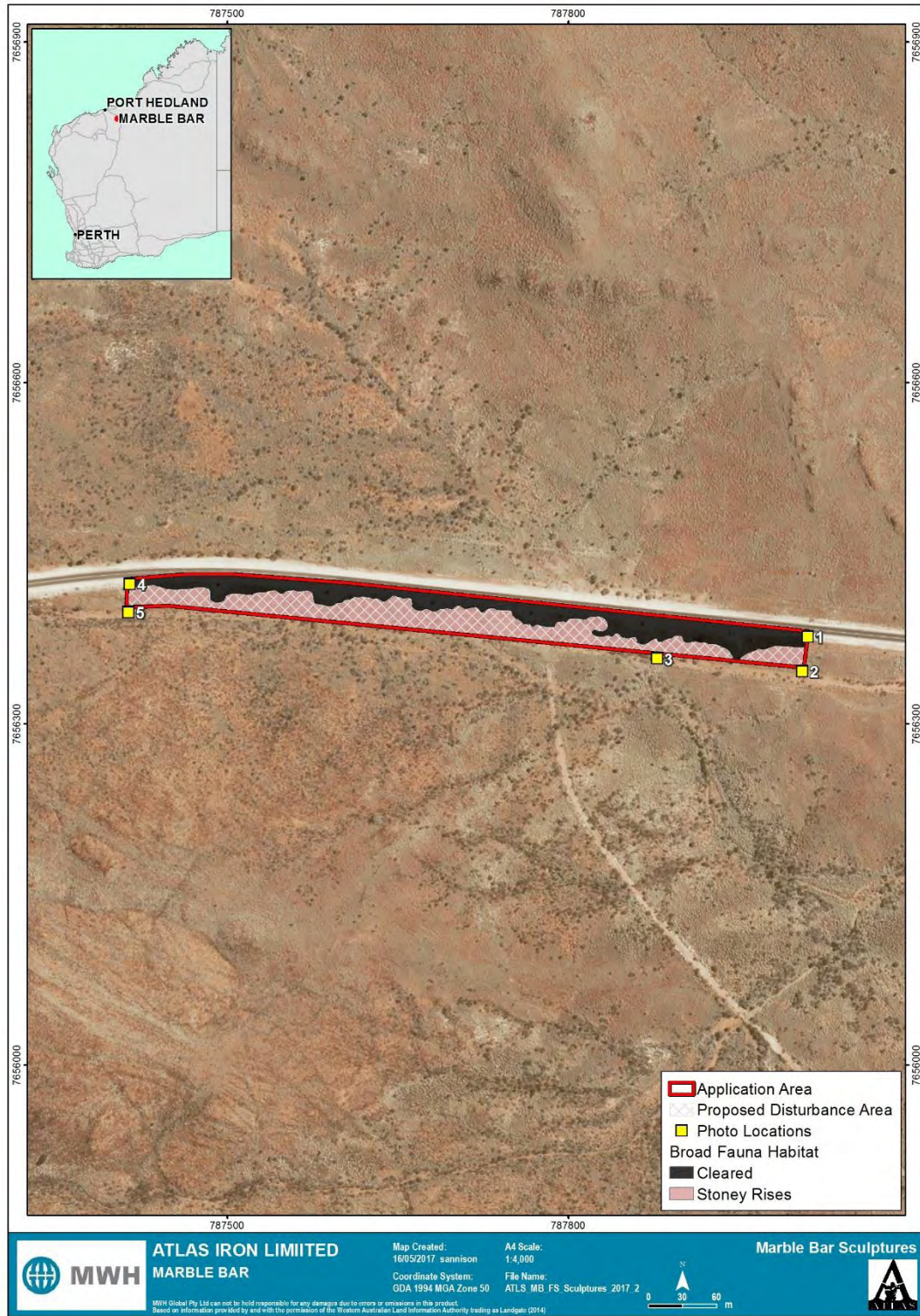


Figure 1: Application Area, Proposed Disturbance Area and fauna habitats

Appendix B: Habitat Photo References



Figure 2: Photo Reference Location 1 – Cleared Land with Stony Rises to the south



Figure 3: Photo Reference Location 2 – Stony Rises



Figure 4: Photo Reference Location 3 – Stony Rises

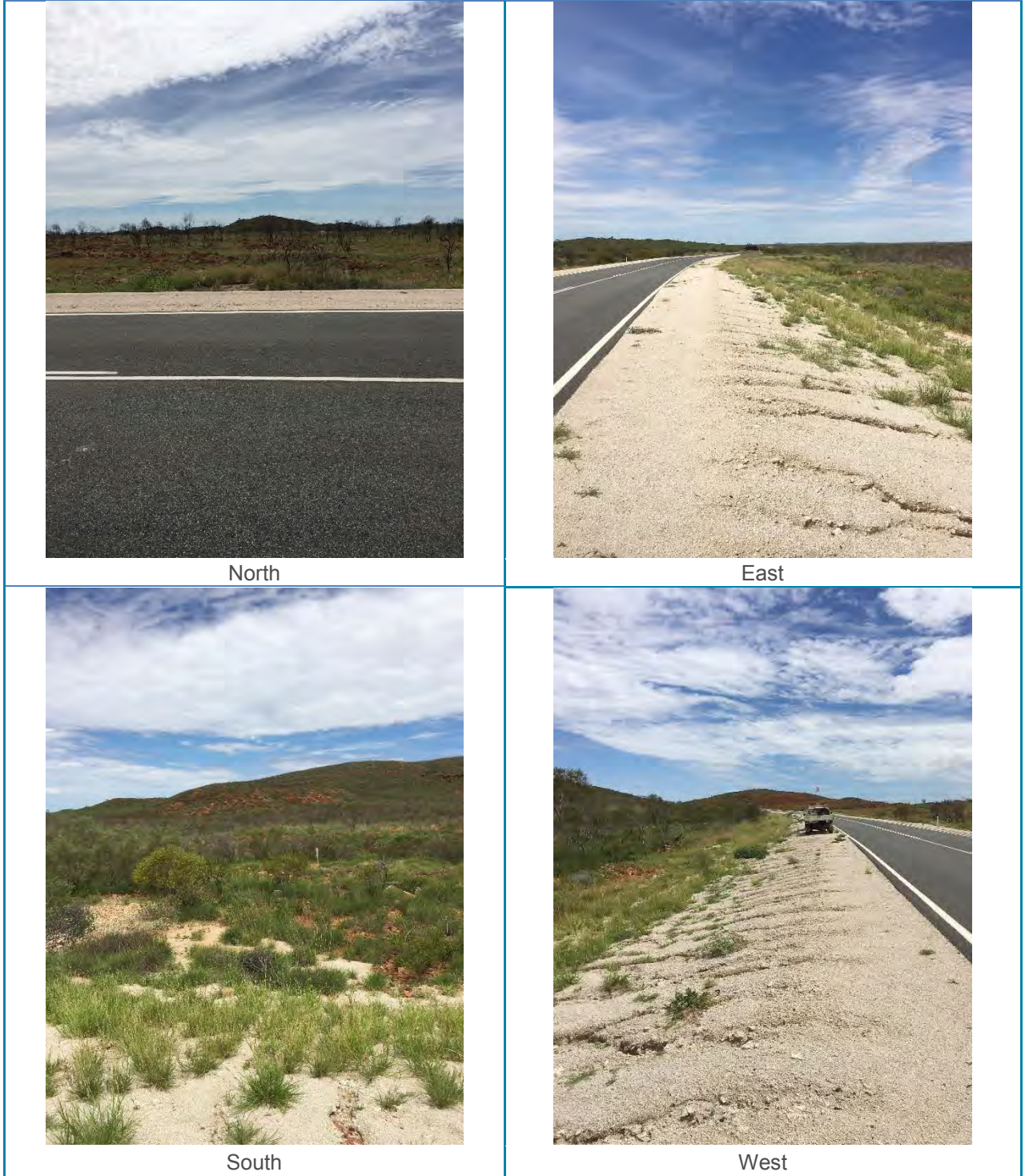


Figure 5: Photo Reference Location 4 – Cleared Land with Stony Rises to the south



Figure 6: Photo Reference Location 5 – Stony Rises

Appendix C

Table 2: Conservation Significant fauna with potential to occur in the Application Area or its Vicinity

Species		Conservation Status	
		EPBC Act	WC Act
Curllew Sandpiper	<i>Calidris ferruginea</i>	Cr, Mi	S3, S5
Northern Quoll	<i>Dasyurus hallucatus</i>	En	S2
Night Parrot	<i>Pezoporus occidentalis</i>	En	S1
Australian Painted Snipe	<i>Rostratula australis</i>	En	S2
Greater Bilby	<i>Macrotis lagotis</i>	Vu	S3
Ghost Bat	<i>Macroderma gigas</i>	Vu	S3
Pilbara Leaf-nosed Bat	<i>Rhinonictes aurantius</i>	Vu	S3
Pilbara Olive Python	<i>Liasis olivaceus barroni</i>	Vu	S3
Grey Falcon	<i>Falco hypoleucos</i>	-	S3
Peregrine Falcon	<i>Falco peregrinus</i>	-	S7
-	<i>Anilius ganei</i>	-	P1
-	<i>Ctenotus nigrilineatus</i>	-	P1
-	<i>Ctenotus uber johnstonei</i>	-	P2
Spectacled Hare-wallaby	<i>Lagorchestes conspicillatus leichardti</i>	-	P3
Brush-tailed Mulgara	<i>Dasyercus blythi</i>	-	P4
Long-tailed Dunnart	<i>Sminthopsis longicaudata</i>	-	P4
Short-tailed Mouse	<i>Leggadina lakedownensis</i>	-	P4
Western Pebble-mound Mouse	<i>Pseudomys chapmani</i>	-	P4
Fork-tailed Swift	<i>Apus pacificus</i>	Mi	S5
Oriental Plover	<i>Charadrius veredus</i>	Mi	S5
Oriental Pratincole	<i>Glareola maldivarum</i>	Mi	S5
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Mi	S5
Wood Sandpiper	<i>Tringa glareola</i>	Mi	S5
Common Sandpiper	<i>Actitis hypoleucos</i>	Mi	S5
Common Greenshank	<i>Tringa nebularia</i>	Mi	S5
Glossy Ibis	<i>Plegadis falcinellus</i>	Mi	S5
Barn Swallow	<i>Hirundo rustica</i>	Mi	S5
Grey Wagtail	<i>Motacilla cinerea</i>	Mi	S5
Yellow Wagtail	<i>Motacilla flava</i>	Mi	S5
Cattle Egret	<i>Ardea ibis</i>	-	S5
Eastern Great Egret	<i>Ardea modesta</i>	-	S5
Rainbow Bee-eater	<i>Merops ornatus</i>	-	S5

Appendix D: Likelihood of Conservation Listed Vertebrate Species Occurring over the Application Area

Species of conservation significance rankings were assigned using the following definitions:

- **Confirmed** – the presence of the species in the Study Area has been recorded unambiguously during the last ten years (i.e. during recent surveys of the Study Area or from recent records obtained via database searches);
- **Very Likely** – the Study Area lies within the known distribution of the species and contains suitable habitat(s), plus the species generally occurs in suitable habitat and has been recorded nearby within the last 20 years;
- **Likely** – the Study Area lies within the known distribution of the species and the species has been recorded nearby within the last 20 years; however, either:
 - a. the Study Area contains only a small area of suitable habitat, or habitat that is only marginally suitable; or
 - b. the species is generally rare and patchily distributed in suitable habitat;
- **Possible** – there is an outside chance of occurrence, because:
 - a. the Study Area is just outside the known distribution of the species, but it does contain suitable and sufficient habitat (the species may be common, rare, or patchily distributed); or
 - b. the Study Area lies within the known distribution of the species, but the species is very rare and/or patchily distributed; or
 - c. the Study Area lies on the edge of, or within, the known distribution and has suitable habitat, but the species has not been recorded in the area for over 20 years; or
- **Unlikely** – the Study Area lies outside the known distribution of the species, the Study Area does not contain suitable habitat, and the species has not been recorded in the area for over 20 years.

Appendix E: Likelihood of Occurrence

Table 3: Likelihood of Conservation Listed Vertebrate Fauna Species Occurring within the Application Area

Common name (Scientific name)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Curlew Sandpiper <i>Calidris ferruginea</i>	Cr, Mi	S3, S5	The Curlew Sandpiper occurs in intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters (Geering <i>et al.</i> 2007).	Unlikely Nearest DPaW (2016a) record located ~250 km south of the Study Area, at Ophthalmia Dam and very few inland records of the species. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.
Northern Quoll <i>Dasyurus hallucatus</i>	En	S2	In the Pilbara, ironstone ridges, scree slopes of sandstone or ironstone and granite boulders and outcrops (Cramer <i>et al.</i> 2016, Molloy <i>et al.</i> 2016).	Unlikely Although northern Quolls have been recorded in the region (MWH 2016a, 2017) the Application Area does not contain appropriate habitat for the species. Consequently, the species is considered unlikely to occur.
Night Parrot <i>Pezoporus occidentalis</i>	En	S1	Known to inhabit treeless or sparsely wooded long unburnt spinifex hummock plains often interspersed with chenopods (Davis and Metcalf 2008, Pyke and Ehrlich 2014).	Unlikely Nearest DPaW (2016a) record located ~135 km south-west from near the Fortescue Marsh (Davis and Metcalf 2008). Species was recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records. Habitat (based on photographs in Appendix B) show that the Application Area has been recently burned. The Night Parrot is believed to require mature spinifex (greater than 15 years unburned). Based on this information, it is unlikely that the Night Parrot occurs within the Application Area.

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Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Australian Painted Snipe <i>Rostratula australis</i>	En	S2	Shallow, well-vegetated temporary or infrequently filled inland wetlands (Garnett <i>et al.</i> 2011, Knuckey <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~170 km south of the Application Area, near Fortescue Marsh, but otherwise very few records within the Pilbara region (Knuckey <i>et al.</i> 2013). Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records. Suitable habitat does not occur within the Application Area.
Greater Bilby <i>Macrotis lagotis</i>	Vu	S3	Variety of habitats including spinifex hummock grassland and <i>Acacia</i> shrubland, on soft soils (Burrows <i>et al.</i> 2012). In the Pilbara often associated with major drainage line sandy terraces (How <i>et al.</i> 1991).	Unlikely Populations of the species are scattered and rare within its distribution (van Dyck and Strahan 2008). Nearest DPaW (2016b) records located ~30 km south-west of the Application Area and ~45 km south-east at McPhee Creek (Outback Ecology 2014). Species requires sandy substrates for burrowing. Habitat within the Application Area is not appropriate for the species.
Ghost Bat <i>Macroderma gigas</i>	Vu	S3	The species roosts within deep humid caves, rock crevice and abandoned mines (Armstrong and Anstee 2000). The species will forage in most habitat types and will travel 2 km from a roost to hunt (Churchill 2008).	Possible The species has been recorded in surrounding study areas (MWH 2016a). The species may overfly the Application Area, but no suitable roosting habitat is present.
Pilbara Leaf-nosed Bat <i>Rhinonicteris aurantia</i>	Vu	S3	Species roosts within caves and abandoned mines with high humidity (95%) and temperature (32 °C). Species forages in caves and along waterbodies with fringing vegetation (Armstrong 2001, DoE 2016).	Possible The species has been recorded in surrounding study areas (MWH 2016a). The species may overfly the Application Area, but no suitable roosting habitat is present.
Pilbara Olive Python <i>Liasis olivaceus barroni</i>	Vu	S3	Species commonly recorded along watercourses and areas of permanent water, particularly in rocky gorges, escarpments and gullies (Pearson 1993).	Unlikely The species has been confirmed in the region (MWH 2016a) and may occur in Rocky Ridge and Gorge habitat and utilise Drainage Line and Riverine habitats for foraging and dispersal. None of these habitats occur within the Application Area and consequently, the species is considered unlikely to occur.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Grey Falcon <i>Falco hypoleucos</i>	-	S3	Timbered lowlands, particularly Acacia shrubland and along inland drainage systems. Also frequent spinifex and tussock grassland (Burbidge <i>et al.</i> 2010, Olsen and Olsen 1986).	Possible Nearest DPaW (2016b) records located ~45 km east from 1994, ~45 km north from 2005 and ~60 km north-east from 1999. The Application Area lies within the known distribution of the Grey Falcon (Morcombe 2003), but the species is patchily distributed and sightings are rare (Barrett <i>et al.</i> 2003). The species were to occur, it is likely to be only on an intermittent basis due to its nomadic nature.
Peregrine Falcon <i>Falco peregrinus</i>	-	S7	The species occurs along coastal cliffs, rivers and ranges as well as wooded watercourses and lakes nesting on cliffs, granite outcrops, quarries (Johnstone and Storr 1998).	Possible One individual was observed 20 km southwest of the Study Area in 2014 (MWH 2016a). The species was also recorded at Abydos-Woodstock Reserve by (How <i>et al.</i> 1991). The Application Area lies within the known distribution of the species (Barrett <i>et al.</i> 2003). The species may fly over the Application Area on an irregular basis, but is not dependent on habitats within the Application Area.
- <i>Anilius ganei</i>	-	P1	This species is endemic to the Pilbara and known from a relatively small number of specimens. Records are sparse and widespread, but it is thought to be linked to moist gorge and gully habitats (Doughty <i>et al.</i> 2011, Wilson and Swan 2014).	Unlikely Nearest DPaW (2016a) records located ~200 km south of the Application Area within the Hamersley Ranges. The species was however recorded during three surveys conducted within 30 km of the Application Area, in habitats equivalent to Rocky Ridge and Gorge (Outback Ecology 2010, 2013, 2014). These habitats do not occur in the Application Area and consequently, this species is considered unlikely to occur.
- <i>Ctenotus nigrilineatus</i>	-	P1	Little is known about the habitat preferences of the species. Previous records have however been collected from spinifex plains at the base of granite outcrops (How <i>et al.</i> 1991).	Unlikely Nearest DPaW (2016a) record located ~65 km west of the Application Area, from Abydos-Woodstock Reserve in 1990 (How <i>et al.</i> 1991), and ~85 km south near Nullagine. Specific habitat requirements of the species are not confirmed but appear to be associated with spinifex plains at the base of granite outcrops. This habitat does not occur within the Application Area and consequently the species is considered unlikely to occur.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
- <i>Ctenotus uber johnstonei</i>	-	P2	The habitat requirements of the species are largely unknown although it is believed the species is associated compacted clayey soil with sparse plant cover (Wilson and Swan 2014).	Unlikely Nearest DPaW (2016a) record located ~15 km south of the Application Area. The species was also recorded at Mt Webber Outback Ecology (2014). Its habitat preferences are poorly understood, and in the absence of additional information it is considered unlikely to occur in the Application Area.
Spectacled Hare-wallaby <i>Lagorchestes conspicillatus leichardti</i>	-	P3	The Spectacled Hare-wallaby in tussock and hummock grasslands and <i>Acacia</i> shrublands (Ingleby and Westoby 1992).	Unlikely An abandoned shelter site, with scats, was recorded within the Stony Rises habitat at Corunna Downs, 20 km south of the Application Area in 2014 (MWH 2016a). The species requires mature spinifex for cover. The lack of suitable habitat means that the species is unlikely to occur within the Application Area.
Brush-tailed Mulgara <i>Dasycercus blythi</i>	-	P4	Sand plains and gibber plains with moderately dense spinifex with 'runways' between clumps (van Dyck and Strahan 2008).	Unlikely Nearest DPaW (2016a) record located ~15 km east of the Application Area from 1959. However, due to the absence of suitable habitat, specifically spinifex sandplains, the species is considered unlikely to occur.
Long-tailed Dunnart <i>Sminthopsis longicaudata</i>	-	P4	Typically occurs on plateaus near breakaways and scree slopes, and on rugged boulder-strewn scree slopes (Gibson and McKenzie 2009). Once considered rare but now shown to be relatively common and widespread in rocky habitats (van Dyck and Strahan 2008).	Unlikely Nearest DPaW (2016b) records located ~35 km east of the Application Area. The species was recently recorded at McPhee Creek (Outback Ecology 2012), located 45 km from the Application Area. However due to the absence of suitable habitat within the Application Area, the species is considered unlikely to occur.
Short-tailed Mouse <i>Leggadina lakedownensis</i>	-	P4	Tussock and hummock grassland, <i>Acacia</i> shrubland, and savannah woodland, on cracking clays and alluvial clays (Kutt and Kemp 2005, Moro and Morris 2000).	Unlikely The nearest is approximately 20 km west of the Application Area (DPaW 2016b). However suitable habitat for the species does not occur within the Application Area.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Western Pebble-mound Mouse <i>Pseudomys chapmani</i>	-	P4	Spurs and rocky hills with many small pebbles vegetated by spinifex islands (Anstee 1996, Anstee and Armstrong 2001, Anstee <i>et al.</i> 1997).	Possible The species was recorded on 13 occasions 20 km south of the Application Area in 2014 (MWH 2016a). Nine of the records were recorded within Stony Rises habitat, three within Ironstone Ridgetop habitat and one within Spinifex Stony Plain. Additionally, the species was recorded on 11 occasions 4 km west of the Application Area in 2016 (MWH 2017). Given the frequency of records and potential habitat (Stony Rises) occurring within the Application Area, it is possible that this species occurs.
Fork-tailed Swift <i>Apus pacificus</i>	Mi	S5	The Fork-tailed Swift is an aerial specialist that overflies numerous habitats (Pizzey and Knight 2012).	Possible Nearest DPaW (2016a) record is located ~75 km north-west of the Application Area from 2011. The species may flyover the Application Area on an irregular basis, but is not dependent on habitats within the Application Area.
Oriental Plover <i>Charadrius veredus</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species predominantly occurs within near-coastal samphire and grass flats, also beaches, tidal creeks, saltwork ponds and sewage ponds (Johnstone <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area. Preferred habitat for the species does not occur within the Application Area and the species is generally uncommon in the region.
Oriental Pratincole <i>Glareola maldivarum</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species favours open grassy plains (including airfields and sports ovals), samphire and open mudflats and beaches (Johnstone <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~150 km north-west of the Application Area, from Port Hedland and no inland records of the species. Suitable habitat does not occur within the Application Area
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species favours flooded samphire flats and grasslands, mangrove creeks, mudflats, beaches, river pools, saltwork ponds (where commonly located on hypersaline ponds) sewage ponds, and freshwater soaks (Johnstone <i>et al.</i> 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area, from freshwater pools east of Marble Bar. The Application Area does not contain any habitat suitable for the species.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Wood Sandpiper <i>Tringa glareola</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Occurs mainly in river pools, sewage ponds, flooded claypans, freshwater lagoons and bore overflows (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area, from freshwater pools east of Marble Bar. The Application Area does not contain any habitat suitable for the species.
Common Sandpiper <i>Actitis hypoleucos</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Species favours tidal and reef flats, beaches, saltwork ponds, river pools, flooded claypans, freshwater soaks and ephemeral waters (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) records located ~25 km north-east of the Application Area at Marble Bar from 2005. The Application Area does not contain any habitat suitable for the species.
Common Greenshank <i>Tringa nebularia</i>	Mi	S5	Species occurs as a non-breeding summer migrant which occurs throughout the region. Occurs mainly in Tidal mudflats, mangrove creeks, flooded samphire flats, beaches, river pools, and saltwork and sewage ponds (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) record located ~25 km north-east of the Application Area, from freshwater pools east of Marble Bar. The Application Area does not contain any habitat suitable for the species.
Glossy Ibis <i>Plegadis falcinellus</i>	Mi	S5	Freshwater wetlands, irrigated areas, margins of dams, floodplains, brackish and saline wetlands, tidal mudflats, pastures, lawns and public gardens (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016a) record located ~50 km north of the Application Area, from the Coongan Riverine system. The Application Area does not contain any habitat suitable for the species.
Barn Swallow <i>Hirundo rustica</i>	Mi	S5	Open country in coastal lowlands, often near water, towns and cities. Also over freshwater wetlands, paperbark woodland, mesophyll shrub thickets and grasslands (Pizzey and Knight 2012).	Unlikely Nearest DPaW (2016a) record located ~150 km north-west of the Application Area, from Port Hedland and no inland records of the species. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.
Grey Wagtail <i>Motacilla cinerea</i>	Mi	S5	Little is known about the biology of the Grey Wagtail. This species occurs near fast-flowing water(Pizzey and Knight 2012).	Unlikely Nearest DPaW (2016a) record located ~550 km north-west of the Application Area, from Broome. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.

Common name (<i>Scientific name</i>)	Conservation status		Broad habitat type	Likelihood of occurrence
	EPBC Act	In WA		
Yellow Wagtail <i>Motacilla flava</i>	Mi	S5	Little is known about the biology of the Yellow Wagtail. This species occurs near salt works, paddocks and marshes (Pizzey and Knight 2012).	Unlikely No previous surveys in the vicinity of the Application Area have recorded the species and it was reported only by the DoE Protected Matters database, which is based on estimated species distributions rather than actual field records.
Cattle Egret <i>Ardea ibis</i>		S5	Occurs in a wide range of habitats including, marshes, reservoirs, lakes, swamps, and riverside woodlands and often forage in fields with grazing livestock (Pizzey and Knight 2012).	Unlikely Nearest DPaW (2016a) record located ~160 km south of the Application Area, from the Fortescue Marsh and generally very few inland records of the species. Species only recorded from DoEE Protected Matters database, which is based on estimated species distribution, rather than actual field records.
Eastern Great Egret <i>Ardea modesta</i>		S5	Forages in a wide range of wetland habitats including, flooded claypans, flooded samphire (inundated by rain or high tides), river pools, sewage ponds, mangrove creeks and saltwork ponds (Johnstone et al. 2013). Breeding recorded in treed drainages lines and inland islands (Johnstone et al. 2013).	Unlikely Nearest DPaW (2016b) records located ~8 km east of the Application Area within Emu Creek. However the Application Area does not contain habitat suitable for the species.
Rainbow Bee-eater <i>Merops ornatus</i>		S5	Lightly wooded, often sandy country, preferring areas near water (Johnstone et al. 2013).	Possible The species was recorded from 61 records approximately 20 km south of the Application Area (MWH 2016a) and from two records 10 km SW of the Application Area (MWH 2017). The species may be recorded from various habitats in the landscape, but is more common along drainage features in the landscape. Although more likely to occur in the Riverine and Drainage Line habitat, it is possible that the species may occur within the Application Area.