

Attachment 8

Supplementary
Fauna Survey Report

WINCHESTER SOUTH PROJECT

Environmental Impact Statement
Additional Information



WHITEHAVEN COAL



Resource
Strategies





Winchester South Project - Supplementary Terrestrial Ecology Survey Report

3 June 2022

Whitehaven WS Pty Ltd

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Document Management

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Abbreviations

Abbreviation	Description
°C	Degrees Celsius
BOM	Bureau of Meteorology
DAWE	Department of Agriculture, Water and Environment
DES	Queensland Department of Environment and Science
DEWHA	Department of the Environment, Water, Heritage and the Arts
E2M	E2M Pty Ltd
EIS	Environmental Impact Statement
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	Hectares
km	Kilometres
m	Metres
mm	Millimetres
NC Act	Queensland <i>Nature Conservation Act 1992</i>
NSW	New South Wales
OEH	Office of Environment & Heritage
RFI	Request for Information
SDPWO Act	<i>Queensland State Development and Public Works Organisation Act 1971</i>
sp.	Singular species. For example, <i>Eucalyptus</i> sp. refers to a single species of <i>Eucalyptus</i>
spp.	Multiple species. For example, <i>Eucalyptus</i> spp. refers to multiple species of <i>Eucalyptus</i>
SPRAT	Species Profile and Threats Database
TEAR	Terrestrial Ecology Assessment Report
The Project	Winchester South Project
Whitehaven	Whitehaven Coal Pty Ltd



1 Introduction

Whitehaven Coal Pty Ltd (Whitehaven) received a Request For Information (RFI) regarding the fauna survey effort detailed in the Terrestrial Ecology chapter of the Winchester South Project Environmental Impact Statement (EIS). This Supplementary Survey Report has been prepared by E2M Pty Ltd (E2M) in order to address the RFI.

1.1 Project background

Whitehaven is proposing to develop an open cut coal mine with associated construction and operation mine infrastructure. The proposed mine is named the ‘Winchester South Project’ (herein referred to as ‘the Project’), and is located within the Bowen Basin, approximately 30 kilometres (km) south-east of Moranbah, as depicted in Figure 1.

The Coordinator-General declared the Project to be a ‘coordinated project for which an EIS is required under section 26(1)(a) of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act)’. In accordance with this, E2M prepared the Terrestrial Ecology Assessment Report (TEAR) chapter for the Project’s EIS (E2M, 2021), based on the results of a comprehensive desktop and field study across the Study Area (Figure 1).

Within the TEAR, the likelihood of occurrence assessment concluded that the threatened species northern quoll (*Dasyurus hallucatus*) and Corben’s long-eared bat (aka southern long-eared bat) (*Nyctophilus corbeni*) were ‘unlikely to occur’ within or adjacent to the Project’s Study Area. This assessment justification was based on:

- the absence of suitable habitat;
- lack of records within a 40 km radius of the Project;
- the highly modified nature of the environment within and surrounding the Study Area, including ongoing and existing cumulative impact of the surrounding mining precinct; and/or
- expert opinion on species range distribution.

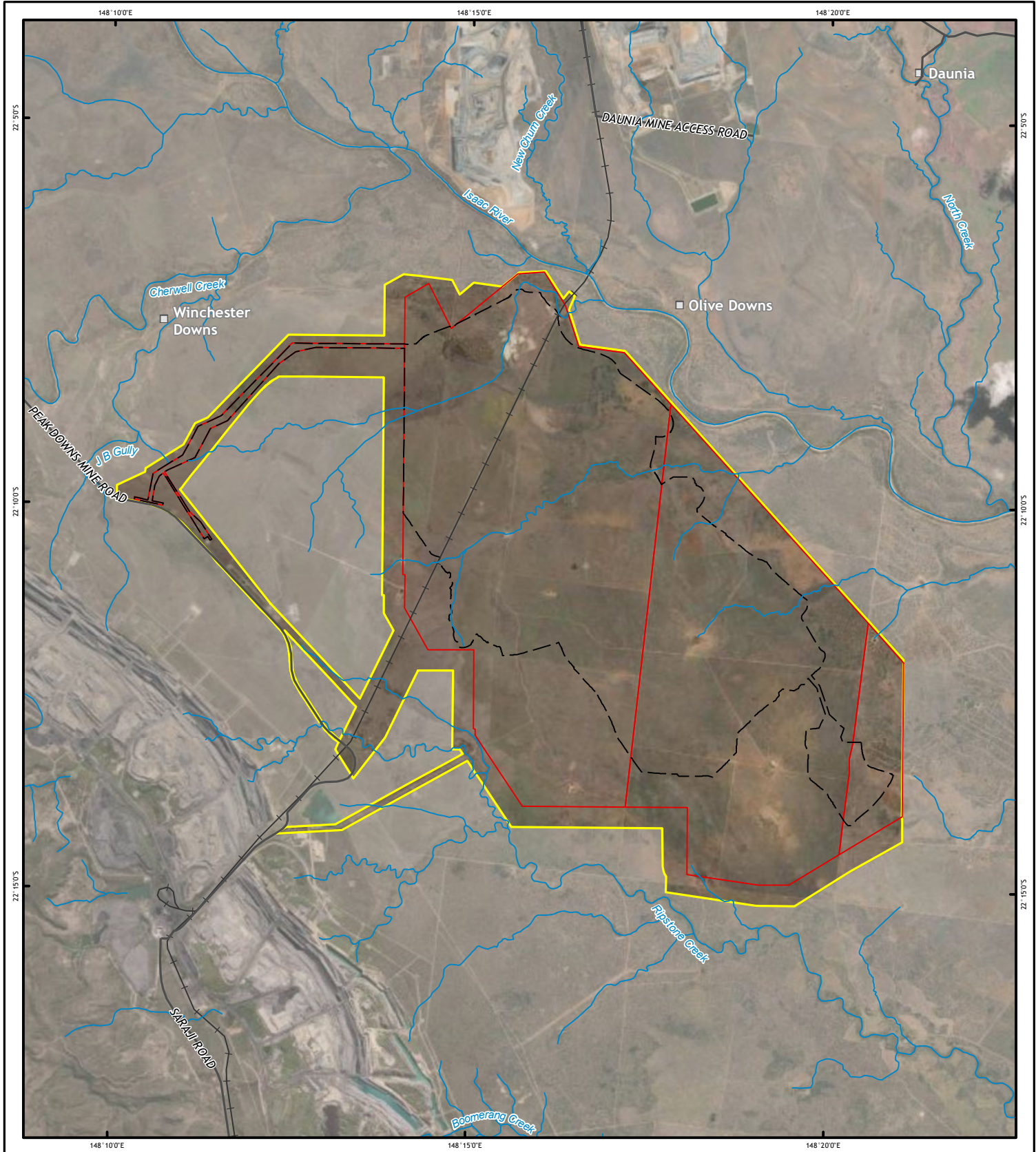
Despite the assessment of northern quoll and Corben’s long-eared bat as unlikely to inhabit the Project’s Study Area, the TEAR’s comprehensive scope of the fauna survey program targeted a wide assemblage of fauna including medium to large sized mammals and microbats. The methods deployed were suitable to detect evidence of northern quoll (i.e. baited camera traps, cage/Elliott traps, nocturnal spotlighting, diurnal active searches and habitat assessments), as well as evidence of *Nyctophilus* spp. (i.e. passive acoustic detection), if either species were to be present. The results of the TEAR field study confirmed the desktop assessment, concluding the absence of highly suitable northern quoll habitat within the Study Area, and no direct or indirect evidence of either northern quoll or Corben’s long-eared bat occurrence.

However, in line with the *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland, Version 3* (Eyre et al., 2018) and the *Survey Guidelines for Australia’s Threatened Bats* (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010), the RFI has specifically queried:

- the absence of hair tube sampling as a survey method for northern quoll; and
- the lack of harp trapping as a survey method for Corben’s long-eared bat.

Whitehaven therefore requested E2M conduct additional targeted surveys in order to satisfy the RFI requirements for these two species. The methods and results of these additional fauna survey works are outlined within the following sections.



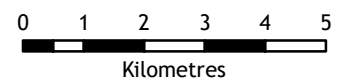


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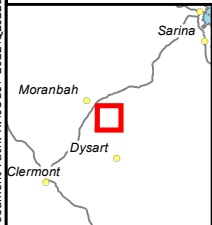
- Homesteads
- Study Area
- Road
- Indicative Surface Disturbance Extent
- Railways
- Mining Lease Application Boundary
- Watercourse



Scale 1:125,000 (A4)



Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator



Notes:
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FIGURE 1: STUDY AREA

Supplementary Survey Report
Winchester South

Map Number	Job Number	Rev
1 of 1	QEJ22002	0

1.2 Species habitat and distribution

1.2.1 Northern quoll (*Dasyurus hallucatus*)

The northern quoll occurs in a range of habitats, including open dry sclerophyll forest and woodland, riparian woodland, low dry vine thicket, the margins of notophyll vineforest, mangroves, sugarcane farms and in urban areas (Department of Agriculture, Water and Environment (DAWE), 2022). They are most abundant in hilly or rocky areas close to permanent water (DAWE, 2022). The current distribution of the northern quoll has contracted throughout its former range and in Queensland it is now fragmented into a number of populations with the highest densities found in Cape York, the Atherton Tablelands and the Mackay-Whitsunday area (DAWE, 2022).

1.2.2 Corben's long-eared bat (*Nyctophilus corbeni*)

The Corben's long-eared bat inhabits a variety of vegetation types, including mallee, bull oak (*Allocasuarina luehmannii*) and box eucalypt dominated communities, but is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of New South Wales (NSW) and southern Queensland (NSW Office of Environment & Heritage (OEH), 2022). Overall, the distribution of the south-eastern form coincides approximately with the Murray Darling Basin, with the Pilliga Scrub region being the distinct stronghold for this species. Within Queensland, Australian bat expert, Greg Ford, predicts the species does not occur north of the Tropic of Capricorn, approximately 130 km south of the Study Area (G. Ford, personal communication, 2022).



2 Methods

2.1 Previous surveys

The field survey methods, timing and effort for the Supplementary Survey Report were determined through comparing existing Project survey effort completed within the TEAR against Commonwealth and State prescribed survey guidelines (herein collectively referred to as ‘the guidelines’). These included:

- Species Profile and Threats Database (SPRAT profile) for the northern quoll (DAWE, 2022);
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) *Survey Guidelines for Australia’s Threatened Mammals* (Department of Sustainability, Environment, Water, Population and Communities, 2011);
- EPBC Act *Survey Guidelines for Australia’s Threatened Bats* (DEWHA, 2010); and
- *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (Eyre et al., 2018).

Table 1 and Table 2 outline the respective guidelines for northern quoll and Corben’s long-eared bat, in conjunction with the survey effort previously conducted during the TEAR field study.

Table 1. Northern quoll survey guidelines and effort

Survey effort requirements	
Commonwealth	
<i>EPBC Act Referral Guidelines for the Endangered Northern Quoll</i>	<ul style="list-style-type: none"> • remote activated cameras and scat searches are the recommended detection technique and greater effort will be required for projects that will impact on habitat critical to the survival of the northern quoll • targeted surveys are required when habitat critical to the survival of the northern quoll is proposed to be cleared or indirectly impacted
SPRAT profile	<ul style="list-style-type: none"> • reconnaissance survey to identify potential habitat/features • trapping effort for a targeted survey should be determined by the formula $y = 50 \times 0.5$, where y is the number of trap-nights and x is the area of potential northern quoll habitat in hectares (ha) • trapping effort is calculated as the number of traps by the number of nights of trapping (e.g. trap-nights) • for linear habitat critical to the survival of the species (e.g. gorges, major drainage lines, breakaways less than 100 metres (m) wide), 1 trap per 100 linear metres is recommended
<i>Survey Guidelines for Australia’s Threatened Mammals</i>	<ul style="list-style-type: none"> • the survey techniques recommended to detect the presence of the northern quoll in areas up to 5 ha in size are cage trapping and Elliott trapping surveys • cage trapping is the generally accepted technique for targeting this species. However, in remote locations or where it is difficult to deploy large numbers of cage traps, Elliott traps, particularly large Elliott traps, are a suitable alternative
State	
<i>Terrestrial Vertebrate Fauna Survey Guidelines for Queensland</i> (no species-specific guideline in Queensland)	<ul style="list-style-type: none"> • camera traps “Fauna species that are more reliably identified from images include medium to large sized mammals (e.g. bandicoots, phascogales, quolls, macropods, foxes and cats)” “Camera trapping has been demonstrated to be a far more successful method than many trapping techniques for many cryptic or wary vertebrate species including quolls, bandicoots and other small to medium-sized mammals” • spotlight search “Spotlighting also targets medium to large terrestrial nocturnal mammals such as bettongs and quolls”



Survey effort requirements

- hair tubes
“hair tubes remain a cost effective way to increase detection effort targeting cryptic small to medium sized mammals (e.g. quolls), as they can be left deployed for an extended period and once set require little further attention”
- scat collection
“Predator scats (including dog Canis familiaris, fox Vulpes vulpes and quoll Dasyurus spp.) can be found on the generic site but more likely along tracks and roads”

Winchester South Project TEAR survey effort

- 128 camera trap nights
- 45 cage trap nights
- 114 hours of spotlight searches
- 153 hours of active searches (e.g. scat search, opportunistic observation)
- habitat assessments

Table 2. Corben’s long-eared bat survey guidelines and effort

Survey effort requirements

Commonwealth

Survey Guidelines for Australia’s Threatened Bats

- passive acoustic detection
- trapping (harp traps (20 trap nights, 5 night minimum))

State

Terrestrial Vertebrate Fauna Survey Guidelines for Queensland

(no species-specific guideline in Queensland)

- harp trapping and acoustic recording is recommended for microbat species

Winchester South Project TEAR survey effort

- 60 nights of acoustic recording with Anabat detectors



2.2 Supplementary Survey Report survey methods

2.2.1 Northern quoll (*Dasyurus hallucatus*)

The northern quoll SPRAT profile (DAWE, 2022), defines a two-step approach for assessing the presence/absence of northern quoll within an area, including:

- **Step 1 - Reconnaissance survey:** Reconnaissance surveys can be conducted at any time of year, with the purpose of assessing the suitability of habitat within the Study Area for northern quoll. Reconnaissance surveys may choose to consider species presence by using non-invasive techniques such as active searches for scats and latrine sites, motion activated cameras, hair tubes or spotlighting where appropriate.
- **Step 2 - Targeted survey:** A targeted survey is recommended for any proposal occurring within modelled distribution of the species where the reconnaissance survey identifies the presence of the species and/or “habitat critical to the survival of the species”¹.

As the survey works conducted as part of the TEAR have not identified either the species or habitat critical to the survival of the species, additional reconnaissance surveys using baited hair tubes were considered sufficient to meet the requirements of the RFI.

2.2.1.1 Baited hair tubes

Baited hair tubes were placed in remnant vegetation across the Study Area. The funnels were baited with oats, sardines, honey and peanut butter balls and deployed for the duration of the survey to maximise survey effort. As no habitat critical to the survival of the species has been identified within the Study Area, the hair tubes were placed within remnant vegetation across the Study Area to maximise potential identification of northern quoll.

Twenty hair tubes were deployed for six to seven nights each, totalling 122 trap nights, which in combination with the TEAR surveys is considered sufficient to assess the presence of northern quoll within the Study Area. The location of each hair tube is depicted in Figure 2.

2.2.2 Corben’s long-eared bat (*Nyctophilus corbeni*)

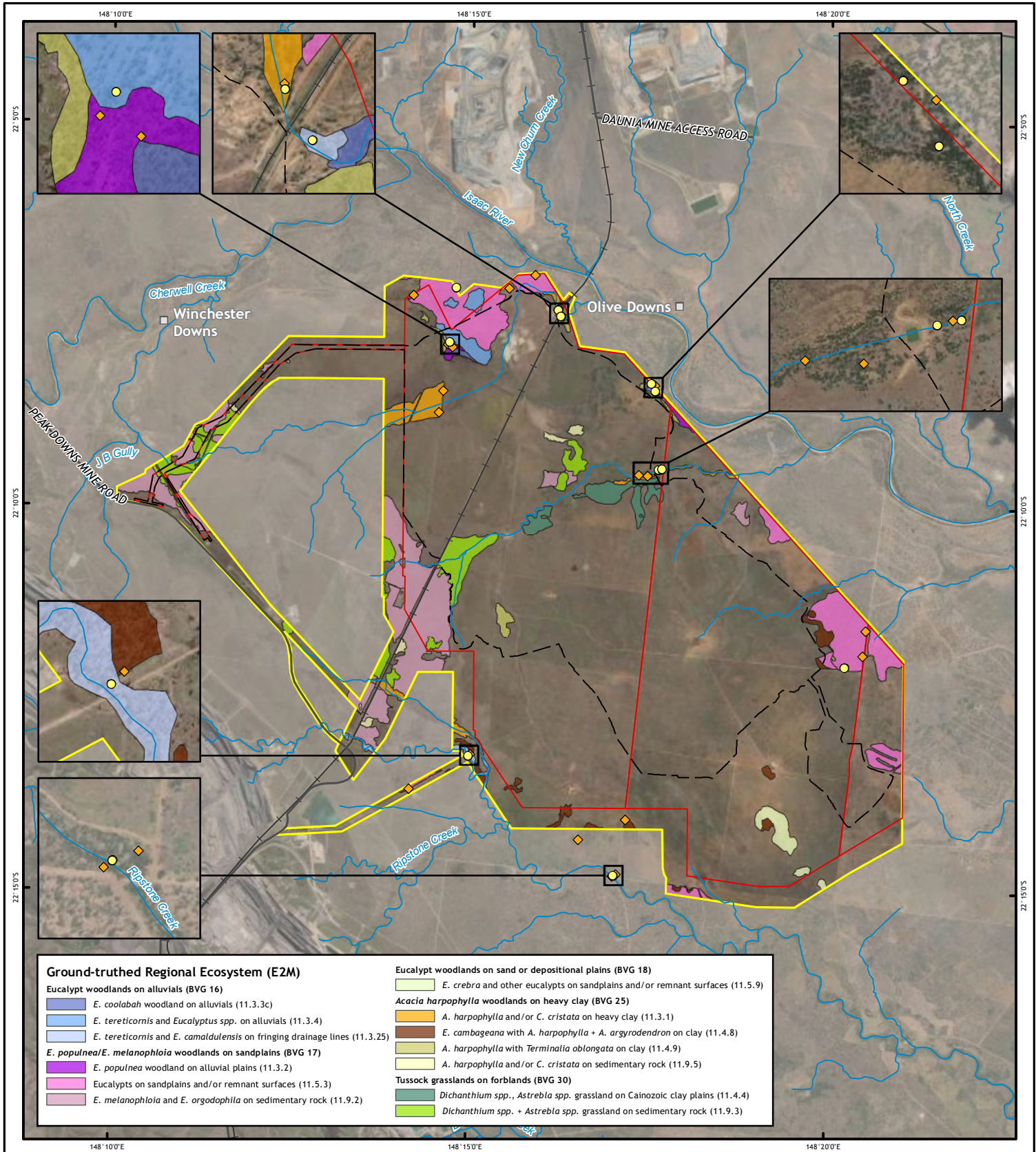
The EPBC Act *Survey Guidelines for Australia Threatened Bats* (DEWHA, 2010) identifies mist netting and harp trapping as suitable survey methods for detection of this species. The minimum proposed survey effort for areas <50 ha in size is a total of 20 traps nights over a minimum of five nights, with optimal survey time between October and April. While the Study Area is likely to contain >50 ha of potentially suitable habitat, given the species has not been previously identified within the region, the minimum survey effort was sufficient to meet the requirements of the RFI.

2.2.2.1 Harp trapping

Four harp traps were established across the Study Area for a period of five nights; totalling 20 traps nights. Harp traps were placed in remnant vegetation targeting potential flyways for Microchiroptera spp. The survey was conducted in March (within the guidelines optimal survey period of October - April) to maximise potential capture rates and satisfy the guideline requirements. Harp traps were relocated every one to two days, totalling 11 trap locations as depicted in Figure 2.

¹ Habitat critical to the survival of the species equates to habitat within the species modelled distribution which provides shelter for breeding, refuge from fire / or predation and potential poisoning from cane toads (Department of the Environment, 2016).





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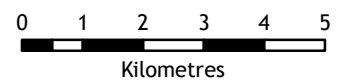
- Homestead
- Road
- Railway
- Watercourse
- Study Area
- Indicative Surface Disturbance Extent
- Mining Lease
- Application Boundary

Survey Site

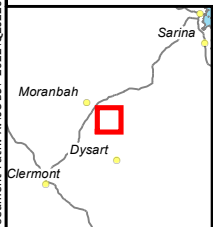
- Harp Trap
- Hair Tube



Scale 1:125,000 (A4)



Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator



Notes:
Aerial Imagery: © ESRI 2022
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Road: © DoR 2021

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A	Issued for Review	CO	DL	23/03/2022
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FIGURE 2: SURVEY LOCATIONS

Supplementary Survey Report
Winchester South

Map Number	Job Number	Rev
1 of 1	QEJ22002	0

2.2.3 Survey conditions

The field survey was conducted from 8th - 17th of March 2022 by two E2M ecologists. Weather conditions during the survey were hot and humid with daily maximum temperatures ranging from 31.6 degrees Celsius (°C) to 41.4°C, averaging 35.3°C at Moranbah Airport weather station (Bureau of Meteorology (BOM) weather station number 034035). The Study Area and surrounds experienced two rain events over the survey period, with the region receiving 20 millimetres (mm) of rain over this time. Prior to this rain, the area was dry, having experienced below average rainfall (February 2022 total; 12.2 mm, average February total; 84.9 mm) in the preceding month.



3 Results

3.1 Field results

3.1.1 Northern quoll (*Dasyurus hallucatus*)

3.1.1.1 Study Area habitat and condition

No habitat critical to the survival of the species was identified within the Study Area due to a lack of rocky outcrops which are known to be a favoured habitat for quolls. While areas of open dry sclerophyll forest and riparian woodland may potentially provide suitable habitat, the lack of structural complexity (e.g. large hollow logs) in the ground layer limits habitat suitability.

3.1.1.2 Supplementary Survey Report Survey results

Northern quoll was not identified during the survey. No potential hair samples were collected from the hair tubes.

3.1.2 Corben's long-eared bat (*Nyctophilus corbeni*)

3.1.2.1 Study Area habitat and condition

No suitable habitat for Corben's long-eared bat was identified within the Study Area. The Study Area lacked all favoured habitat, including vegetation communities dominated by mallee, *Allocasuarina leuhmanni* (bull oak), *Eucalyptus melliodora* (box eucalypt), or *Callitris* spp. (cypress-pine).

3.1.2.2 Survey results

Corben's long eared bat was not identified during the survey, with only two microchiroptera species, little broad-nosed bat (*Scotorepens greyii*) and northern broad-nosed bat (*Scotorepens sanborni*), recorded over the five nights of harp trapping. Additionally, Australian bat expert, Greg Ford, predicts the species does not occur north of the Tropic of Capricorn, approximately 130 km south of the Study Area (G. Ford, pers. comm., 2022).



3.2 Likelihood of occurrence assessment

The field survey results of the Supplementary Survey Report supported the conclusion of the TEAR, with neither northern quoll or Corben's long-eared bat identified during the additional surveys. As such, both species are considered 'unlikely to occur' within the Study Area and unlikely to be significantly impacted by the Project. The likelihood of occurrence assessment is detailed in Table 3 below.

Table 3. Likelihood of occurrence assessment

Species	EPBC Act Status ¹	NC Act Status ¹	Habitat	Project Survey Effort	Likelihood of occurrence
northern quoll <i>Dasyurus hallucatus</i>	E	LC	The northern quoll occurs in a range of habitats, including open dry sclerophyll forest and woodland, riparian woodland, low dry vine thicket, the margins of notophyll vineforest, mangroves, sugarcane farms and in urban areas (DAWE, 2022). They are most abundant in hilly or rocky areas close to permanent water (DAWE, 2022).	TEAR Surveys <ul style="list-style-type: none"> • 128 camera trap nights • 45 cage trap nights • 114 hours of spotlight searches • 153 hours of active searches (e.g. scat search, opportunistic observation) • habitat assessments Supplementary Survey Report Surveys <ul style="list-style-type: none"> • 122 hair tube trap nights 	Unlikely to occur Suitable habitat for the species is limited within the Study Area, and habitat critical to the survival of the species is absent. The closest known historic record is located approximately 46 km from the Study Area. Species was also not detected during TEAR and Supplementary Survey Report field surveys which were undertaken in accordance with the species surveys guidelines.
Corben's long-eared bat <i>Nyctophilus corbeni</i>	V	V	The Corben's long-eared bat inhabits a variety of vegetation types, including mallee, bull oak (<i>Allocasuarina luehmannii</i>) and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland (OEH, 2022).	TEAR Surveys <ul style="list-style-type: none"> • 60 nights of acoustic recording with Anabat detectors • habitat assessments Supplementary Survey Report Surveys <ul style="list-style-type: none"> • 20 harp trap nights 	Unlikely to occur The species has not previously been recorded within the desktop search extent (50 km), and the Study Area is located outside of the species known distribution. <i>Nyctophilus</i> spp. were identified during the TEAR surveys, however they were not considered to be Corben's long-eared bat based on the Study Area being located outside of the species known distribution which is presumed to end around the Tropic of Capricorn, approximately 130 km south of the Study Area (G. Ford, pers. comm., 2022). Species was also not detected during the Supplementary Survey Report surveys.

¹ E= Endangered, V = Vulnerable, LC = Least Concern



4 Conclusion

Resource Strategies, on behalf of Whitehaven, has received a RFI regarding the fauna survey effort detailed in the TEAR chapter of the Project's EIS. In line with the *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland, Version 3* (Eyre et al., 2018), the DES RFI has specifically queried:

- the absence of hair tube sampling as a survey method for northern quoll; and
- the lack of harp trapping as a survey method for Corben's long-eared bat.

As such, Whitehaven requested E2M conduct additional targeted surveys to satisfy the RFI requirements for each of these two species.

Combined the TEAR and Supplementary Survey Report surveys have been undertaken over three years (October 2018 - March 2022) in order to meet the minimum survey requirements for northern quoll and Corben's long-eared bat, including:

Northern quoll

- 128 camera trap nights;
- 45 cage trap nights;
- 114 hours of spotlight searches;
- 153 hours of active searches (e.g. scat search, opportunistic observation); and
- 122 hair tube trap nights.

Corben's long-eared bat

- 60 nights of acoustic recording with Anabat detectors; and
- 20 harp trap nights.

Given neither species has been observed during extensive field surveys, the lack of suitable habitat present within the Study Area, and/or the Study Area occurring outside the species known distribution; both species are considered unlikely to occur within the Study Area. As such, the Project is unlikely to result in a significant residual impact on either of these two species.



5 References

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