

14 February 2024

Biodiversity Conservation Division of
Department of Planning and Environment

Dear Biodiversity Conservation Division

**RE: Addendum to the HVO Continuation Project Biodiversity Development
Assessment Report: Additional Targeted Surveys**

In November 2023 Umwelt amended the Biodiversity Development Assessment Report (BDAR) for the Hunter Valley Operations (HVO) Continuation Project (the Project) in response to the submissions from the Biodiversity Conservation Division (BCD) of Department of Planning and Environment (DPE) dated 15 August 2023.

During this time, additional targeted surveys were in progress for species for which targeted surveys were outstanding to comply with the Biodiversity Assessment Method (BAM) and NSW *Biodiversity Conservation Act 2016* (BC Act).

This addendum letter report describes the species targeted, survey methods used and survey results. None of the target species were identified or any new threatened species recorded, therefore no change to the BDAR and associated BAM calculator is required.

1.0 Introduction

Hunter Valley Operations (HVO) is a multi-pit open cut mining complex approximately 24 kilometres (km) north-west of Singleton in the Hunter Valley of New South Wales (NSW). HVO comprises two mine sites separated by the Hunter River, HVO North and HVO South. While the two mine sites are approved under separate development consents, they are operated as one complex with fully integrated environmental management systems. HVO is owned by subsidiary companies of Yancoal and Glencore, as participants in the unincorporated HVO Joint Venture (JV).

The HVO Continuation Project (the Project) broadly comprises the continuation of the life of HVO North and HVO South, from the current approved mining completion dates of 2025 and 2030 respectively, to the end of 2050 at HVO North and the end of 2045 at HVO South. The continuation of mining across the HVO Complex will increase resource recovery from the existing operation, predominantly by mining through previously mined areas and to the extent of existing mining tenements and extracting coal from deeper seams at HVO North.

The Biodiversity Development Assessment Report (BDAR) was prepared by Umwelt using the Biodiversity Assessment Method (BAM) (DPIE 2020a) in accordance with the *Biodiversity Conservation Act 2016* (BC Act) to determine the impact of the HVO Continuation Project (the Project) on biodiversity values and identify offsetting requirements following the implementation of suitable avoidance and minimisation measures.

The Environmental Impact Statement (EIS) for the Project, including the BDAR, was submitted to the NSW Department of Planning (DPE) and subsequently placed on public exhibition from Monday 30 January 2023 through to Monday 27 February 2023. Following exhibition, the DPE – Biodiversity Conservation Division (BCD) provided advice on the BDAR. The Project was formally modified via an Amendment Report submitted 9 November 2023 to seek approval for the Lemington Road re-alignment to further avoid impacts on *Warkworth Sands Woodland Endangered Ecological Community* (EEC). The BDAR was updated to respond to the comments from BCD and re-assesses the impacts associated with the realignment of Lemington Road and submitted as an appendix to the Amendment Report. The BCD also identified a requirement for additional consideration and survey (where appropriate) for a number of species, some of which have been considered and/or surveyed, and the methods and results described in the updated BDAR. This letter addendum to the BDAR details additional surveys undertaken in the Development Footprints for species for which surveys were outstanding when the revised BDAR was submitted to BCD in November 2023.

These species include:

- Stephen's banded snake (*Hoplocephalus stephensii*)
- Austral toadflax (*Thesium australe*)
- Leafless tongue orchid (*Cryptostylis hunteriana*).

2.0 Methods

Surveys were undertaken for the threatened species for which targeted surveys were outstanding at the time the BDAR was re-issued to HVO. Surveys included species-specific targeted searches in suitable habitat throughout pre-determined suitable habitat within the Development Footprint. Suitable habitat constitutes associated Plant Community Types, and/or important habitat features. Survey effort is shown in **Figure 2.1** and **Figure 2.2**.

2.1 Targeted Flora Survey Methods

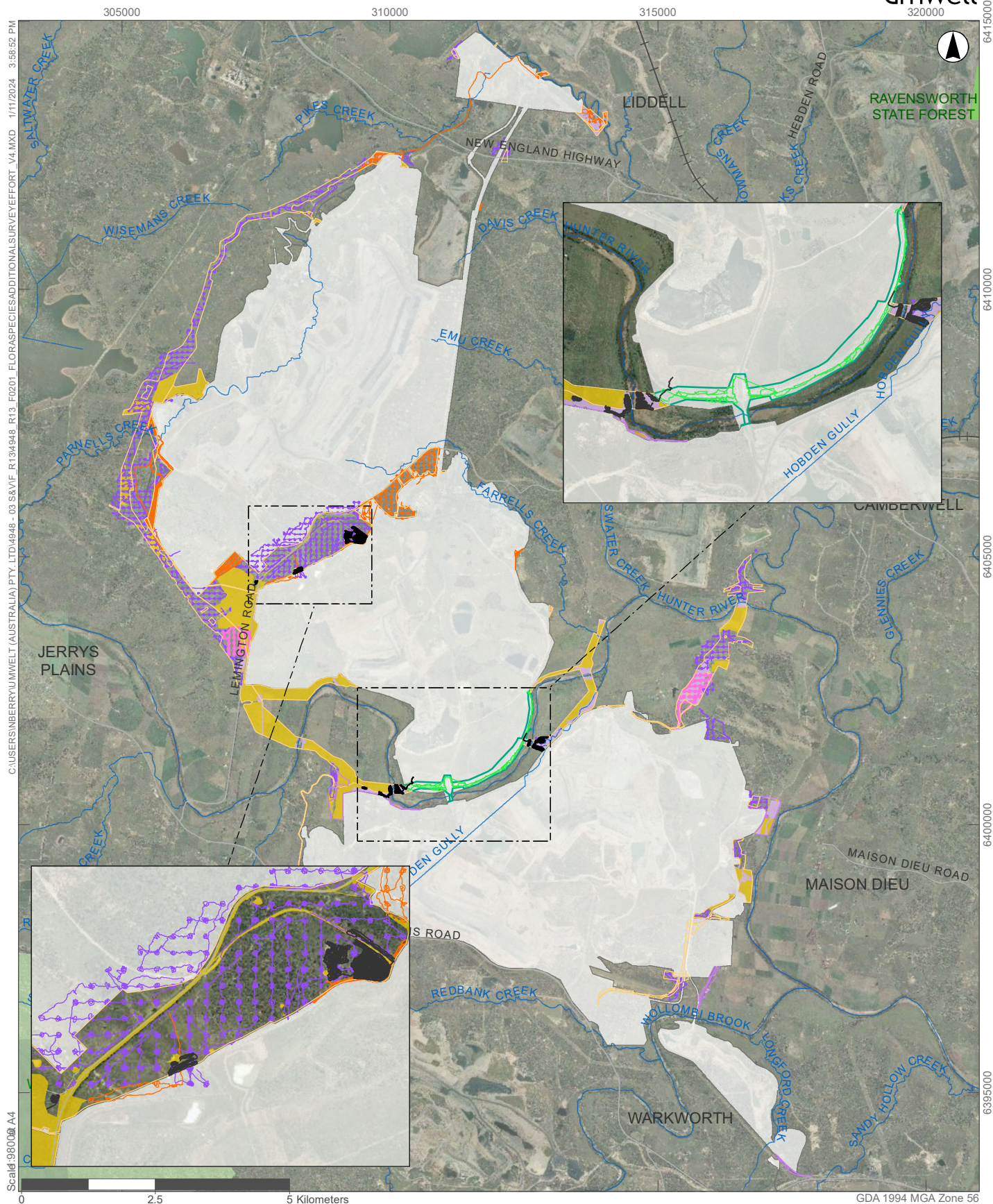
For the purpose of the BDAR, targeted surveys for threatened flora species were undertaken using the two-phase grid-based systematic survey approach for large areas greater than 50 hectares described in Section 4.4.1 of *Surveying threatened plants and their habitats* (DPIE 2020b). However, for some flora species, surveys were required in targeted suitable habitat areas in the warmer months. As these areas were smaller than 50 hectares, parallel field traverses in accordance with Section 4.1 of *Surveying threatened plants and their habitats* (DPIE 2020b) were undertaken on 1 November 2023.

These targeted flora surveys are in addition to the targeted flora survey efforts described in the revised BDAR. **Figure 2.1** shows the additional surveys undertaken on 1 November, 2023 within the context of all other targeted flora surveys undertaken in September and October 2023, which have already been discussed in the revised BDAR.

The parallel field traverses were guided by a separation of approximately 5 metres, which is suited to surveying forbs in a moderately open structured woodland Plant Community Type (PCT). The surveys targeted austral toadflax (*Thesium australe*) and leafless tongue orchid (*Cryptostylis hunteriana*) within PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley, and PCT 1655 Grey Box - Slaty Box shrub - grass woodland on sandstone slopes of the upper Hunter and Sydney Basin, which variably constitute the extent of the suitable habitat for both species within the Development Footprint, excluding the exotic grassland vegetation zone (Table 2.1, Figure 2.1).

Table 2.1 PCTs and Vegetation Zones Comprising Suitable Habitat for Target Threatened Flora (1 November 2024)

Associated Threatened Flora Species	Vegetation Zone and Condition	Area (ha) Surveyed
42 – River Red Gum / River Oak riparian woodland wetland in the Hunter Valley		
<i>Cryptostylis hunteriana</i> <i>Thesium australe</i>	1. Moderate	1.0
	2. Low to Moderate	0.8
	3. Cooba Woodland	0.8
	4. Derived Native Grassland	5.0
	5. Exotic Grassland	-
	Total area of PCT 42 surveyed	7.6
1655 – Grey Box – Slaty Box shrub – grass woodland on sandstone slopes of the upper Hunter and Sydney Basin		
<i>Cryptostylis hunteriana</i> <i>Thesium australe</i>	7. Moderate	7.0
	Total area of PCT 1655 surveyed	7.0



Legend

- Targeted Flora Transects October 2020
- Targeted Flora Transects October 2021
- Targeted RRG Transects August 2022
- Targeted Flora Transects September 2023
- Targeted Flora Transects November 2023
- Railway Line
- Road
- Drainage Line
- HVO Existing and Approved Disturbance Areas
- HVO North Development Footprint
- HVO South Development Footprint
- River Red Gum Additional Disturbance Area
- Category 1 - Exempt Land
- Cleared Land
- Exotic Vegetation
- National Parks
- State Forest

FIGURE 2.1

**Flora Species
Survey Effort**

2.2 Targeted Fauna Survey Methods

Umwelt ecologists undertook targeted surveys for Stephens banded snake in accordance with the survey methods described in **Table 2.2**. The survey effort is displayed in **Figure 2.2**, weather conditions during survey periods are contained within **Appendix A** and all fauna species recorded during the targeted surveys are listed in **Appendix B**. Additionally, **Appendix C** contains habitat constraints and survey requirements detailed in the TBDC.

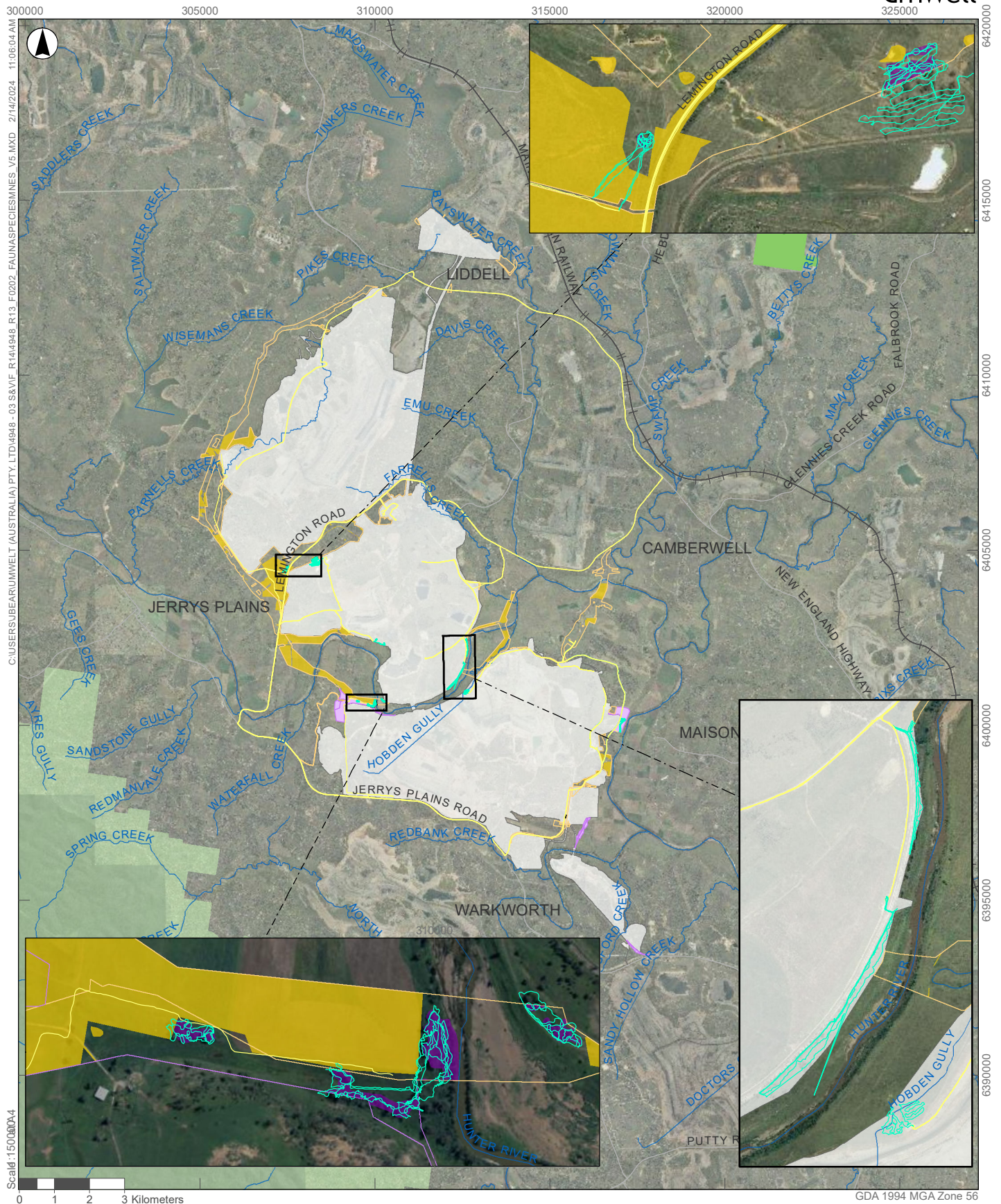
Table 2.2 Targeted Fauna Survey Methods

Species	Survey guideline	Survey area	Survey Method Details																
Stephen’s banded snake (<i>Hoplocephalus stephensii</i>)	Threatened reptiles Biodiversity Assessment Method survey guide (DPIE 2022).	Seven areas of PCT 42 in the Development Footprints and locality.	Seven (7) areas of PCT42 which contained potentially suitable habitat were surveyed (Figure 2.2).																
			Nocturnal spotlight surveys were undertaken over seven (7) nights between 23 October and 11 December 2023, totalling 16 person hours. Spotlight surveys involved walking a meandering transect and recording any fauna species seen or heard calling (Appendix B), whilst targeting Stephen’s banded snake.																
			Nocturnal road surveys were also undertaken for opportunistic sightings, however these were not in accordance with the survey guidelines as they were not undertaken within suitable habitat and exceeded the required travelling speed of 5 kilometres per hour at times. Despite this limitation, fauna species were recorded during all nocturnal road surveys.																
			<table><tr><th>Date</th><th>Person hours</th></tr><tr><td>23 Oct 2023</td><td>1.83</td></tr><tr><td>24 Oct 2023</td><td>1.57</td></tr><tr><td>25 Oct 2023</td><td>3.21</td></tr><tr><td>26 Oct 2023</td><td>1.83</td></tr><tr><td>27 Nov 2023</td><td>2.34</td></tr><tr><td>5 Dec 2023</td><td>2.33</td></tr><tr><td>11 Dec 2023</td><td>2.88</td></tr></table>	Date	Person hours	23 Oct 2023	1.83	24 Oct 2023	1.57	25 Oct 2023	3.21	26 Oct 2023	1.83	27 Nov 2023	2.34	5 Dec 2023	2.33	11 Dec 2023	2.88
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11 Dec 2023	2.88																		

2.3 Limitations

In the week of 23–26 October 2023 the survey team experienced some limitations due to time constraints and inclement weather which caused tracks to become inaccessible, thereby precluding access to pre-determined areas of suitable habitat for Stephens Banded Snake. However, subsequent survey efforts were able to sufficiently cover these areas where required.

The subsequent Stephens banded snake surveys were undertaken in a reduced area as the suitable habitat was refined from the previous extent to exclude vegetation zones lacking hollow bearing trees, arboreal vine tangles, and fallen/standing dead timber including logs. The small size of the patches of suitable habitat within associated PCTs precluded the necessity to survey within 500 metres of suitable habitat in accordance with the *Threatened reptiles Biodiversity Assessment Method survey guide* (DPIE 2022).



Legend

- Stephens banded snake (SBS) opportunistic driving transect
- Stephens banded snake (SBS) spotlighting transect
- Stephens banded snake suitable habitat
- HVO North Development Footprint
- HVO South Development Footprint
- HVO Existing and Approved Disturbance Areas
- Railway Line
- Road
- Drainage Line
- Category 1 - Exempt Land
- National Parks
- State Forest

FIGURE 2.2

Stephens Banded Snake Survey Effort

3.0 Results

3.1 Targeted Flora Survey Results

Austral toadflax (*Thesium australe*) and leafless tongue orchid (*Cryptostylis hunteriana*) were not detected throughout the parallel field traverses, nor were any other threatened flora species.

3.2 Targeted Fauna Survey Results

Stephens banded snake was not detected within the Development Footprints or surrounds. All species detected throughout the course of the surveys were recorded and listed in **Appendix B**, and included 21 birds, 12 mammals, four (4) reptiles and nine (9) amphibians.

The species frequently encountered during the targeted surveys included an abundance of common brushtail possums, kangaroos, wallabies, roosting diurnal bird species and nocturnal bird species such as barn owl and tawny frogmouth.

3.2.1 Threatened Species

One threatened species was detected during nocturnal surveys for Stephens banded snake; Grey-headed flying fox (*Pteropus poliocephalus*), which is listed as vulnerable under the BC Act and endangered under the EPBC Act.

The grey-headed flying-fox is a dual credit species, whereby breeding camps comprise the species credit component and foraging habitat is offset as an ecosystem credit (DPE 2023). The grey-headed flying-fox was observed foraging within the Development Footprint, there were no day camps or maternity camps identified during any of the surveys undertaken for this assessment.

4.0 Conclusion

Despite targeted surveys undertaken in accordance with the relevant survey guidelines, none of the target threatened species were detected or any new threatened species recorded, therefore no change to the BDAR and associated BAM calculator case is required. One (1) threatened species was detected, however they do not require offsetting or modifications to the BDAR and associated BAM calculator case as they have already been accounted for.

We trust this information meets with your current requirements. Please do not hesitate to contact the undersigned on 0402 121 183 should you require clarification or further information.

Yours sincerely



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5.0 References

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2010b) *Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the EPBC Act*.

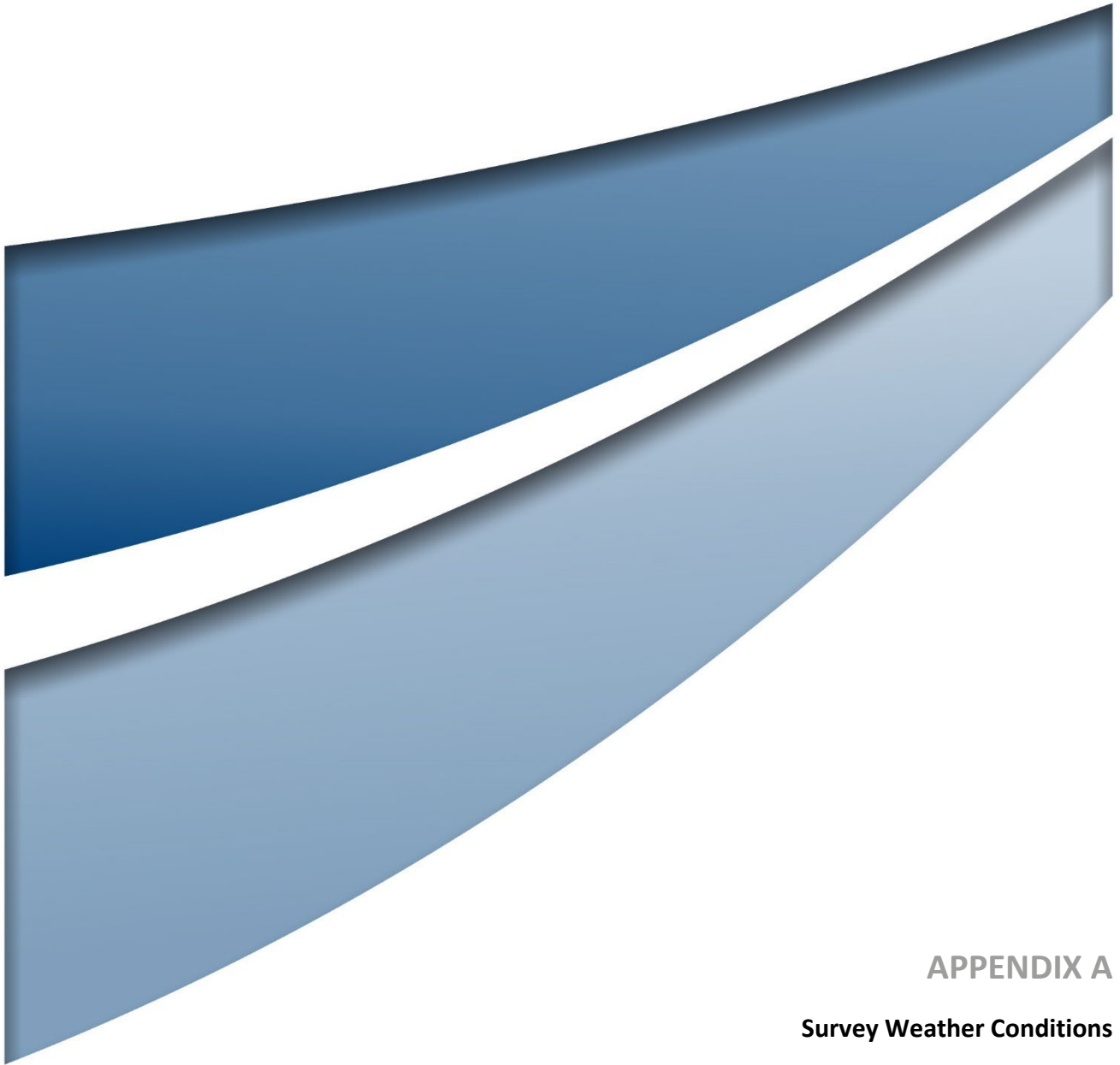
Department of Planning, Industry and Environment (DPIE) (2020a) *NSW Survey Guide for Threatened Frogs A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method*.

Department of Planning, Industry and Environment (DPIE) (2020b) *Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method*.

Department of Planning, Industry and Environment (DPIE) (2022) *Threatened reptiles Biodiversity Assessment Method survey guide*.

Department of Planning and Environment (DPE) (2023) *BioNet Atlas Threatened Biodiversity Database Collection*.

Umwelt (2023) *Biodiversity Development Assessment Report (BDAR) for the Hunter Valley Operations (HVO) Continuation Project*.



APPENDIX A

Survey Weather Conditions

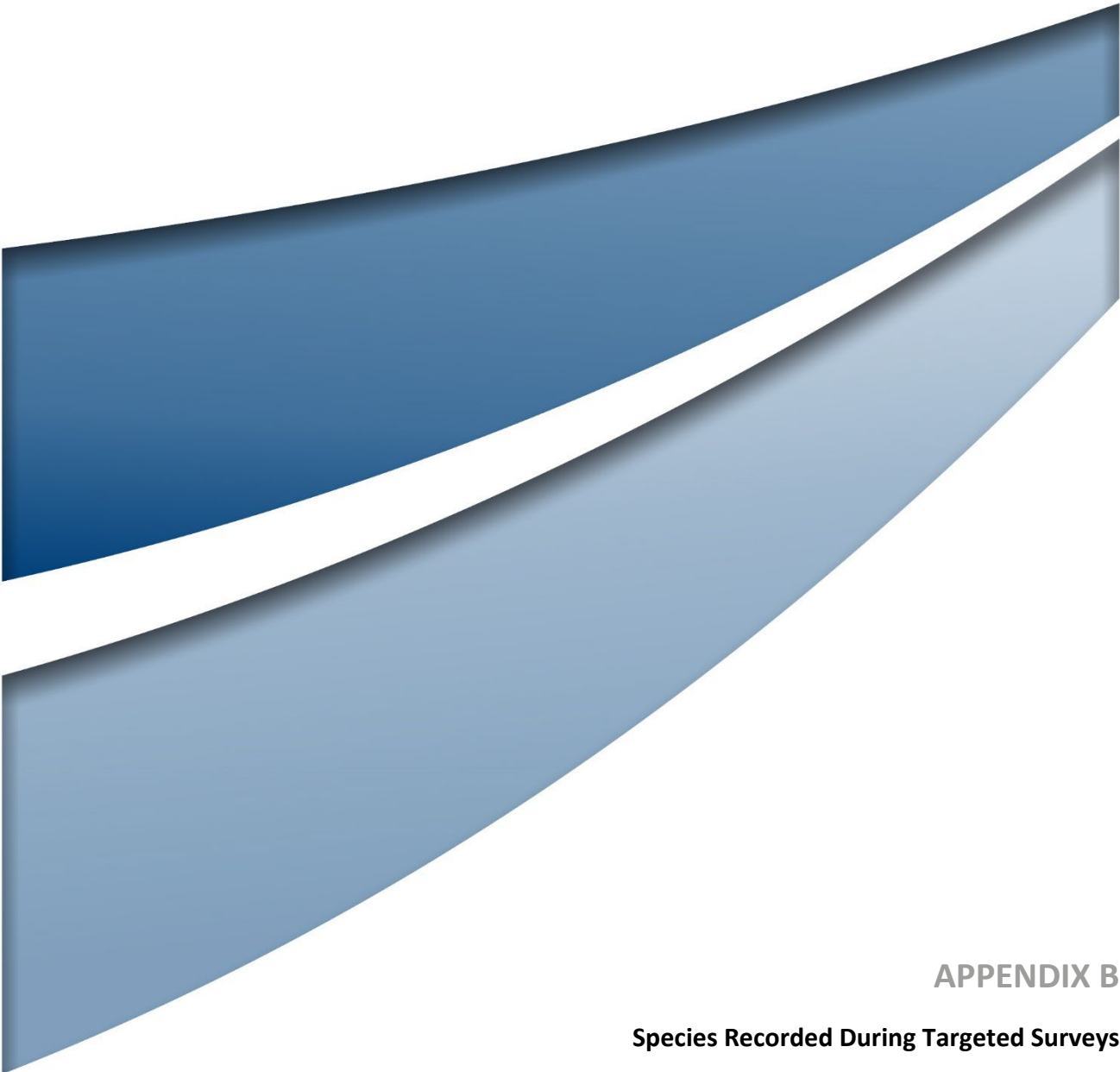
Table A.1 Survey Weather Conditions

Date	Min-Max Temp. (°C)	Rainfall (mm)	Relative Humidity (3 pm) (%)	Min-Max Temp (mean) (°C)	Rainfall (total) (mm)	Relative Humidity (3 pm) (mean) (%)
HVO Met Station	Daily observations			Monthly observations		
23 October 2023	13.7–28.7	0	11	12.5–26.1	34.6	28.1
24 October 2023	12.2–34.3	0	11			
25 October 2023	18.1–32.4	0	12			
26 October 2023	10.2–17.5	17	91			
27 November 2023	17.5–30.7	0	40	15.7–26.9	45.2	42.7
5 December 2023	15.0–35.9	0	21	18.7–31.0	69.6	36.4
11 December 2023	19.7–25.2	0	34			

Notes:

All data sourced from HVO Meteorological Station.

Monthly data for December reflects the mean min-max temp, total rainfall and mean RH (3 pm) up until 14 December 2023.



APPENDIX B

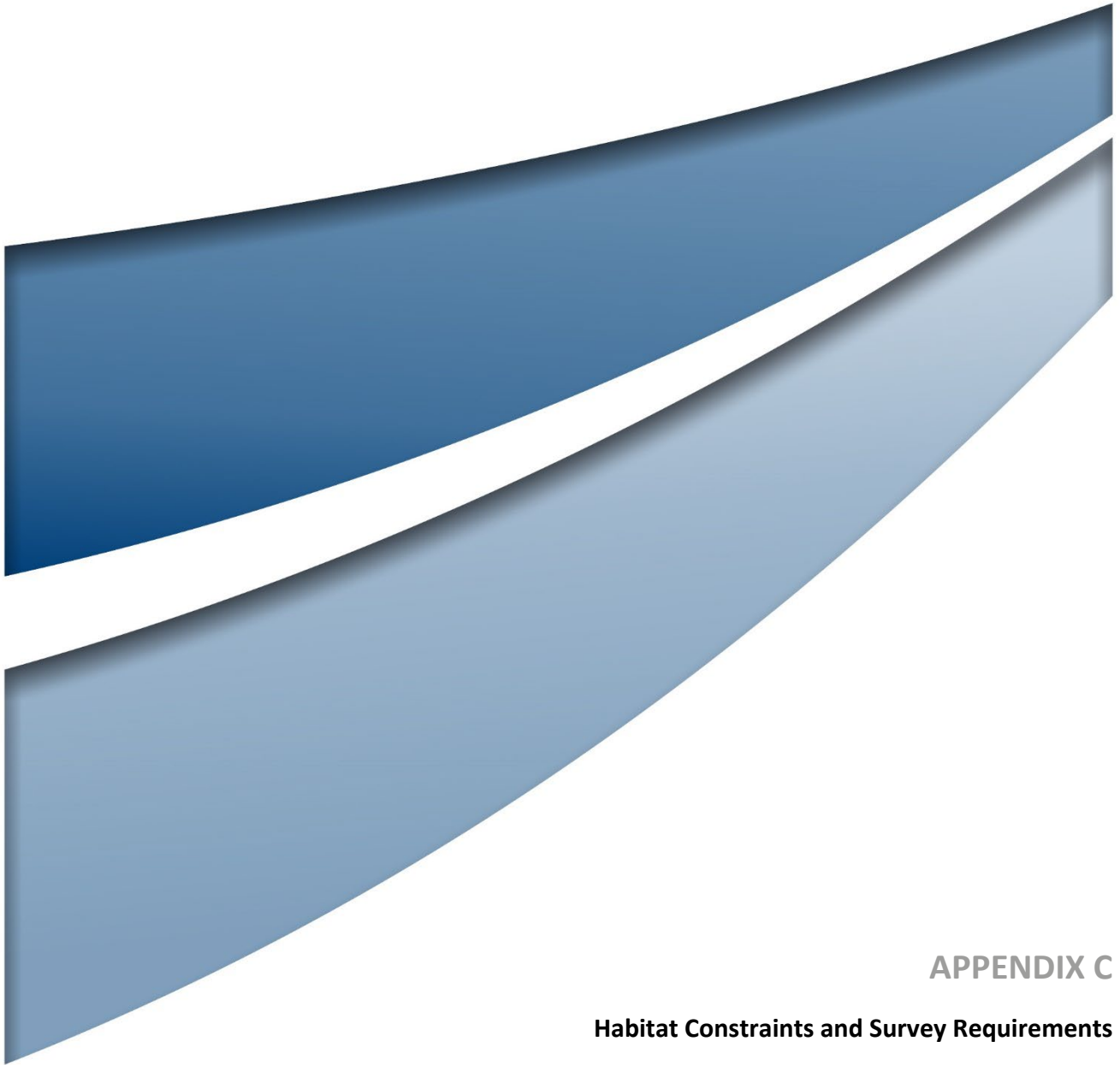
Species Recorded During Targeted Surveys

Table B.1 Species Recorded During Targeted Surveys

Species (Common name/Scientific name)	Threatened Status	Survey type
Birds		
Australasian grebe (<i>Tachybaptus novaehollandiae</i>)	P	Nocturnal Spotlight
Australian magpie (<i>Gymnorhina tibicen</i>)	P	Nocturnal Spotlight/Diurnal bird survey/Remote Camera
Barn owl (<i>Tyto alba</i>)	P	Nocturnal Spotlight
Black swan (<i>Cygnus atratus</i>)	P	Nocturnal Spotlight
Black-shouldered kite (<i>Elanus axillarus</i>)	P	Nocturnal Spotlight
Brown falcon (<i>Falco berigora</i>)	P	Nocturnal Spotlight
Brown quail (<i>Synoicus ypsilophorous</i>)	P	Nocturnal Spotlight
Galah (<i>Eolophus roseicapilla</i>)	P	Nocturnal Spotlight
Grey goshawk (<i>Accipiter novaehollandiae</i>)	P	Nocturnal Spotlight
Laughing kookaburra (<i>Dacelo novaeguineae</i>)	P	Nocturnal Spotlight
Masked lapwing (<i>Vanellus miles</i>)	P	Nocturnal Spotlight
Owlet-nightjar (<i>Aegotheles cristatus</i>)	P	Nocturnal Spotlight
Pacific black duck (<i>Anas superciliosa</i>)	P	Nocturnal Spotlight
Pied cormorant (<i>Phalacrocorax varius</i>)	P	Nocturnal Spotlight
Pied stilts (<i>Himantopus novaezelandiae</i>)	P	Nocturnal Spotlight
Reed warbler (<i>Acrocephalus australis</i>)	P	Nocturnal Spotlight
Superb fairywren (<i>Malurus cyaneus</i>)	P	Nocturnal Spotlight
Tawny frogmouth (<i>Podargus strigoides</i>)	P	Nocturnal Spotlight
Welcome swallow (<i>Hirundo neoxena</i>)	P	Nocturnal Spotlight
Whistling kite (<i>Haliastur sphenurus</i>)	P	Nocturnal Spotlight
Willie wagtail (<i>Rhipidura leucophrys</i>)	P	Nocturnal Spotlight
Mammals		
Black rat (<i>Rattus rattus</i>)	I	Nocturnal Spotlight
Cat (<i>Felis catus</i>)	I	Nocturnal Spotlight
Common brushtail possum (<i>Trichosurus vulpecula</i>)	P	Nocturnal Spotlight
Eastern grey kangaroo (<i>Macropus giganteus</i>)	P	Nocturnal Spotlight
European hare (<i>Lepus europaeus</i>)	I	Nocturnal Spotlight
Feral pig (<i>Sus scrofa</i>)	I	Nocturnal Spotlight
Grey-headed flying fox (<i>Pteropus poliocephalus</i>)	P, V (BC Act) and E (EPBC Act)	Nocturnal Spotlight
House mouse (<i>Mus musculus</i>)	I	Nocturnal Spotlight
Northern brown bandicoot (<i>Isodon macrourus</i>)	P	Nocturnal Spotlight
Rabbit (<i>Oryctolagus cuniculus</i>)	I	Nocturnal Spotlight
Red-necked wallaby (<i>Notamacropus rufogriseus</i>)	P	Nocturnal Spotlight

Species (Common name/Scientific name)	Threatened Status	Survey type
Swamp wallaby (<i>Wallabia bicolor</i>)	P	Nocturnal Spotlight
Reptiles		
Barking gecko (<i>Underwoodisaurus milii</i>)	P	Nocturnal Spotlight
Blue-bellied black snake (<i>Pseudechis guttatus</i>)	P	Nocturnal Spotlight
Robust velvet gecko (<i>Amalosia robusta</i>)	P	Nocturnal Spotlight
Tree skink (<i>Egernia striolata</i>)	P	Nocturnal Spotlight
Amphibians		
Broad-palmed frog (<i>Litoria latopalmata</i>)	P	Nocturnal Spotlight
Common eastern froglet (<i>Crinia signifera</i>)	P	Nocturnal Spotlight
Eastern dwarf tree frog (<i>Litoria fallax</i>)	P	Nocturnal Spotlight
Green tree frog (<i>Litoria caerulea</i>)	P	Nocturnal Spotlight
Peron's tree frog (<i>Litoria peronii</i>)	P	Nocturnal Spotlight
Rocket frog (<i>Litoria laptopalmata</i>)	P	Nocturnal Spotlight
Screaming tree frog (<i>Litoria quiritatus</i>)	P	Nocturnal Spotlight
Spotted marsh frog (<i>Limnodynastes tasmaniensis</i>)	P	Nocturnal Spotlight
Striped marsh frog (<i>Limnodynastes peronii</i>)	P	Nocturnal Spotlight

P = Protected, V = Vulnerable, E = Endangered, I = Introduced, Bold species relates to threatened status.



APPENDIX C

Habitat Constraints and Survey Requirements

Table C.1 Habitat Constraints and Survey Requirements

Common Name Scientific Name BC Act Status	Source	TBDC and Commonwealth Survey Guidelines Information			
		Required Survey Period^	Habitat Constraints/ Geographic Limitations	Predicted PCTs in Development Footprints	Minimum Survey Requirements
Stephen's banded snake <i>Hoplocephalus stephensii</i> Vulnerable	BAM-C	Oct-Mar	Hollow bearing trees, arboreal vine tangles, fallen/standing dead timber including logs (or within 500 m of these habitats) located within PCTs associated with the species in the TBDC (DPE 2023).	42	As noted in the Threatened reptiles Biodiversity Assessment Method survey guide (DPIE 2022), undertake nocturnal road surveys in suitable habitat, by driving a vehicle at 5 km/h and observing for snakes on the road. A passenger may use a spotlight to search further ahead along the road. Where a snake is detected, stop the vehicle in a safe position to identify the snake
Austral toadflax <i>Thesium australe</i> Vulnerable	PMST, BAM-C	Nov-Feb	-	42 1655	As noted in the TBDC (DPE 2023): This species can be easily overlooked when understorey height exceeds 30 cm. When this is the case close inspection surveys (searching between grass tussocks) may be necessary to conclusively determine absence of this species. The unit of measure for this species is area. Minimum survey requirements as per the NSW survey guide for surveying threatened plants and their habitats (DPIE 2020b).
Leafless tongue-orchid <i>Cryptostylis hunteriana</i> Vulnerable	BAM-C	Nov-Jan	-	42 1655	As noted in the TBDC (DPE 2023): Poor winter and spring rainfall may hamper flowering. Flowers between October and November in northern populations (north of Hunter Valley) and progressively later further south (November - December on the Central Coast to December to Late January on the South Coast). Species seems to flower well in periods when the understory is more open.