

Appendix H

MNES report – figure calculations

MNES	Habitat type	Criteria
TECs		
Poplar box TEC	-	RE 11.3.2, 11.3.17, 11.4.7, 11.4.12, 12.3.10 (DEE 2019)
Semi-evergreen vine thicket TEC	-	RE 11.2.3, 11.3.11, 11.4.1, 11.5.15, 11.8.3, 11.8.6, 11.8.13, 11.9.4, 11.9.8, 11.11.18 (McDonald 2010)
Threatened Fauna		
Koala	Koala habitat includes forests or woodlands. These resources fall within individual koala's home ranges and allow for interaction with adjacent individuals.	<p>Mapping was based on field verified RE mapping (RE verified at 40 locations and BioCondition at 18 sites), mapping all remnant and high-value regrowth for the following RE communities which contain the koala food trees listed by DoR as essential habitat factors within 10 km of the Project area include:</p> <ul style="list-style-type: none"> - 9.12.1 <i>Eucalyptus crebra</i> and/or <i>E. xanthoclada</i> and/or <i>E. drepanophylla</i> low open woodland on igneous rocks - 9.12.4 <i>Eucalyptus shirleyi</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia peltata</i> and/or <i>Callitris intratropica</i> low open woodland on igneous rocks - 9.12.19 <i>Eucalyptus crebra</i> or <i>E. granitica</i> +/- <i>Corymbia citriodora</i> subsp. <i>citriodora</i> +/- <i>E. portuensis</i> mixed woodland on igneous hills - 9.12.22 <i>Eucalyptus drepanophylla</i>, <i>Corymbia clarksoniana</i> or <i>C. intermedia</i> and <i>C. dallachiana</i> woodland on steep rugged igneous ranges - 9.12.24 <i>Eucalyptus drepanophylla</i> or <i>E. crebra</i> and/or <i>E. xanthoclada</i> and <i>Corymbia peltata</i> woodland on igneous rocks - 11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. woodland on alluvial plains - 11.3.4a <i>Corymbia tessellaris</i> woodland - 11.3.7 <i>Corymbia</i> spp. open woodland on alluvial plains - 11.3.9 <i>Eucalyptus platyphylla</i>, <i>Corymbia</i> spp. woodland on alluvial plains - 11.3.10 <i>Eucalyptus brownii</i> woodland on alluvial plains - 11.3.12 <i>Melaleuca viridiflora</i>, <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains - 11.3.13 <i>Grevillea striata</i> open woodland on coastal alluvial plains - 11.3.25 <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines - 11.3.25b <i>Melaleuca leucadendra</i> and/or <i>M. fluviatilis</i>, <i>Nauclea orientalis</i> open forest - 11.3.30 <i>Eucalyptus crebra</i>, <i>Corymbia dallachiana</i> woodland on alluvial plains - 11.3.33 <i>Eremophila mitchellii</i> open woodland on alluvial plains - 11.3.35 <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains - 11.3.35a <i>Corymbia tessellaris</i>, <i>C. clarksoniana</i> and <i>Eucalyptus platyphylla</i> woodland - 11.11.1 <i>Eucalyptus crebra</i> +/- <i>Acacia rhodoxylon</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding - 11.11.15 <i>Eucalyptus crebra</i> woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics - 11.12.1 <i>Eucalyptus crebra</i> woodland on igneous rocks - 11.12.9 <i>Eucalyptus platyphylla</i> woodland on igneous rocks
	Koala habitat includes road-side and rail vegetation and paddock trees, safe intervening ground matrix for travelling between trees and patches to forage and shelter and reproduce and access to vegetated corridors or paddock trees to facilitate movement between	Any patches of non-remnant vegetation that is not mapped. These were mapped using high resolution aerial imagery based on ground-truthed information from field observations.

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	patches. These resources fall within individual koala's home ranges and allow for interaction with adjacent individuals.	
Bare-rumped sheath-tail bat	Roosting	<p>Moderate and large hollows in <i>E. platyphylla</i> were mapped as potential roost trees and small hollow-bearing <i>E. platyphylla</i> were mapped as future potential roost trees.</p> <p>All areas within 200 m of moderate and large roost trees (<i>E. platyphylla</i> only) were also mapped as potential roosting habitat.</p>
	Foraging	<p>All remnant and regrowth REs that are listed as essential habitat factors for the species by DoR that occur within 10 km of the Project area were mapped as potential foraging habitat:</p> <ul style="list-style-type: none"> – 11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. woodland on alluvial plains – 11.3.4a <i>Corymbia tessellaris</i> woodland. On alluvial sandridges to elevated levees and level terraces adjacent to larger stream channels which are irregularly flooded or possibly relict. – 11.3.7 <i>Corymbia</i> spp. open woodland on alluvial plains – 11.3.9 <i>Eucalyptus platyphylla</i>, <i>Corymbia</i> spp. woodland on alluvial plains – 11.3.10 <i>Eucalyptus brownii</i> woodland on alluvial plains – 11.3.12 <i>Melaleuca viridiflora</i>, <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains – 11.3.13 <i>Grevillea striata</i> open woodland on coastal alluvial plains – 11.3.25 <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines – 11.3.27 Freshwater wetlands – 11.3.30 <i>Eucalyptus crebra</i>, <i>Corymbia dallachiana</i> woodland on alluvial plains – 11.3.33 <i>Eremophila mitchellii</i> open woodland on alluvial plains – 11.3.35 <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains – 11.3.35a <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains – 11.11.1 <i>Eucalyptus crebra</i> +/- <i>Acacia rhodoxylon</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding – 11.11.15 <i>Eucalyptus crebra</i> woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics – 11.12.1 <i>Eucalyptus crebra</i> woodland on igneous rocks – 11.12.9 <i>Eucalyptus platyphylla</i> woodland on igneous rocks
Black-throated finch (southern)	Important area	<p>Areas within 5 km of a post-1995 record of the subspecies.</p> <p>As extensive surveys have not been undertaken to the guidelines in multiple seasons, a precautionary approach will be taken, the entire area is mapped as an important area, assuming that the subspecies will occur.</p>
	Nesting habitat	<p>All remnant REs listed as essential habitat factors by DoR, or REs that align with the species preferred habitat, that occur within 1 km of permanent and seasonal water sources including watercourses, stock dams and wetlands. (Irrigation channels were not used as these are steep-sided channels with flowing water that do not present suitable drinking sites for the black-throated finch (southern). Res within a 10 km buffer relevant to the subspecies include:</p> <ul style="list-style-type: none"> – 9.12.1 <i>Eucalyptus crebra</i> and/or <i>E. xanthoclada</i> and/or <i>E. drepanophylla</i> low open woodland on igneous rocks – 9.12.4 <i>Eucalyptus shirleyi</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia peltata</i> and/or <i>Callitris intratropica</i> low open woodland on igneous rocks – 9.12.19 <i>Eucalyptus crebra</i> or <i>E. granitica</i> +/- <i>Corymbia citriodora</i> subsp. <i>Citriodora</i> +/- <i>E. portuensis</i> mixed woodland on igneous hills

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		<ul style="list-style-type: none"> - 9.12.22 <i>Eucalyptus drepanophylla</i>, <i>Corymbia clarksoniana</i> or <i>C. intermedia</i> and <i>C. dallachiana</i> woodland on steep rugged igneous ranges - 9.12.24 <i>Eucalyptus drepanophylla</i> or <i>E. crebra</i> and/or <i>E. xanthoclada</i> and <i>Corymbia peltata</i> woodland on igneous rocks - 11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. Woodland on alluvial plains - 11.3.4a <i>Corymbia tessellaris</i> woodland. On alluvial sandridges to elevated levees and level terraces adjacent to larger stream channels which are irregularly flooded or possibly relict. - 11.3.7 <i>Corymbia</i> spp. open woodland on alluvial plains - 11.3.9 <i>Eucalyptus platyphylla</i>, <i>Corymbia</i> spp. Woodland on alluvial plains - 11.3.10 <i>Eucalyptus brownii</i> woodland on alluvial plains - 11.3.12 <i>Melaleuca viridiflora</i>, <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains - 11.3.13 <i>Grevillea striata</i> open woodland on coastal alluvial plains - 11.3.25 <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines - 11.3.25b <i>Melaleuca leucadendra</i> and/or <i>M. fluviatilis</i>, <i>Nauclea orientalis</i> open forest - 11.3.27 Freshwater wetlands - 11.3.30 <i>Eucalyptus crebra</i>, <i>Corymbia dallachiana</i> woodland on alluvial plains - 11.3.31 <i>Ophiuros exaltatus</i>, <i>Dichanthium</i> spp. grassland on alluvial plains - 11.3.33 <i>Eremophila mitchellii</i> open woodland on alluvial plains - 11.3.35 <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains - 11.3.35a <i>Corymbia tessellaris</i>, <i>C. clarksoniana</i> and <i>Eucalyptus platyphylla</i> woodland - 11.11.1 <i>Eucalyptus crebra</i> +/- <i>Acacia rhodoxylon</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding - 11.11.15 <i>Eucalyptus crebra</i> woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics - 11.12.1 <i>Eucalyptus crebra</i> woodland on igneous rocks - 11.12.9 <i>Eucalyptus platyphylla</i> woodland on igneous rocks
	Foraging habitat	<p>All remnant REs with a native grassy understorey within 3 km of permanent water including watercourses and stock dams.</p> <p>REs within a 10 km buffer relevant to the subspecies include:</p> <ul style="list-style-type: none"> - 9.12.1 <i>Eucalyptus crebra</i> and/or <i>E. xanthoclada</i> and/or <i>E. drepanophylla</i> low open woodland on igneous rocks - 9.12.4 <i>Eucalyptus shirleyi</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia peltata</i> and/or <i>Callitris intratropica</i> low open woodland on igneous rocks - 9.12.19 <i>Eucalyptus crebra</i> or <i>E. granitica</i> +/- <i>Corymbia citriodora</i> subsp. <i>Citriodora</i> +/- <i>E. portuensis</i> mixed woodland on igneous hills - 9.12.22 <i>Eucalyptus drepanophylla</i>, <i>Corymbia clarksoniana</i> or <i>C. intermedia</i> and <i>C. dallachiana</i> woodland on steep rugged igneous ranges - 9.12.24 <i>Eucalyptus drepanophylla</i> or <i>E. crebra</i> and/or <i>E. xanthoclada</i> and <i>Corymbia peltata</i> woodland on igneous rocks - 11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. Woodland on alluvial plains - 11.3.4a <i>Corymbia tessellaris</i> woodland. On alluvial sandridges to elevated levees and level terraces adjacent to larger stream channels which are irregularly flooded or possibly relict. - 11.3.7 <i>Corymbia</i> spp. open woodland on alluvial plains

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		<ul style="list-style-type: none"> – 11.3.9 <i>Eucalyptus platyphylla</i>, <i>Corymbia</i> spp. Woodland on alluvial plains – 11.3.10 <i>Eucalyptus brownii</i> woodland on alluvial plains – 11.3.12 <i>Melaleuca viridiflora</i>, <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains – 11.3.13 <i>Grevillea striata</i> open woodland on coastal alluvial plains – 11.3.25 <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines – 11.3.25b <i>Melaleuca leucadendra</i> and/or <i>M. fluviatilis</i>, <i>Nauclea orientalis</i> open forest – 11.3.27 Freshwater wetlands – 11.3.30 <i>Eucalyptus crebra</i>, <i>Corymbia dallachiana</i> woodland on alluvial plains – 11.3.31 <i>Ophiuros exaltatus</i>, <i>Dichanthium</i> spp. grassland on alluvial plains – 11.3.33 <i>Eremophila mitchellii</i> open woodland on alluvial plains – 11.3.35 <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains – 11.3.35a <i>Corymbia tessellaris</i>, <i>C. clarksoniana</i> and <i>Eucalyptus platyphylla</i> woodland – 11.11.1 <i>Eucalyptus crebra</i> +/- <i>Acacia rhodoxylon</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding – 11.11.15 <i>Eucalyptus crebra</i> woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics – 11.12.1 <i>Eucalyptus crebra</i> woodland on igneous rocks – 11.12.9 <i>Eucalyptus platyphylla</i> woodland on igneous rocks
Squatter pigeon (southern)	Foraging	<p>Any remnant and regrowth REs within 3 km of permanent or seasonal waterbodies (including watercourses, irrigation channels, stock dams and natural wetlands) on suitable soil (i.e. Land Zone 3, 5 or 7 RE as included in the approved conservation advice).</p> <p>No REs of Land Zone 5 or 7 were present within the Project area. The Project area exclusively overlaps Land Zone 3 and Land Zone 12.</p> <p>Woodland vegetation on Land Zone 3 is likely to provide foraging habitat, noting that individual squatter pigeons were recorded at the Project area. REs within the Project area that are likely suitable foraging habitat include:</p> <ul style="list-style-type: none"> – 11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. Woodland on alluvial plains – 11.3.4a <i>Corymbia tessellaris</i> woodland. On alluvial sandridges to elevated levees and level terraces adjacent to larger stream channels which are irregularly flooded or possibly relict – 11.3.7 <i>Corymbia</i> spp. Open woodland on alluvial plains – 11.3.9 <i>Eucalyptus platyphylla</i>, <i>Corymbia</i> spp. Woodland on alluvial plains – 11.3.10 <i>Eucalyptus brownii</i> woodland on alluvial plains – 11.3.12 <i>Melaleuca viridiflora</i>, <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains – 11.3.13 <i>Grevillea striata</i> open woodland on coastal alluvial plains – 11.3.25 <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines – 11.3.25b <i>Melaleuca leucadendra</i> and/or <i>M. fluviatilis</i>, <i>Nauclea orientalis</i> open forest – 11.3.25f Main river channels. Open water or exposed stream beds and bars. Usually devoid of emergent vegetation although scattered trees and shrubs such as <i>Melaleuca viminalis</i> or <i>Melaleuca</i> spp. May be present and aquatic species may be abundant particularly in water holes and lagoons. Occurs in river channels. – 11.3.30 <i>Eucalyptus crebra</i>, <i>Corymbia dallachiana</i> woodland on alluvial plains

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		<ul style="list-style-type: none"> – 11.3.31 <i>Ophiuros exaltatus</i>, <i>Dichanthium</i> spp. grassland on alluvial plains – 11.3.35 <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains – 11.3.35a <i>Corymbia tessellaris</i>, <i>C. clarksoniana</i> and <i>Eucalyptus platyphylla</i> woodland
	Breeding	<p>Any remnant or regrowth RE occurs on suitable soil (i.e. Land Zone 3, 5 or 7 RE as outlined in the Commonwealth 'SPRAT' profile for the subspecies)) within 1 km of permanent or seasonal waterbodies (including watercourses, irrigation channels, stock dams and wetlands).</p> <p>No REs of Land Zone 5 or 7 were present within the Project area. .</p> <p>Woodland vegetation on Land Zone 3 is likely to provide breeding habitat, noting that individual squatter pigeons were recorded at the Project area. REs within the Project area that are likely suitable breeding habitat include:</p> <ul style="list-style-type: none"> – 11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. Woodland on alluvial plains – 11.3.4a <i>Corymbia tessellaris</i> woodland. On alluvial sandridges to elevated levees and level terraces adjacent to larger stream channels which are irregularly flooded or possibly relict – 11.3.7 <i>Corymbia</i> spp. Open woodland on alluvial plains – 11.3.9 <i>Eucalyptus platyphylla</i>, <i>Corymbia</i> spp. Woodland on alluvial plains – 11.3.10 <i>Eucalyptus brownii</i> woodland on alluvial plains – 11.3.12 <i>Melaleuca viridiflora</i>, <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains – 11.3.13 <i>Grevillea striata</i> open woodland on coastal alluvial plains – 11.3.25 <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines – 11.3.25b <i>Melaleuca leucadendra</i> and/or <i>M. fluviatilis</i>, <i>Nauclea orientalis</i> open forest – 11.3.25f Main river channels. Open water or exposed stream beds and bars. Usually devoid of emergent vegetation although scattered trees and shrubs such as <i>Melaleuca viminalis</i> or <i>Melaleuca</i> spp. May be present and aquatic species may be abundant particularly in water holes and lagoons. Occurs in river channels. – 11.3.30 <i>Eucalyptus crebra</i>, <i>Corymbia dallachiana</i> woodland on alluvial plains – 11.3.31 <i>Ophiuros exaltatus</i>, <i>Dichanthium</i> spp. grassland on alluvial plains – 11.3.35 <i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i> woodland on alluvial plains – 11.3.35a <i>Corymbia tessellaris</i>, <i>C. clarksoniana</i> and <i>Eucalyptus platyphylla</i> woodland.
	Drinking and dispersal	<p>Any remnant or regrowth forest or woodland occurring between patches of foraging or breeding habitat that facilitates movement between patches of foraging habitat, breeding habitat and/or waterbodies.</p> <p>REs within the Project area that are likely suitable for dispersal habitat include:</p> <ul style="list-style-type: none"> – 11.12.1 <i>Eucalyptus crebra</i> woodland on igneous rocks
White-throated needletail	Foraging	All habitat above the Project area and surrounds were considered potential foraging habitat for the species. As the species is almost exclusively aerial and is therefore not directly dependent on ground habitat, no foraging habitat was mapped for the white-throated needletail.
	Roosting	The Project area consisted of open woodland. In Australia, confirmed and high confidence records of white-throated needletail roosting indicate the species roosts in dense foliage of canopy trees in large tracts of treed remnant vegetation along or contiguous with mountain ranges (Nature Advisory, 2021). Given the absence of suitable roosting habitat, no

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		roosting habitat for the white-throated needletail has been mapped for the Project area.