Appendix D

MNES habitat mapping rules

Accessibility Statement

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Please note there may be content within appendices to this report that are not fully accessible to individuals using assistive technology. This may be due to the technical nature of these documents, which can contain complex tables, graphics, and legal language that are not compatible with certain accessibility tools.

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Appendix D Habitat Mapping Rules

Compared to the December 2022 referral, results within this Appendix integrates new information based on the revised Impact area (Appendix B Supplementary MNES Report, Section 6.1), increased targeted field survey program (Appendix B Supplementary MNES Report, Section 2.5), and refined vegetation and habitat mapping (Appendix B Supplementary MNES Report, Appendix B Figures and this Appendix).

Table 1 Habitat mapping approach for MNES conservation significant species and communities that are known or have the potential to occur within the Impact area

Species	Habitat category	Habitat definition	Mapping Approach	Methods
Greater glider (southern and central) *(Petauroides volans)*	Breeding	Highly connected, eucalypt woodland or forest containing trees >30 cm DBH.	All vegetation (i.e remnant, non-remnant, high value regrowth (HVR), regrowth) with a mature eucalypt canopy that contains trees over 30 cm DBH.	• Desktop assessment of species habitat requirements • Overlayed field habitat data for greater glider with GTRE spatial layer • Separated into breeding, foraging, dispersal habitat across the impact area
	Foraging	Eucalypt woodland or forest containing preferred Eucalypt species.	All vegetation and parklands with a eucalypt canopy that do not contain eucalypt trees over 30 cm DBH.	
	Dispersal	Any remaining eucalypt woodland or forest that may be suitable habitat.	Any remaining eucalypt woodland or forest.	
Yellow-bellied glider (south-eastern) *(Petaurus australis australis)*	Breeding	Highly connected, eucalypt woodland or forest containing trees >30 cm DBH.	All vegetation with a mature eucalypt canopy that contain trees over 30 cm DBH.	• Desktop assessment of species habitat requirements • Overlayed field habitat data for yellow-bellied glider with GTRE spatial layer • Separated into breeding, foraging, dispersal habitat across the impact area
	Foraging	Eucalypt woodland or forest containing preferred Eucalypt species	All vegetation and parklands with a eucalypt canopy that do not contain eucalypt trees over 30 cm DBH.	
	Dispersal	Any remaining eucalypt woodland or forest that may be suitable habitat.	Remnant REs comprising eucalypt woodland or forest.	
Koala (combined populations of Qld, NSW and the ACT)	Foraging and breeding	All vegetation types (that is, within remnant, HVR, regrowth or non-remnant vegetation, comprising and at times dominated by Locally Important Koala Trees (LIKTs), and ancillary habitat trees	All vegetation containing LIKTs	• Desktop assessment of species habitat requirements, including species records and evidence of koala presence (scats)

Species	Habitat category	Habitat definition	Mapping Approach	Methods
(Phascolarctos cinereus)		that may be utilised for occasional foraging.		• Overlayed field habitat data for koala with GTRE spatial layer and Nearmap spatial imagery (resolution 15 cm) for fine-scale mapping • Separated into foraging and breeding habitat across the impact area. Desktop assessment of species habitat requirements • Spatial analysis of excluded areas (i.e. Railway corridors (and applied a 10 km buffer), building roofs, active industrial areas, areas with no vegetation, wetlands and rivers, existing noise walls and areas with existing koala exclusion fencing or high fencing with barbed wire) • Overlayed koala field habitat data for koala with GTRE spatial layer and removed excluded areas. • Allocation of shelter and dispersal habitat
	Shelter and dispersal	All remaining areas not dominated by LIKT or ancillary habitat trees, containing small stands of trees or individual mature trees (i.e. any tree with a canopy width over 5 metres) which may provide shelter or safe intervening ground matrix facilitating dispersal between habitats.	All remaining areas not considered 'foraging and breeding' habitat, excluding the following areas unlikely to be regularly used as koala dispersal pathways: • Railway corridors (i.e. 10 m buffer from existing railway tracks) • Building roofs, as per Qspatial dataset Generated building outlines – Queensland 24 September 2024 (DoR, 24 September 2024) • Groundtruthed wetlands, rivers as per Qspatial dataset Vegetation management watercourse and drainage feature map (1:100000 and 1:250000) - Queensland excerpt South East Queensland Version 7.01 (DNRMMRRD, 5 November 2024), and swimming pools as per Qspatial dataset Swimming pools – Queensland (DoR, 22 November 2024) • Noise walls • Koala exclusion fencing or barbed wire • Major road reserve corridors e.g. highways and motorways, except where koala habitat has been mapped within these corridors	
Grey-headed flying-fox *(Pteropus poliocephalus)*	Breeding/Roosting	Field observations where >20 Grey-headed Flying-fox were observed. Includes areas of vegetation with exposed branches, generally located near a permanent water source. Can	Patches of vegetation where >20 Grey-headed Flying-fox were observed.	• Undertaken desktop assessment of species habitat requirements • Overlayed field habitat data for grey-headed flying-fox including

Species	Habitat category	Habitat definition	Mapping Approach	Methods
		occur in contiguous remnant woodlands or forest, or small patches of non-remnant vegetation.		roost locations with GTRE spatial layer. • Identified *Eucalypt, Angophora, Melaleuca, Banksia and Syzygium spp, Lophostemon* and *Corymbia* species favoured for foraging, as well as fruiting exotic species. • Separated into breeding, foraging, dispersal habitat across the impact area.
	Foraging	Any flowering or fleshy-fruited trees, including fruit and blossoms of rainforest species, especially *Ficus* spp and blossoms of myrtaceous species including *Eucalyptus*, *Lophostemon, Corymbia* and *Angophora*, *Melaleuca*, *Banksia* and *Syzygium* spp.	Areas of remnant Eucalypt woodland and/or vegetation where native or exotic flowering or fruiting trees were observed.	
	Dispersal	All other woody vegetation (any condition) that facilitates the local movement of the species.	Any remaining remnant, high value regrowth or non-remnant vegetation, including scattered trees. Excludes developed areas, that are residential, industrial, roadside corridor and stations and roads.	
Spotted-tailed quoll (southern sub-species) (SE mainland population) (*Dasyurus maculatus maculatus)*	Breeding/Foraging/ Dispersal	Rocky habitats or relatively complex woodland or forest area containing rare to occasional breeding opportunities (i.e. large diameter trees, termite mounds or hollow logs) in close proximity to permanent and semi-permanent creek lines (<1km).	Remnant RE's comprising woodlands or forests that occur in areas of rugged terrain (as observable in aerial imagery and contour mapping) and contains denning opportunities.	The following fauna habitat types: • Eucalypt woodland on sandy plains • Water bodies, creeks and lakes • Eucalypt woodland to open forest on alluvial plains • Eucalypt woodland to open forest on metamorphic soils • Eucalypt woodland to open forest on sedimentary rocks • Low mixed regrowth • Recent revegetation areas • Parkland (vegetated)
	Foraging	Mature vegetation communities connected to or in close proximity (<1km) to breeding / foraging habitat.	Remnant REs within 1 km of breeding/refuge habitat.	
	Dispersal	Mature vegetation communities connected to or in close proximity (<1km) breeding / foraging habitat.	Any remaining HVR or remnant vegetation that contains structural complexity. Excludes communities with a very 'sparse' structure or 'low' canopy.	
South-eastern glossy black-cockatoo	Breeding	Highly connected, eucalypt woodland or forest containing trees >50 cm DBH And/or	All vegetation, (i.e remnant, non-remnant, or HVR) which contains eucalypts with trees > 50 cm DBH and hollows that are >8 m above ground; located in branches	• Desktop assessment of species habitat requirements

Species	Habitat category	Habitat definition	Mapping Approach	Methods
(Calyptorhynchus lathami lathami)		Areas likely to contain hollows that are >8 m above ground; located in branches >30 cm in diameter, branch or stem no more than 45º from vertical; and minimum entrance diameter of >15 cm	>30 cm in diameter, branch or stem no more than 45º from vertical; and minimum entrance diameter of >15 cm	• Overlayed field habitat data for glossy black-cockatoo with GTRE spatial layer and Nearmap spatial imagery (resolution 15 cm) for fine-scale mapping • Separated into breeding, foraging, breeding and foraging, and dispersal only habitat across the impact area • Identified breeding habitat as large trees with breeding hollows • Sheoak (*Casuarina* and *Allocasuarina*) locations from field data were allocated as foraging habitat or breeding and foraging habitat • Other suitable remaining vegetation that was not mapped as breeding or foraging was mapped as dispersal for the species.
	Breeding and foraging	Highly connected, eucalypt woodland or forest containing trees >50 cm DBH AND/OR likely to contain hollows that are >8 m above ground; located in branches >30 cm in diameter, branch or stem no more than 45º from vertical; and minimum entrance diameter of >15 cm and containing stands of sheoak.	Patches of vegetation containing observations of Allocasuarina/Casuarina (sheoak) and where vegetation contains eucalypts with trees > 50 cm DBH AND/OR likely to contain hollows that are >8 m above ground; located in branches >30 cm in diameter, branch or stem no more than 45º from vertical; and minimum entrance diameter of >15 cm	
	Foraging	Eucalypt woodland or forest containing stands of sheoak.	Areas with sheoaks present	
	Dispersal	All other woody vegetation (any condition) that facilitates the local movement of the species.	Any remaining vegetation community (non-remnant, remnant, HVR) including scattered trees.	
Regent honeyeater (*Anthochaera phrygia*)	Foraging and dispersal	Eucalypt woodland, dry sclerophyll forest or riparian vegetation OR eucalypt vegetation within urban areas.	All vegetation and parklands which contains mature eucalypt trees	The following fauna habitat types: • Developed areas (vegetated) • Eucalypt woodland on sandy plains • Eucalypt woodland to open forest on alluvial plains • Eucalypt woodland to open forest on metamorphic soils • Eucalypt woodland to open forest on sedimentary rocks • Low mixed regrowth • Recent revegetation areas • Parkland (vegetated)

Species	Habitat category	Habitat definition	Mapping Approach	Methods
				• Water bodies, creeks and lakes
Swift parrot *(Lathamus discolor)*	Foraging and dispersal	Eucalypt woodland, dry sclerophyll forest or riparian vegetation OR eucalypt vegetation within urban areas.	All vegetation and parklands which contains mature eucalypt trees	The following fauna habitat types: • Developed Areas (vegetated) • Eucalypt woodland on sandy plains • Low mixed regrowth, • recent revegetation areas • Parkland (vegetated) • Eucalypt woodland to open forest on alluvial plains • Eucalypt woodland to open forest on metamorphic soils • Eucalypt woodland to open forest on sedimentary rocks • Water bodies, creeks and lakes
Australian painted snipe (*Rostratula australis*)	Foraging and dispersal	Shallow waterbodies including terrestrial wetlands, swamps, clayplans, bore drains and dams with areas of dense vegetation cover; OR grasslands that are frequently inundated or waterlogged.	Waterbodies with suitable habitat features based on targeted field survey results.	The following fauna habitat types: • Water bodies, creeks and lakes • Wetlands • Wetlands and swamps.
Latham's snipe (*Gallinago hardwickii*)	Foraging and dispersal	Suitable wetlands.	Waterbodies with suitable habitat features based on targeted field survey results.	• Overlayed field habitat data for Latham's snipe with GTRE spatial layer and Nearmap spatial imagery (resolution 15 cm) for fine-scale mapping • Identified foraging and dispersal habitat across the impact area.
Terrestrial migratory species (fork-tailed swift, oriental cuckoo,	Foraging and dispersal	A variety of habitat types from forests to open woodlands, subtropical and temperate rainforest.	Suitable fauna habitat types.	The following fauna habitat types: • Eucalypt woodland on sandy plains • Eucalypt woodland to open forest on alluvial plains

Species	Habitat category	Habitat definition	Mapping Approach	Methods
black-faced monarch, satin flycatcher, rufous fantail)				• Eucalypt woodland to open forest on metamorphic soils • Eucalypt woodland to open forest on sedimentary rocks • Low mixed regrowth • Parkland (not vegetated) • Parkland (vegetated) • Recent revegetation areas • Developed Areas (vegetated) • Water bodies, creeks and lakes • Wetlands • Wetlands and swamps
Wetland migratory species (sharp-tailed sandpiper, eastern osprey, marsh sandpiper, gull-billed tern, common greenshank, glossy ibis)	Foraging and dispersal	Suitable wetlands.	Waterbodies with suitable habitat features based on targeted field survey results.	The following fauna habitat types: • Water bodies, creeks and lakes • Wetlands • Wetlands and swamps
Mary River Cod (*Maccullochella mariensis*)	Foraging and dispersal	A variety of riverine habitat types from high gradient, rocky, upland streams, to large, slow-flowing pools in lowland areas.	Watercourses with suitable habitat features based on targeted field survey results.	The following fauna habitat types: • Water bodies, creeks and lakes
White-throated needletail *(Hirundapus caudacutus)*	Foraging and dispersal	Forages aerially above a wide variety of habitats ranging from heavily trees forests to open habitats.	Suitable fauna habitat types.	The following fauna habitat types: • Developed Areas (vegetated) • Eucalypt woodland on sandy plains • Eucalypt woodland to open forest on alluvial plains

Species	Habitat category	Habitat definition	Mapping Approach	Methods
				• Eucalypt woodland to open forest on metamorphic soils • Eucalypt woodland to open forest on sedimentary rocks • Low mixed regrowth • Parkland (not vegetated) • Parkland (vegetated) • Recent revegetation areas • Water bodies, creeks and lakes • Wetlands • Wetlands and swamps
Angle-stemmed Myrtle (*Gossia gonoclada*)	Habitat	Lowland riparian rainforest and notophyll vine forest, along permanent watercourses subject to tidal influence on well-drained clay soils, sandy loams and alluvial soils.	Canopy surrounding field observations - individual was observed 14m outside impact area	• Overlayed field observation data with GTRE spatial layer and Nearmap spatial imagery (resolution 15 cm) for fine-scale mapping
Macadamia nut (*Macadamia integrifolia*)	Habitat	Remnant rainforest.	Canopy surrounding field observations	• Overlayed field observation data with GTRE spatial layer and Nearmap spatial imagery (resolution 15 cm) for fine-scale mapping
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions threatened ecological community	Habitat	Eucalypt vegetation on alluvial landforms meeting the key diagnostic and condition threshold criteria.	Vegetation ground truthed as 12.3.3 and 12.3.3d underwent targeted field surveys, in accordance with the Approved Conservation Advice for the Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions (DCCEEW, 2022), to assess if vegetation met the key diagnostic characteristic and condition thresholds. Any vegetation communities failing to meet the associated diagnostic features and condition requirements for the	Vegetation containing 12.3.3 or 12.3.3d assessed against key diagnostic thresholds and condition criteria, in accordance with the *Approved Conservation Advice for the Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* (DCCEEW, 2022) including: • Density of large native trees [≥ 45 cm diameter at breast height (DBH)] and very large native

Species	Habitat category	Habitat definition	Mapping Approach	Methods
			respective TEC were then excluded from the threatened community.	trees (≥ 60 cm DBH) within the plot (100m x 50m) • Total native perennial cover (graminoids, forbs, grasses, shrubs, low trees, juvenile canopy species, resprouting or suckering of the lower portions of canopy trees, and cryptograms) within the plot (100m x 50m) • Native groundcover species and species richness (grasses, forbs, ferns and sedges) within a 20m x20m subplot at the centre of the larger plot • Exotic cover and species • Evidence of arboreal fauna (i.e. scratches, scat etc); and • Patch size (ha) and contiguity.