Appendix J
Significant impact assessments of MNES that possibly occur

This Appendix provides significant impact assessments undertaken in accordance with the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (Significant Impact Guideline) for all Matters of National Environmental Significance (MNES) assessed as having a 'Possible' likelihood of occurring within the Exploratory Works Survey area. MNES assessed as 'Possible' have suitable habitat present within the Exploratory Works Survey area but have not been recorded within a 30 km radius of the Project area in the last 10 years. As there are no recent records within the locality, there is a reduced likelihood of the species being present in the Survey area.

While MNES have been assessed as 'Possible' in the Exploratory Works Survey area, comprehensive surveys in accordance with Commonwealth surveys guidelines targeting MNES have been undertaken within the Exploratory Works Survey area and within the broader Borumba Pumped Hydro Energy Storage (PHES) Survey area; and all MNES assessed as 'Possible' were not recorded. In this regard, all MNES assessed as 'Possible' are anticipated not to be present.

Irrespective of the above, significant impact assessments (SIA) have been undertaken for all MNES assessed as having a 'Possible' likelihood of occurring. The impact calculations used in the SIA are based on potentially suitable habitat only and caution should be exercised in the strict application/interpretation of the impact areas, as these areas do not reflect impacts to know habitat of the species and only reflect potentially suitable habitat within which the species has not been recorded.

Table J-1 details the MNES assessed as having a 'Possible' likelihood of occurring and the extent (ha) of potential habitat for the threatened flora and fauna impacted by the Exploratory Works.

Table J-1: MNES assessed as having a 'Possible' likelihood of occurring and area (ha) of potential habitat impacted

Common name	Scientific name	EPBC status	Area (ha) of potential habitat impacted
Threatened flora			
Austral toadflax	*Thesium australe*	Vulnerable	19.6
Blotched Sarcochilus	*Sarcochilus weinthalii*	Vulnerable	0.2
Hairy-joint grass	*Arthraxon hispidus*	Vulnerable	5.1
Nightcap coleus	*Coleus nitidus*	Endangered	0.1
Quassia	*Samadera bidwillii*	Vulnerable	32.6
Threatened fauna			
Australian painted snipe	*Rostratula australis*	Endangered	0
Coxen's fig-parrot	*Cyclopsitta diophthalma coxeni*	Critically Endangered	2.7
Northern quoll	*Dasyurus hallucatus*	Endangered	38
Spotted-tail quoll (SE mainland population)	*Dasyurus maculatus maculatus*	Endangered	38

For the purposes of simplifying the significant impact assessments, the significant impact assessments for the threatened flora and fauna species have been combined based on conservation statues due to having the same significant impact assessment criteria. As such, all threatened flora species listed as vulnerable under the EPBC Act are assessed together, while the Nightcap coleus, listed as endangered is assessed separately. For threatened

fauna, all species listed as critically endangered and endangered under the EPBC Act have been assessed together.

Descriptions of the MNES are provided in sections following the significant impact assessments.

MNES flora listed as endangered under the EPBC Act

A significant impact assessment has been undertaken for Nightcap coleus (*Coleus nitidus*), which is listed as endangered under the EPBC Act in, Table J-2.

Table J-2: Significant impact assessment Nightcap coleus (*Coleus nitidus*)

Nightcap coleus (*Coleus nitidus*)	
Impact criteria	**Assessment**
Lead to a long-term decrease in the size of a population	**Unlikely** Extensive survey efforts in the Borumba PHES Survey area have not identified any records of the species. The Project is anticipated to directly impact 0.1 ha of potential habitat. The direct impacts to 0.1 ha of potential habitat within which the species was not identified is unlikely to lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species	**Unlikely** The only confirmed regional record of this species is associated with Gallangowan State Forest and Yabba State Forest approximately 18 km west of the Exploratory Works Project. A total of 0.1 ha of potential habitat is anticipated to be impacted. The Atlas of Living Australia (ALA) area of occupancy (AOO) tool indicates there will be no reduction to the AOO for the species. As such, the clearing associated with the Exploratory Works Project is considered unlikely to reduce the area of occupancy of the species.
Fragment an existing population into two or more populations	**Unlikely** The species was not found in surveys of the Borumba PHES Survey area, and the nearest record is approximately 18 km away. Although potential habitat will be cleared for the Project, clearing will not fragment any known existing population.
Adversely affect habitat critical to the survival of a species	**Unlikely** The Conservation Advice for the species does not describe habitat critical to the survival of the species, however the general definition in the Significant Impact Guideline describes it as areas that are necessary: • for the long-term maintenance of the species (including maintenance of species essential to the survival of the species, such as pollinators) • to maintain genetic diversity and long-term evolutionary development, or • for the reintroduction of populations or recovery of the species. Given the species was not recorded in the Borumba PHES Survey area and the nearest record is approximately 18 km away, potential habitat in the footprint does not meet the definition of habitat critical to the survival of the species. Therefore, habitat critical to the survival of the species is unlikely to be adversely affected by the Project.
Disrupt the breeding cycle of a population	**Unlikely** Given that no individuals were recorded in the Borumba PHES Survey area, the Project is considered unlikely to disrupt the breeding cycle of a population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that	**Unlikely** No individuals were recorded in the Borumba PHES Survey area during field surveys, and the nearest record is approximately 18 km away.

Nightcap coleus (*Coleus nitidus*)	
Impact criteria	**Assessment**
the species is likely to decline	Although approximately 0.1 ha of potential habitat will be cleared, clearing will not decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	**Unlikely** Invasive species that are known threats to the species including Crofton weed (*Ageratina adenophora*), mistflower (*Ageratina riparia*) and lantana (*Lantana camara*) are already established and widespread in the Exploratory Works Project Survey area. The Exploratory Works Project will implement hygiene controls and weed management measures to ensure no new invasive weeds are introduced into the species' potential habitat within the Survey area. The Exploratory Works Project is considered unlikely to establish invasive species that are harmful to the *Coleus nitidus*.
Introduce disease that may cause the species to decline	**Unlikely** The Conservation Advice does not identify any diseases that are a threat to the species. Nevertheless, hygiene controls and biosecurity measures described in the Flora and Fauna Management Plan (FFMP) will be implemented to avoid introducing and spreading disease within the Survey area. The Exploratory Works Project will not introduce disease that may cause the species to decline.
Interfere with the recovery of the species	**Unlikely** There is no approved recovery plan specific to the species. The Border Ranges Rainforest Biodiversity Management Plan – NSW & Queensland (DECCW NSW, 2010) has been adopted for the species. The plan covers the Australian Government's Border Ranges North and South (Queensland and New South Wales) Biodiversity Hotspot. The Exploratory Works Project is not within this area, and therefore the Project is unlikely to conflict with any of the plan's recovery objectives. Further, the Exploratory Works Project does not support a known population of this species and it will not exacerbate any threats identified in the Conservation Advice for the species. Therefore, the Exploratory Works Project is unlikely to interfere with the recovery of the species.
Recommendation:	Significant impact is **unlikely**

MNES flora listed as vulnerable under the EPBC Act

A significant impact assessment has been undertaken in Table J-3 for the following threatened flora species listed as vulnerable under the EPBC Act:

- Austral toadflax (*Thesium australe*)
- blotched Sarcochilus (*Sarcochilus weinthalii*)
- hairy-joint grass (*Arthraxon hispidus*)
- Quassia (*Samadera bidwillii*).

Table J-3: Significant impact assessment of threatened flora species listed as vulnerable under the EPBC Act

Impact criteria	Assessment
Lead to a long-term decrease in the size of an important population	**Unlikely** None of the vulnerable species were found during targeted surveys of the Borumba PHES Survey area. For all vulnerable species the relevant approved Conservation Advice does not nominate any "important population". The Significant Impact Guidelines 1.1 identify that an 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are: • key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species range. As none of the flora species listed as vulnerable were observed within the Borumba PHES Survey area, important populations of the species are considered not to be present in the Survey area.
Reduce the area of occupancy of an important population	**Unlikely** As none of the flora species listed as vulnerable were observed within the Borumba PHES Survey area, the works are unlikely to impact any individuals and therefore are unlikely to reduce the area of occupancy of an important population or the species.
Fragment an existing important population into two or more populations	**Unlikely** As none of the flora species listed as vulnerable were observed within the Borumba PHES Survey area, the works are unlikely to fragment an existing important population into two or more populations.
Adversely affect habitat critical to the survival of a species	**Unlikely** The approved Conservation Advice do not nominate any habitat critical to the survival of any of the species listed as vulnerable. The Significant Impact Guideline 1.1 describes habitat critical to the survival of a species as areas that are necessary: • for the long-term maintenance of the species (including maintenance of species essential to the survival of the species, such as pollinators) • to maintain genetic diversity and long-term evolutionary development, or • for the reintroduction of populations or recovery of the species. As none of the flora species listed as vulnerable were observed within the Borumba PHES Survey area, the vegetation within the Project footprint is unlikely to fall within the gamut of being habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population	**Unlikely** As none of the flora species listed as vulnerable were observed within the Borumba PHES Survey area, the Project is unlikely to disrupt the breeding cycle of an important population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely** Given none of the flora species listed as vulnerable were recorded during the field surveys undertaken within the Borumba PHES Survey area, the removal of vegetation is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to an extent that the species is likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	**Unlikely** None of the flora species listed as vulnerable were observed within the Borumba PHES Survey area and therefore they are unlikely to be present. As they are unlikely to be present, the Project is unlikely to result in invasive species becoming established in the species habitat.

Impact criteria	Assessment
Introduce disease that may cause the species to decline	**Unlikely** None of the flora species listed as vulnerable were observed within the Borumba PHES Survey area and therefore they are unlikely to be present. As they are unlikely to be present, the Project is unlikely to introduce disease that may cause the species to decline.
Interfere with the recovery of the species	**Unlikely** As none of the flora species listed as vulnerable were observed within the Borumba PHES Survey area, the Project is unlikely to interfere with the recovery of the species.
Recommendation:	Significant impact is **unlikely** for the following threatened flora species listed as vulnerable under the EPBC Act: • Austral toadflax (*Thesium australe*) • Blotched Sarcochilus (*Sarcochilus weinthalii*) • Hairy-joint grass (*Arthraxon hispidus*) • Quassia (*Samadera bidwillii*).

MNES fauna listed as critically endangered and endangered under the EPBC Act

A significant impact assessment has been undertaken in Table J-4 for the following threatened fauna species listed as critically endangered and endangered under the EPBC Act:

- Australian painted snipe (*Rostratula australis*)
- Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*)
- northern quoll (*Dasyurus hallucatus*)
- spotted-tail quoll (SE mainland population) (*Dasyurus maculatus maculatus*).

Table J-4: Significant impact assessment of threatened fauna species listed as critically endangered and endangered under the EPBC Act

Impact criteria	Assessment
Lead to a long-term decrease in the size of a population	**Unlikely** Extensive survey efforts in the Borumba PHES Survey area have not identified any records of these four species. As no individuals were identified within the Borumba PHES Survey area, the Project is unlikely to lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species	**Unlikely** Extensive survey efforts in the Borumba PHES Survey area have not identified any records of these four species. As no individuals were identified within the Borumba PHES Survey area, the Project is unlikely to reduce the area of occupancy of the species.
Fragment an existing population into two or more populations	**Unlikely** Extensive survey efforts in the Borumba PHES Survey area have not identified any records of these four species. As no individuals were identified within the Borumba PHES Survey area, the Project is unlikely to fragment an existing population into two or more populations.

Impact criteria	Assessment
Adversely affect habitat critical to the survival of a species	**Unlikely** Habitat critical to the survival of the species is defined in the Conservation Advice relevant for the MNES. Where not defined, the Significant Impact Guideline describes it as areas that are necessary: • for the long-term maintenance of the species (including maintenance of species essential to the survival of the species, such as pollinators) • to maintain genetic diversity and long-term evolutionary development, or • for the reintroduction of populations or recovery of the species. The habitat within the Exploratory Works Survey area is unlikely to fall within the gamut of being habitat critical the survival of the species. In this regard, habitat critical to the survival of the species is unlikely to be adversely affected.
Disrupt the breeding cycle of a population	**Unlikely** Given that no individuals were recorded in the Borumba PHES Survey area, the Project is considered unlikely to disrupt the breeding cycle of a population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely** No individuals were recorded in the Borumba PHES Survey area during field surveys. Although potentially suitable habitat is anticipated to be cleared, the clearing is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	**Unlikely** A broad range of introduced pest animal and plant species are already established in the Survey area and surrounds. The Exploratory Works Project is expected not to exacerbate any existing threats or lead to any new invasive species becoming established in the species' habitat as introduced pest animals are currently present in the area.
Introduce disease that may cause the species to decline	**Unlikely** The Exploratory Works Project is expected not to introduce any disease that may cause any critically endangered and/or endangered species to decline.
Interfere with the recovery of the species	**Unlikely** The clearing of vegetation within which the critically endangered and/or endangered species were not identified is unlikely to interfere with the recovery of any of the species.
Recommendation:	Significant impact is **unlikely** for the following threatened fauna species listed as critically endangered or endangered under the EPBC Act: • Australian painted snipe (*Rostratula australis*) • Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*) • northern quoll (*Dasyurus hallucatus*) • spotted-tail quoll (SE mainland population) (*Dasyurus maculatus maculatus*)

Threatened flora descriptions

Austral toadflax (*Thesium australe*)

A description of Austral toadflax (*Thesium australe*) is provided in Table J-5. This species was not identified in the Survey area, however potentially suitable habitat is present in the Survey area is shown in Figure E-22 (Appendix E).

Table J-5: Description of Austral toadflax (*Thesium australe*)

Austral toadflax (*Thesium australe*)	
Profile	**Conservation status**: Vulnerable **Habitat:** Approved Conservation Advice for *Thesium australe* describes the species as a hairless yellow-green perennial herb with slender wiry stems to 40 cm high. It mostly flowers in spring and summer and has tiny white flowers. It is semi-parasitic on roots of grassland species, most notably native grasses such as Kangaroo grass (*Themeda triandra*) (DOE, 2013). **Distribution**: The species occurs in New South Wales, the Australian Capital Territory, Queensland and Victoria in shrubland, grassland or woodland, often in damp areas. Its current distribution is sporadic but widespread, occurring between the Bunya Mountains in south-east Queensland to northeast Victoria and as far inland as the southern, central and northern tablelands in New South Wales and the Toowoomba region (DOE, 2023). **Previous records**: This species has previously been recorded (in 1993) approximately 18 km to the west of the Exploratory Works Project footprint (ALA, 2023). **Threats**: Conservation Advice for the species identifies the main threats to the species as: • altered fire regimes / disturbance • existing and intensified grazing by livestock, native herbivores and feral herbivores • residential, infrastructure and agricultural development • weed invasion • infrastructure (road and rail) maintenance, particularly road widening and re-routing.
In the Survey area	**Surveys**: Surveys were completed between November 2022 and August 2024. Detection of this species is highly seasonal as it can become dormant (senesce back to rootstock) during the cooler months. As such, surveys were conducted in summer. **Species occurrence**: *T. australe* was not detected during targeted surveys. **Potential habitat**: The species can occur in a large range of habitats and, as such, approximately 1,320 ha of potential habitat for the species has been mapped in the Borumba PHES Survey area, of which 19.6 ha is located withing the Exploratory Works Project footprint. Habitat for the species in the Survey area includes grassy woodlands and open forest areas that are most likely to support Kangaroo grass understorey. **Present threats to the species**: • Weeds including *Lantana camara* (Category 3 and Weeds of National Significance (WoNS)) are persistent throughout the Exploratory Works Project footprint. Other weeds identified include corky passionflower (*Passiflora suberosa*) and Noogoora burr (*Xanthium occidentale*).

Blotched Sarcochilus (*Sarcochilus weinthalii*)

A description of blotched Sarcochilus (*Sarcochilus weinthalii*) is provided in Table J-6. This species has not previously been recorded within the Survey area however potentially suitable habitat is present as shown in Figure E-23 (Appendix E).

Table J-6: Description of blotched Sarcochilus (*Sarcochilus weinthalii*)

Blotched sarcochilus (*Sarcochilus weinthalii*)	
Profile	**Conservation status:** Vulnerable **Habitat:** Approved Conservation Advice for the species describes suitable habitat as rainforest, dry rainforest and drier scrub of sub-coastal ranges and associated foothills inland from the coast at altitudes of 400-700 m above sea level (ASL). In south east Queensland, the species occurs in microphyll and notophyll rainforest and patches of isolated scrub (DOE, 2014). **Distribution:** The species occurs mainly in south-east Queensland (SEQ) and northern NSW. Records have also been found inland from Coffs Harbour and at Port Macquarie. In SEQ, the species occurs around Toowoomba, Esk and Yarraman. Wrattens National Park contains the northernmost record (ALA, 2023). **Previous records:** The nearest record of the species (from 1986) is located 18 km north-west of the Survey area in Wrattens National Park (ALA, 2023). **Threats:** The Conservation Advice identifies the main threats to the species as: • habitat loss through land clearing for agriculture and development and forestry operations, including track maintenance • inappropriate fire regimes • illegal collection.
In the Survey area	**Surveys:** Surveys were completed between November 2022 and August 2024 in all areas of suitable habitat within the Borumba PHES Survey area. **Species occurrence:** The species was not detected during field surveys. **Potential habitat:** Approximately 125 ha of potential habitat has been mapped within the Survey area, of which 0.2 ha is in within the Exploratory Works Project footprint. **Present threats to the species:** Clearing for track maintenance.

Hairy joint grass (*Arthaxon hispidus*)

A description of hairy joint grass (*Arthraxon hispidus*) is provided in Table J-7. This species was not identified in the Survey area, however potentially suitable habitat is present as shown in Figure E-24 (Appendix E).

Table J-7: Description of hairy joint grass (*Arthraxon hispidus)*

Hairy joint grass *(Arthraxon hispidus*)	
Profile	**Conservation status:** Vulnerable **Habitat:** Suitable habitat for the species within Queensland includes the edges of rainforest and in wet eucalypt forest, often near creeks or swamps, as well as woodlands. In south-east Queensland, it has also been recorded growing around freshwater springs on coastal foreshore dunes, in shaded small gullies, on creek banks, on sandy alluvium in creek beds in open forests, and with bog mosses in mound springs (DEWHA, 2008). **Distribution:** In Australia it occurs from scattered locations spanning from north Queensland to northern New South Wales. **Previous records:** The species may have been historically observed (in 1939) in the immediate vicinity of the Borumba PHES Project and Exploratory Works Project footprint (ALA, 2023). However, all associated local records have limited spatial accuracies of between 10 and 25 km. **Threats:** The main identified threat to the species is weed invasion. In particular, mistflower, Crofton weed, and lantana are considered to be the primary potential threats identified (DEWHA, 2008).

Hairy joint grass *(Arthraxon hispidus)*	
In the Survey area	**Surveys:** Targeted surveys were completed between November 2022 and August 2024 in all areas of suitable habitat in the Borumba PHES Survey area. **Species occurrence:** *Arthraxon hispidus* was not detected. **Potential habitat:** Approximately 985 ha of potential habitat for the species occurs within the Borumba PHES Survey area, of which 5.1 ha is within the Exploratory Works Project footprint. **Present threats to the species:** Crofton weed, mistflower and *Lantana camara* are widespread within the surveyed area. Other recognised weed species that were present include corky passionflower and Noogoora burr.

Nightcap coleus (*Coleus nitidus*)

A description of nightcap coleus (*Coleus nitidus*) is provided in Table J-8. Potentially suitable habitat for the species is present in the Borumba PHES Survey area as shown in Figure E-25 (Appendix E).

Table J-8: Description of nightcap coleus (*Coleus nitidus*)

Nightcap coleus (*Coleus nitidus*)	
Profile	**Conservation status:** Endangered **Habitat:** Suitable habitat for the species is found in gullies and on boulders in rainforest or open forest on the margins of rainforest (DEWHA, 2008). **Distribution:** Although initially thought to be restricted to the Nightcap Range and McPherson Range in north east New South Wales and south east Queensland (DEWHA, 2008), recent records (ALA, 2023) indicate that the species also occurs in the D'Aguilar Range west of Brisbane with an isolated and highly disjunct record from Gallangowan State Forest, NNW of Jimna, QLD. **Previous records:** A specimen was collected in 2009, 18 km west of the Exploratory Works Project footprint (ALA, 2023). **Threats:** The threats to the species as listed in the Conservation Advice include: • flooding of a known population by the planned increase in the reservoir capacity of the Hinze Dam Stage 3 Project • competition from invasive weeds including Crofton weed, mistflower and lantana • roadside clearing and maintenance in Numinbah State Forest • habitat modification • inappropriate fire regimes.
In the Survey area	**Surveys:** Surveys were completed between November 2022 and August 2024 in all areas of suitable habitat in the Borumba PHES Survey area. **Species occurrence:** The species was not detected during field surveys. **Potential habitat:** Approximately 85 ha of suitable habitat has been mapped in the Borumba PHES Survey area, of which 0.1 ha is within the Exploratory Works Project footprint. **Present threats to the species:** Crofton weed, mistflower and lantana are widespread in the Survey area.

Quassia (Samadera bidwillii)

A description of quassia (*Samadera bidwillii*) is provided in Table J-9. This species has not been recorded within the Survey area. However, potentially suitable habitat is present as shown in Figure E-26 (Appendix E).

Table J-9: Description of quassia (*Samadera bidwillii*)

Quassia (*Samadera bidwillii*)	
Profile	**Conservation status:** Vulnerable **Habitat:** The species occurs in rainforest and woodland communities and is often associated with rainforest margins and/or areas adjacent to temporary and permanent watercourses up to 510 m ASL (DEWHA, 2008). **Distribution:** The species is endemic to Queensland and known to occur in at least 40 locations between Scawfell Island (offshore from Mackay) and north of Gympie (DEWHA, 2008). **Previous records:** The nearest record was made in 2020, approximately 48 km northeast of the Exploratory Works Project footprint (ALA, 2023). **Threats:** The threats to the species as listed in the Conservation Advice include soil erosion and habitat clearing as a result of agriculture, forestry, urban development and recreational activities.
In the Survey area	**Surveys:** Surveys were completed between November 2022 and August 2024 in all areas of suitable habitat within the Borumba PHES Survey area. **Species occurrence:** The species was not detected during field surveys. **Potential habitat:** Approximately 3,117 ha of potential habitat has been mapped within the Borumba PHES Survey area, of which 32.6 ha is within the Exploratory Works Project footprint. **Present threats to the species:** Nil. There are no known populations associated with the Survey area.

Threatened fauna descriptions

Australian painted snipe (*Rostratula australis*)

A description of the Australian painted snipe (*Rostratula australis*) is provided in Table J-10. This species has not previously been recorded within the Survey area however potentially suitable habitat occurs as shown in Figure E-27 (Appendix E).

Table J-10: Description of Australian painted snipe (*Rostratula australis*)

Australian painted snipe (*Rostratula australis*)	
Profile	**Conservation status:** Endangered **Habitat:** The Conservation Advice states the species occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub, *Muehlenbeckia spp*. (lignum), open timber or samphire. **Distribution:** It has been recorded from wetlands across Australia and is most common in eastern Australia (DSEWPAC, 2013). **Previous records:** The nearest records are from more than 15 years ago. The most recent records were made in November 2023 at Lake MacDonald, almost 40 km east of the Exploratory Works Project footprint. **Habitat Critical to the Survival of the Species:** The National Recovery Plan for the Australian Painted Snipe states that very little is known about the specific habitat requirements of the Australian Painted Snipe (DCCEEW, 2022). However, as a guide, habitat critical to the survival of the species can be considered to include: • any natural wetland habitat where the species is known or likely to occur (especially within suitable breeding habitat) within the indicative distribution map • any location outside the indicative distribution map that may be periodically occupied by Australian Painted Snipe when wetland conditions are favourable. **Important Populations:** The Australian Painted Snipe is considered to occur in a single, contiguous breeding population (Garnett, 2000).

Australian painted snipe (*Rostratula australis*)	
	Threats: The Conservation Advice identifies the main threats to the species as: • loss and degradation of wetlands, through draining and diversion of water for agriculture and reservoirs • habitat disturbance from livestock such as grazing and trampling of wetland vegetation and nests, and nutrient enrichment • predation by feral animals, although there is limited evidence • replacement of native wetland vegetation by invasive weeds (DSEWPAC, 2013).
In the Survey area	**Survey effort:** Surveys were completed between November 2022 and April 2024. Surveys were undertaken within the Borumba PHES Survey area, which includes the Exploratory Works Survey area. **Species occurrence:** The species was not recorded in the Borumba PHES Survey area despite extensive survey effort. **Potential habitat:** Approximately 10 ha of potential habitat has been mapped as present in the Borumba PHES Survey area, of which none is located within the Exploratory Works Project footprint. **Present threats to the species:** Feral animals and invasive weeds are present in the Survey area.

Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*)

A description of Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*) is provided in Table J-11. This species has not previously been recorded within the Survey area. However, potentially suitable habitat occurs as shown in Figure E-28 (Appendix E).

Table J-11: Description of Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*)

Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*)	
Profile	**Conservation status:** Critically Endangered **Habitat:** The Conservation Advice states this subspecies was known to occupy lowland subtropical rainforest, dry rainforest, littoral and vine forest habitats, as well as riparian corridors in woodland and urbanised and agricultural areas that support fig trees (*Ficus* spp.) (DCCEEW, 2023). **Distribution:** The Conservation Advice (DCCEEW, 2023) states, based on accepted records, the core distribution of the species extends from Gympie in south-eastern Queensland to the Richmond River in north-eastern New South Wales, and west to the Bunya Mountains, Main Range and Koreelah Range. In Queensland, the most recent reliable records of Coxen's fig-parrot are from near Imbil, Kin Kin Creek, Upper Pinbarren Creek, Montville, the Maleny area, Mount Glorious, Main Range National Park and Lamington National Park. **Previous records:** There are only approximately 90 reliable records of Coxen's fig-parrot in Queensland since 1970. While recent targeted surveys have been largely unsuccessful, unverified incidental sightings continue to be reported sporadically by members of the public including a series of reports of up to four individuals in 2001–2004 from south-east Queensland at Montville, Main Range National Park, Imbil State Forest, Lamington National Park, Beerwah Forest Reserve and Maleny (DCCEEW, 2023). Due to a lack of recent verified records, there is potential that the subspecies is extinct (Menkhorst et al. 2017). **Habitat Critical to the Survival of the Species:** The Conservation Advice (DCCEEW, 2023) states it is not possible to definitively state what constitutes habitat critical to the survival of the subspecies, given the poor state of knowledge about the distribution, movement, and ecology of the Coxen's fig-parrot. However, the Coxen's Fig-Parrot Recovery Team suggested that areas within abundant fig trees appear to be an important habitat component for the species. **Important Populations:** The Conservation Advice (DCCEEW, 2023) for the species recommends that the species should be considered as one important population. **Threats:** The Conservation Advice (DCCEEW, 2023) for the subspecies identifies the following threats:

Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*)	
	• loss of habitat caused by the clearing of lowland rainforest and logging of rainforest trees • degradation of habitat by invasive weeds • loss of isolated stands of fig trees due to a lack of natural recruitment • illegal collection of birds or eggs for the avicultural trade • fragmentation, poor quality and small area of the remaining habitat.
In the Survey area	**Survey effort:** Surveys were completed between November 2022 and April 2024. Surveys were undertaken within the Borumba PHES Survey area, which includes the Exploratory Works Survey area. In addition acoustics analysis of calls from three long term monitoring locations around Lake Borumba were analysed by a specialist and no Coxen's fig parrot calls were identified. **Species occurrence:** The species was not recorded in the Borumba PHES Survey area. **Habitat:** Approximately 776 ha of potential habitat for this subspecies is present within the Borumba PHES Survey area, of which 2.7 ha is located within the Exploratory Works Project footprint. **Present threats to the subspecies:** A suite of invasive weed species were recorded within the Survey area including *Lantana camara,* corky passionflower, Noogoora burra, Crofton weed, and mistflower.

Northern quoll (*Dasyurus hallucatus*)

A description of northern quoll (*Dasyurus hallucatus*) is provided in Table J-12. This species has not previously been recorded within the Survey area however potentially suitable habitat occurs as shown in Figure E-29 (Appendix E).

Table J-12: Description of northern quoll (*Dasyurus hallucatus*)

Northern quoll (*Dasyurus hallucatus*)	
Profile	**Conservation status:** Endangered **Habitat:** Northern quolls occur in a variety of habitats and is therefore not considered to have highly specific habitat requirements. Habitat types include (but are not limited to) rocky areas, eucalypt forests and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. They use dens in the daytime, which provide important shelter from weather and predators. Den sites are also non-specific, and northern quoll have been recorded using rocky outcrops, tree hollows, hollow logs, termite mounds, goanna burrows and human dwellings for shelter. Habitat critical to the survival of the species includes areas where they are least exposed to current threats, and therefore includes two broad habitat types: rocky areas and offshore islands (Hill & Ward, 2010). **Distribution:** The northern quoll has a discontinuous distribution across northern Australia. Core populations occur in rocky and/or high rainfall areas. In Queensland, surviving populations occur predominantly (but not exclusively) in upland rocky areas (e.g., Cape Cleveland/Mt Elliott, Mareeba, Crediton, Eungella, Clarke Range) and several coastal sites (e.g., Cleveland, Cape Upstart, Cape Gloucester, Condor Range) in north and central Queensland. **Previous records:** The species was most recently recorded in 1991, more than 25 km south of the Survey area. **Habitat Critical to the Survival of the Species:** The National Recovery Plan for the Northern Quoll states habitat critical to the survival of the species is where northern quolls are least exposed to threats or least likely to be in the future (Hill & Ward, 2010). Two particularly broad habitat types fall into this category: rocky areas and offshore islands. The Exploratory Works Survey area is located on the Australian mainland. Rocky outcrops are located within the Borumba PHES Survey area, which may provide habitat critical to the survival of the species. **Important Populations:** The National Recovery Plan for the species refers to the following important populations:

Northern quoll (*Dasyurus hallucatus*)	
	• Remnant populations of northern quolls that persist alongside threatened. These include populations in Queensland that have persisted long after Cane toad invasion. • Populations that may be exposed to threats in the future but have the potential to persist (based on habitat, etc.). These populations should be defined as part of the recovery process and need to be monitored and protected. • Populations on offshore islands in the Northern Territory and Western Australia that are unlikely to be naturally colonised by Cane toads or Cats. • Populations in the Pilbara region of Western Australia, as these are outside the predicted range of Cane toads. Considering these criteria, it is highly unlikely the Exploratory Works Project area supports an important population. **Threats:** The National Recovery Plan for the species identifies threats as: • death by ingestion of Cane toad toxin • direct predation by feral Cats and foxes, and competition for food resources from invasive species such as feral Cats and foxes • inappropriate fire regimes, including too frequent burning leading to a reduction in food abundance and/or increased predation of quolls due to exposure post-fire • habitat degradation, including trampling and grazing by large herbivores including feral pest species and cattle • habitat loss via clearing for human development • weeds, including exotic pasture grasses which may inhibit hunting by quolls and/or foster more intense fire regimes • disease and population isolation • direct hunting.
In the Survey area	**Survey effort:** Surveys were completed between November 2022 and April 2024, including 2,503 camera nights. Surveys were undertaken within the Borumba PHES Survey area, which includes the Exploratory Works Survey area. **Species occurrence:** Northern quoll was not detected within the Exploratory Works Survey area. **Potential habitat:** Approximately 3,802 ha of potential habitat has been mapped within the Borumba PHES Survey area, of which 38 ha is in the Exploratory Works Project footprint. **Present threats to the species:** Feral cat, fox, dingo and Cane toads were observed within the Survey area. Extensive populations of invasive weed species have been recorded.

Spotted-tail quoll (*Dasyurus maculatus maculatus*)

A description of spotted-tail quoll (*Dasyurus maculatus maculatus*) is provided in Table J-13. This species has not previously been recorded within the Survey area. However, potentially suitable habitat occurs as shown in Figure E-30 (Appendix E).

Table J-13: Description of spotted-tail quoll (*Dasyurus maculatus maculatus*)

Spotted-tail quoll (*Dasyurus maculatus maculatus*)	
Profile	**Conservation status:** Endangered **Habitat:** The species prefers mature, wet forest habitat, especially in areas with rainfall 600 mm/year. Habitat requirements include suitable den sites such as hollow logs, tree hollows, rock outcrops or caves. **Distribution:** The spotted-tailed quoll occurs in eastern Australia from south-eastern Queensland to western Victoria. Populations are now fragmented and isolated and estimates of the decline range from 50–90% for the mainland and 25–50% for the population in New South Wales since European settlement (TSSC, 2020). **Previous records:** It was previously recorded in 1992 within 10 km of the Survey area.

Spotted-tail quoll (*Dasyurus maculatus maculatus*)	
	Threats: Conservation Advice for the species identifies threats as: • habitat loss and fragmentation including habitat loss and modification, timber production, and mortality associated with road traffic • invasive species, including predation by feral Cats and European red foxes, competition and/or predation by wild Dogs, poisoning from Cane toads, and poisoning associated with control of non-native predators • fire, including too frequent burning and increased fire frequency / intensity due to climate change • purposeful killing.
In the Survey area	**Targeted surveys**: Surveys were completed between November 2022 and April 2024, including 2,503 camera nights. Surveys were undertaken within the Borumba PHES Survey area, which includes the Exploratory Works Survey area. **Species occurrence:** Spotted-tail quoll was not detected within the Exploratory Works Survey area during targeted surveys. **Potential habitat:** Approximately 3,802 ha of suitable habitat has been mapped within the Survey area, of which 38 ha is in the Exploratory Works Project footprint. **Present threats to the species:** Feral Cats, red foxes and wild Dogs are present within the Survey area.