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To NSW Department of Education

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Subject Ecology input

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1.1 Ecology

A desktop review and site survey was completed to determine the biodiversity constraints associated with the project. The following sections outline the results of this assessment.

1.1.1 Methodology

Desktop review

A search of relevant databases and previous reports was undertaken in February and March 2020 to determine potential biodiversity constraints within a 10 kilometre radius (defined as the 'locality') of the project and that may be associated with the project area. The following databases were reviewed:

- NSW BioNet Atlas of NSW Wildlife for records of threatened species listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) in the locality
- Biodiversity Conservation Division (BCD) Threatened Species, Populations and Communities database for threatened ecological communities that may occur in the locality
- Department of Agriculture, Water and Environment (DAWE) Protected Matters Search tool – for matters of national environmental significance listed under the *Commonwealth Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) located within a 10 kilometre radius of project (searched February 2020)
- State Vegetation Type Mapping (SVTM), NSW Government Vegetation Information System (VIS) and OEH Spatial Data Catalogue for vegetation mapping in the study area
- National Herbarium of NSW, PlantNet database review for Rare or Threatened Australian Plants
- The DAWE directory of important wetlands
- The Commonwealth Bureau of Meteorology's Atlas of Groundwater Dependent Ecosystems (GDE)
- NSW BCD Threatened Species Profile Database
- Critical habitat registers:
 - DAWE – register of critical habitat
 - BCD – areas of outstanding biodiversity values (AOBVs)

Previous reports

The following previous reports were reviewed:

- Biosis (2014), Googong Township Pink-tailed Worm-lizard Management Plan, report prepared for Googong Township Pty Ltd, July 2012
- Australian Government Department of Sustainability, Environment, Water, Populations and Communities (2011), Recommendation Report – Googong Township urban development and associated infrastructure, NSW, report based on EPBC Act referral 2011/5829.
- Manidis Roberts (2010), Googong Township water cycle project, report prepared for CIC Australia Ltd, November 2010.

Field survey

A site survey was undertaken by an ecologist on 17 March 2020. The primary objectives of the site survey were to:

- Determine the vegetation condition within the project area and identify areas of conservation significance with reference to threatened ecological communities listed under the BC Act and EPBC Act
- Identify potential habitat for threatened flora and fauna species in the study area and determine the potential for threatened species to be affected by the project.

The site survey consisted of a random meander search of the entire project site and one flora plot (20 metres by 50 metres) to identify potential areas of habitat value and to determine the vegetation condition within the project area.

Within the plot, the following vegetation and habitat characteristics were recorded:

- Description of vegetation
- Dominant canopy vegetation
- Dominant understorey vegetation
- Groundcover species cover and abundance
- Percent native and exotic plant cover
- Proportion of overstorey regeneration
- Any signs of previous disturbance and grazing.

Fauna surveys were limited to habitat assessment to determine the potential of the project area to provide habitat for threatened fauna species

1.1.2 Existing environment

Vegetation

The project site has been previously cleared of native vegetation during the construction works for the subdivision of the Googong residential area. The project site was used as a construction compound

and stockpile area during construction of the township and is therefore highly degraded and altered from its original state (refer Figure 1).

No remnant canopy vegetation is present in the project site, with trees limited to those planted adjacent to the surrounding footpath. No shrubs are present in the site. Groundcover vegetation is highly degraded and dominated by introduced species, including Turnip Weed (*Rapistrum rugosum*), Lambs Tongues (*Plantago lanceolata*) Cocksfoot (*Dactylis glomerata*) and Sheep Sorrel (*Acetosella vulgaris*). Introduced species account for about 70 percent of the groundcover, native species cover is about 1.4 percent and the remaining cover is bare ground.



Figure 1: View of the project site looking south

Fauna habitat

The project site is comprised of highly degraded groundcover dominated by introduced species. It is unlikely that the site would support fauna species other than to provide marginal foraging habitat for mammal species such as the Eastern Grey Kangaroo (*Macropus giganteus*), of which scats were present on site, common reptile species such as skinks and snakes, including the Eastern Blue-tongue (*Tiliqua schinoides*) and Eastern Brown Snake (*Pseudonaja textilis*), and birds that may forage on the ground. The project site lacks rocky habitat including surface and partially embedded rocks that are essential habitat components for the Pink-tailed Worm-lizard (*Aprasia parapulchella*), a vulnerable listed species under the BC Act and EPBC Act, which is known to occur in the Googong Township area.

Threatened and migratory species

The literature review and database search identified 24 listed species and ecological communities that have the potential to occur in the study area due to suitable habitat being available, and/or have been recorded in the locality (refer Table 1).

Table 1 Listed species likely to occur in the study area

| Species | Status | Recorded in locality | Recorded in project site |
|---|-----------------------------|--|---------------------------------|
| <i>Reptiles, invertebrates, amphibians</i> | | | |
| Golden Sun Moth <i>Synemon plana</i> | E – BC Act CE – EPBC Act | Multiple records for the species, the closest record is 2.5 km west of the proposal site (BCD, 2020) | No |
| Green and Golden Bell frog <i>Litoria aurea</i> | E – BC Act V – EPBC Act | One record for the species, located 2.3 km north-east of the proposal site (BCD, 2020) | |
| Pink-tailed Worm-lizard <i>Aprasia parapulchella</i> | V – BC Act V – EPBC Act | Yes – just outside study area in designated offset area to the east and Rockley Oval to the west (BCD, 2020) | No |
| Rosenberg’s Goanna <i>Varanus rosenbergi</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Southern Bell Frog <i>Litoria raniformis</i> | E – BC Act V – EPBC Act | One records for the species located 2.3 km north-east of the proposal site (BCD, 2020) | |
| <i>Mammals</i> | | | |
| Grey-headed Flying-fox <i>Pteropus poliocephalus</i> | V – BC Act V – EPBC Act | Two records for the species, the closest is located 2.3 km south-west of the proposal site (BCD, 2020) | No |
| Koala <i>Phascolarctos cinereus</i> | V – BC Act V – EPBC Act | One record for the species 2.3 km north-east of the | |

| Species | Status | Recorded in locality | Recorded in project site |
|---|----------------------------|--|--------------------------|
| | | proposal site (BCD, 2020) | |
| Large Bent-winged Bat <i>Miniopterus orianae oceanensis</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Spotted-tailed Quoll <i>Dasyurus maculatus</i> | V – BC Act E – EPBC Act | Two records for the species, the closest is located 1.2 km east of the proposal site (BCD, 2020) | No |
| Birds | | | |
| Australasian Bittern <i>Botaurus poiciloptilus</i> | E – BC Act E – EPBC Act | One record for the species 5.7 km north of the proposal site (BCD, 2020) | |
| Brown Treecreeper (eastern subspecies) <i>Climacteris picumnus victoriae</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Diamond Firetail <i>Stagonopleura guttata</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Flame Robin <i>Petroica phoenicea</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Gang-gang Cockatoo <i>Callocephalon fimbriatum</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Hooded Robin (south-eastern form) <i>Melanodryas cucullata cucullata</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Little Eagle <i>Haliaeetus leucogaster</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Fork-tailed Swift <i>Apus pacificus</i> | Mi – EPBC Act | One record for the species 5.7 km north | No |

| Species | Status | Recorded in locality | Recorded in project site |
|---|----------------------------|--|--------------------------|
| | | of the proposal site (BCD, 2020) | |
| Scarlet Robin <i>Petroica boodang</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Speckled Warbler <i>Chthonicola sagittata</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Spotted Harrier <i>Circus assimilis</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Superb Parrot <i>Polytelis swainsonii</i> | V – BC Act V – EPBC Act | One record for the species 6.0 km north of the proposal site (BCD, 2020) | No |
| Painted Honeyeater <i>Grantiella picta</i> | V – BC Act V – EPBC Act | One record for the species 5.7 km north of the proposal site (BCD, 2020) | No |
| Varied Sittella <i>Daphoenositta chrysoptera</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| White-bellied Sea Eagle <i>Haliaeetus leucogaster</i> | V – BC Act | Two records for the species, the closest is located 2.3 km north-east of the proposal site (BCD, 2020) | No |
| White-throated Needletail <i>Hirundapus caudacutus</i> | Mi – EPBC Act | Two records for the species, the closest is located 2.3 km north-east of the proposal site (BCD, 2020) | No |
| Flora | | | |
| Button Wrinklewort <i>Rutidosia leptorrhynchoides</i> | E – BC Act E – EPBC Act | Multiple records for the species, the closest record is 1.7 km east of the proposal site (BCD, 2020) | No |
| Hoary Sunray | E – EPBC Act | Multiple records for the species, the | No |

| Species | Status | Recorded in locality | Recorded in project site |
|---|----------------------------|---|--------------------------|
| <i>Leucochrysum albicans</i> var. <i>tricolor</i> | | closest record is 1.7 km north of the proposal site (BCD, 2020) | |
| Pale Pomaderris <i>Pomaderris pallida</i> | V – BC Act V – EPBC Act | Multiple records for the species, the closest record is 3.9 km north of the proposal site (BCD, 2020) | No |
| Silky Swainson-pea <i>Swainsona sericea</i> | V – BC Act | No records within 10 km (BCD, 2020) | No |
| Ecological communities | | | |
| Box-Gum Woodland | E – BC Act E – EPBC Act | Known to occur in the offset area to the east of the project site | No |
| Natural Temperate Grassland | E – EPBC Act | Known to occur in numerous areas within the locality | No |

The project site is unlikely to support, or be occupied by any of the species that are likely to occur in the study area, as indicated above. This is due to the highly degraded and introduced nature of the groundcover, the absence of canopy and shrub cover, and the absence of habitat features such as surface and partially embedded rocks and woody debris to provide suitable habitat for threatened species. There are no aquatic habitats or wetland areas in the project site to provide suitable habitat for aquatic or water-dependant species such as amphibians.

Pink-tailed Worm-lizard habitat

The Pink-tailed Worm-lizard is known to occur in the designated conservation area for the species, about 600 metres east of the project site. This 52 hectare conservation area was set aside specifically for the Pink-tailed Worm-lizard following an assessment of the impacts of the Googong Township on the habitat of the species in order to conserve and manage high quality habitat for the species in perpetuity (Biosis 2012). The conservation area is managed by the Queanbeyan-Palerang Regional Council.

With the limited access available at the site, a brief inspection of the conservation area was conducted during the survey period. The conservation area differs significantly from the project site due to the presence of native woodland vegetation with a groundcover containing native species, including Red-leg Grass (*Bothriochloa macra*), and an abundance of rocky habitat, particularly on sloping landform, which is favoured by the species (refer Figure 2).

The species was also previously recorded in the area of Rockley Oval, about 600 metre north-west of the project site. This area, in addition to the area of the project site, has since undergone clearing for the township subdivision and subsequent degradation of any potential habitat that may have been present for the species. The site survey indicated an absence of potential habitat for the species due to lack of surface and partially embedded rocks, and a dominance of introduced groundcover species. The project site is therefore unlikely to provide potential habitat for the species.



Figure 2: View of the Pink-tailed Worm-lizard offset area, showing rocky habitat

Googong foreshores

Googong Foreshores is located about 1.5 kilometres to the east of the project site and known to provide habitat to numerous threatened species. It is Commonwealth land, leased to the Australian Capital Territory and New South Wales governments by the Commonwealth Department of Finance and Deregulation as part of the Queanbeyan Water Supply Agreement. The subdivision of Googong Township is entirely outside of Googong Foreshores. Listed threatened species and ecological communities known to occur within the Googong Foreshores are:

- Pink-tailed Worm-lizard
- Hoary Sunray
- Pale Pomaderris
- Button Wrinklewort
- Natural Temperate Grassland of the Southern Tablelands of New South Wales and the Australian Capital Territory
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

The project site is unlikely to support any of these listed species or ecological communities due to the highly degraded and introduced nature of the groundcover, and lack of habitat features required to provide suitable habitat for these species.

1.1.3 Conclusions and need for further assessment

As the proposal is to be assessed under Part 4 of the EP&A Act, consideration must be given to the project's potential impacts on biodiversity under the Biodiversity Assessment Method (BAM). Where the BAM applies, a Biodiversity Development Assessment Report (BDAR) is required that sets out the proposed biodiversity offsets and that must be taken into account in assessing the proposed development. A BDAR must identify the biodiversity values to be impacted by a development, detail the avoidance methods undertaken to minimise impacts, and identify any offset requirements. However, following initial site surveys, it has been determined that the project site would not involve the removal of any native vegetation or have potential impacts on biodiversity values. Therefore, a BDAR waiver is considered an appropriate level of assessment for the project.

A biodiversity assessment would also be undertaken as part of the EIS and include an assessment of potential impacts on matters of National Environmental Significance (NES) under the EPBC Act. The biodiversity assessment would be included as a chapter of the EIS.

Regards

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Scientist