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Addendum to the Biodiversity Development Assessment Report for the Moriah War Memorial College State Significant Development Application

Dear Kate,

The purpose of this letter is to present the results of additional targeted surveys for the Maroubra Woodland Snail (*Meridolum maryae*) within the grounds of the Moriah War Memorial College, Queens Park (the 'subject land'). Additional surveys were required following the Supplementary Response to Submissions (SRtS) from the Environment, Energy and Science Group (EES) dated 10 February 2021 that '*considers the surveys to have been undertaken in conditions unsuitable for detecting this species*.' The results of the additional surveys in this letter have been prepared as an addendum to the Biodiversity Development Assessment Report (BDAR) submitted by Cumberland Ecology on 23 September 2020 (19139RP1).

It should be noted that the only addendum required to the BDAR includes the results of the additional surveys for the Maroubra Woodland Snail (*Meridolum maryae*). Cumberland Ecology understands that the remaining information in the report submitted previously is adequate in addressing the impacts of the proposed development on biodiversity values within the subject land under the *Biodiversity Conservation Act 2016* (BC Act).

Appendix A of this letter provides an ecological assessment of the Maroubra Woodland Snail (*Meridolum maryae*) in accordance with the requirements of EES. It includes details of additional field surveys conducted in the subject land and considers the ecological impacts of the proposed development presented in the September BDAR.

Following the additional surveys on 1 March 2021 for the Maroubra Woodland Snail (*Meridolum maryae*) within the subject land, it can be concluded that the species is unlikely to occur within the subject land. The additional surveys to come to this conclusion were undertaken during an adequate period of wet weather such that the methods used are consistent with the available information for the species in the TBDC.

Yours sincerely,

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APPENDIX A :

Addendum – Supplementary Survey Findings

A.1. Introduction

Aver, on behalf of Moriah War Memorial College, has commissioned Cumberland Ecology to prepare an addendum letter for additional Ecological Services associated with the proposed State Significant Development (SSD) on the Moriah War Memorial College Queens Park Campus grounds (the 'subject land'). This letter is presented as an addendum to the Biodiversity Development Assessment Report (BDAR) prepared by Cumberland Ecology that was submitted as part of the development package to support the SSD application that assessed the impacts on native vegetation and habitat. On 10 February 2021, the Environment, Energy and Science Group (EES) issued comments within a Supplementary Response to Submissions (SRtS) for the SSD application (DOC20/1043930). The recent comments received from the EES contained within the SRtS include a requirement for additional Maroubra Woodland Snail (*Meridolum maryae*) surveys.

Surveys for the Maroubra Woodland Snail (*Meridolum maryae*) were undertaken by Cumberland Ecology in September 2020, based on available survey guidance at the time which found no evidence of individuals within the subject land. The SRtS has since introduced updated information requiring snail surveys to be undertaken following wet weather. Specifically, this information is now held in the NSW BioNet Threatened Biodiversity Data Collection (TBDC)) and states the following requirements for the species: '*Detection of live specimens requires early morning or evening surveys during or after rain, while the top 3mm of ground and vegetation surfaces are still moist.*' As such, additional surveys for the Maroubra Woodland Snail (*Meridolum maryae*) were required (TBDC 2020).

It is also noted that while the Biodiversity Assessment Method (BAM) has been updated to include requirements under the BAM 2020 document (NSW Government 2020), the SSD application for Moriah War Memorial College has been assessed and submitted under the previous BAM 2017 document. This letter continues to assess the impacts associated with the SSD using the BAM 2017 document (NSW Government 2017).

This letter report provides an ecological assessment of the potential likelihood of occurrence of the Maroubra Woodland Snail (*Meridolum maryae*), in accordance with the requirements of the TBDC. It includes details of additional field surveys conducted in the subject land and considers the ecological impacts of the proposed development site presented in the September 2020 BDAR (**Figure 1**).

A.2. Methods

A.2.1. Additional Surveys

The Maroubra Woodland Snail, which was not included in the list of predicted candidate species credit species in the BAM calculator, has been added to this assessment in association with the occurrence of intact Eastern Suburbs Banksia Scrub (ESBS) within the subject land. This species was added in conjunction with recommendations made by EES in July 2020 and subsequently in February 2021.

The original surveys for the Maroubra Woodland Snail (*Meridolum maryae*) were undertaken on 15 September 2020. As mentioned previously, these surveys were conducted using the information in the Final Determination and Threatened Species Profile (EES 2020b, a). According to the SRtS received on 10 February 2021, these surveys were considered '*to have been undertaken in conditions unsuitable for detecting this species*.' As such,

additional surveys were undertaken by Cumberland Ecology meet the requirements of the information presented in the TBDC. The survey requirements presented in the TBDC are provided below:

> *Species occurs within leaf litter and debris but will be buried under the humic/organic layer of the soil profile when conditions aren't suitable.*
>
> *Presence of snail shells and can be detected all year round. Note for the purpose of survey, the presence of* [Maroubra Woodland Snail] *shells equals the presence of this species.*
>
> *Detection of live specimens requires early morning or evening surveys during or after rain, while the top 3mm of ground and vegetation surfaces are still moist.*
>
> *Best conditions to encourage species to be more easily detectable include moist ground layer, a night time humidity of between 80-100% and night time temperature exceeding 14°C.*

The additional surveys were undertaken on 1 March 2021 between the hours of 6:00 pm and 11:00 pm. Initial searches included digging among leaf litter throughout areas of appropriate habitat within the subject land. Particular focus was given to areas of leaf litter within 1 m of the base of all trees that have a diameter at breast height greater than 10 cm. Searches were also undertaken around any logs or woody debris present.

Nocturnal spotlighting was also conducted for the Maroubra Woodland Snail (*Meridolum maryae*) as they typically forage during the night. These surveys were conducted via random meander searches. The nocturnal surveys used high power hand-held torches, focussing on areas of leaf litter and woody debris. A minimum of two hours spotlighting was undertaken in the survey for one night.

Table 1 provides a summary of the Maroubra Woodland Snail (*Meridolum maryae*) surveyed for within the subject land including the original surveys. The location of these surveys are shown on **Figure 2**.

Survey Period	Dates of Survey	Time of Survey	Sunset	Survey Method
Original survey	15 September 2020	5:00 pm to 10:00 pm (10 person hours)	5:45 pm	Snail searches and spotlighting
Additional survey	1 March 2021	6:00 pm to 11:00 pm (10 person hours)	7:30 pm	Snail searches and spotlighting

A.2.2. Additional Survey Weather Conditions

All weather condition data was sourced from the Bureau of Meteorology from the Sydney - Observatory Hill weather station (Station No. 66214) for temperature and humidity recordings, and the weather station located at Randwick (Station No. 66052) for rainfall data. The additional survey had minimum and maximum temperatures of 19.8°C and 30.8°C, respectively, and an average relative humidity throughout the day of 82%. Rainfall for 1 March 2021 was recorded to be 0.0 mm with 53.4 mm of rainfall in the week preceding the surveys.

A.3. Results and Discussion

A.3.1. Survey Results

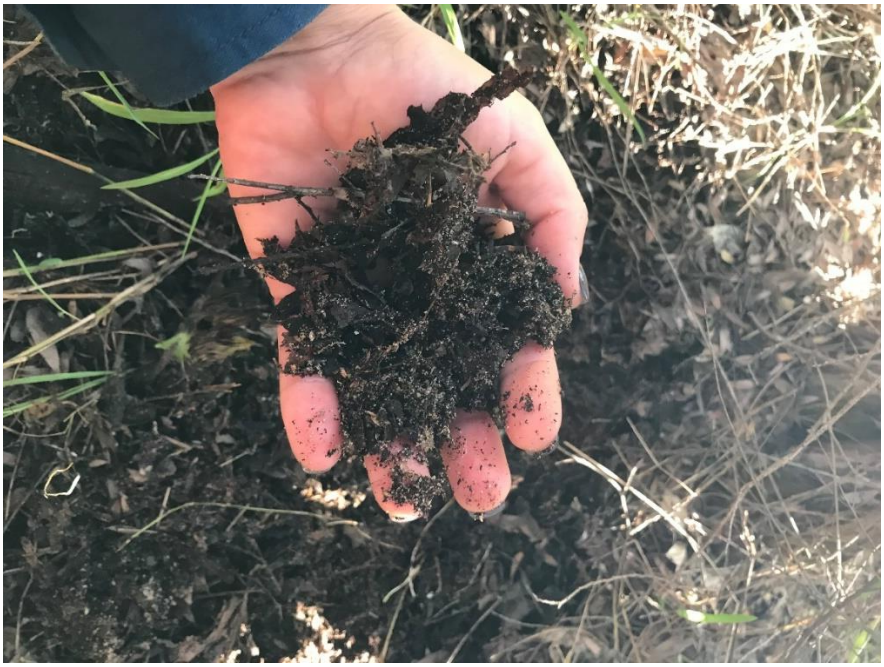
No evidence (live snails or shells) of the Maroubra Woodland Snail (*Meridolum maryae*) were recorded in the subject land during the additional surveys.

A.3.2. Survey Requirements

There is limited evidence for the dispersal and home range of the Maroubra Woodland Snail (*Meridolum maryae* and also relies on evidence from closely related species of snail.(EES 2020b). The Final Determination for the species extrapolates using evidence for similar species of snails in Western Sydney and includes information suggesting that individuals '*are typically active at night but can also move about on overcast or rainy days*' (EES 2020b). This is reiterated on the Threatened Species Profile (EES 2020a). Information held in the TBDC however, specifically mentions that surveys are required to occur following periods of rainfall. Nevertheless, additional surveys were undertaken to provide further evidence that the Maroubra Woodland Snail (*Meridolum maryae*) is unlikely to occur within the subject land.

As mentioned previously, the SRtS received on 10 February 2021 concludes that the original surveys undertaken for the Maroubra Woodland Snail (*Meridolum maryae*) were inadequate due the low amount of rainfall throughout August and September 2020 leading up to the surveys. The additional surveys undertaken on 1 March 2021 as it was evident that there had been sufficient rainfall in the week preceding the surveys that should no records be detected, it could be concluded that the species unlikely to occur within the subject land. Specifically, the Randwick weather station (Station No. 66052) recorded 120.1 mm of rainfall during the month of February of which 53.1 mm was recorded in the week preceding surveys. Moreover, during the surveys, particular attention was given to the composition of the soil which was found to still be moist following recent rainfall such that it could act as adequate foraging habitat for the Maroubra Woodland Snail (*Meridolum maryae*). Photo evidence of the soil composition is shown in **Photograph 1** and **Photograph 2**.

Photograph 1 Sample of soil from the Eastern Suburbs Banksia Scrub within the subject land



Photograph 2 Moist pocket of soil between tree roots

A.3.3. Impacts on Habitat

As presented in the BDAR, the SSD proposes the removal of 0.09 ha of planted Urban Native/Exotic vegetation and was found to occur in low enough condition that no offsets were required. Notwithstanding this, as result of the findings of the additional survey, it can be concluded that the Maroubra Woodland Snail (*Meridolum maryae*) is unlikely to occur within the subject land. A small amount of this vegetation supports a relatively intact soil layer amongst garden beds which, due to the proximity to known potential habitat for the Maroubra Woodland Snail in the patch of ESBS adjacent the subject land, could also provide potential habitat for the species. While this small area of potential marginal habitat will be directly impacted by SSD, the ESBS within and surrounding the subject land will not be directly impacted. **Figure 3** shows the extent to which native vegetation and habitat will be impacted as part of the SSD.

A.4. Conclusion

Following the additional surveys on 1 March 2021 for the Maroubra Woodland Snail (*Meridolum maryae*) within the subject land, it can be concluded that the species is unlikely to occur within the subject land. The additional surveys to come to this conclusion were undertaken during an adequate period of wet weather such that the methods used are consistent with the available information for the species in the TBDC.

A.5. References

EES. 2020a. Maroubra Woodland Snail - profile.
EES. 2020b. NSW Threatened Species Scientific Committee – final determination - Maroubra woodland snail (Meridolum maryae) – endangered species listing
NSW Government. 2017. Biodiversity Assessment Method. Office of the Environment and Heritage, Sydney.
NSW Government. 2020. Biodiversity Assessment Method. Environment, Energy and Science, Parramatta NSW.
TBDC. 2020. Threatened Biodiversity - Maroubra Woodland Snail (Meridolum maryae).

FIGURES

Legend

Development Site

Subject Land

Image Source:
Image © Nearmap (2019)
Dated: 01/07/2019

Data Source:
Spatial Services
NSW Department of Finance and Services

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 10 20 30 40 m

I:\...\19139\Figures\Letter 6\20210304\Figure 1. Location

Figure 1. Location of the subject land

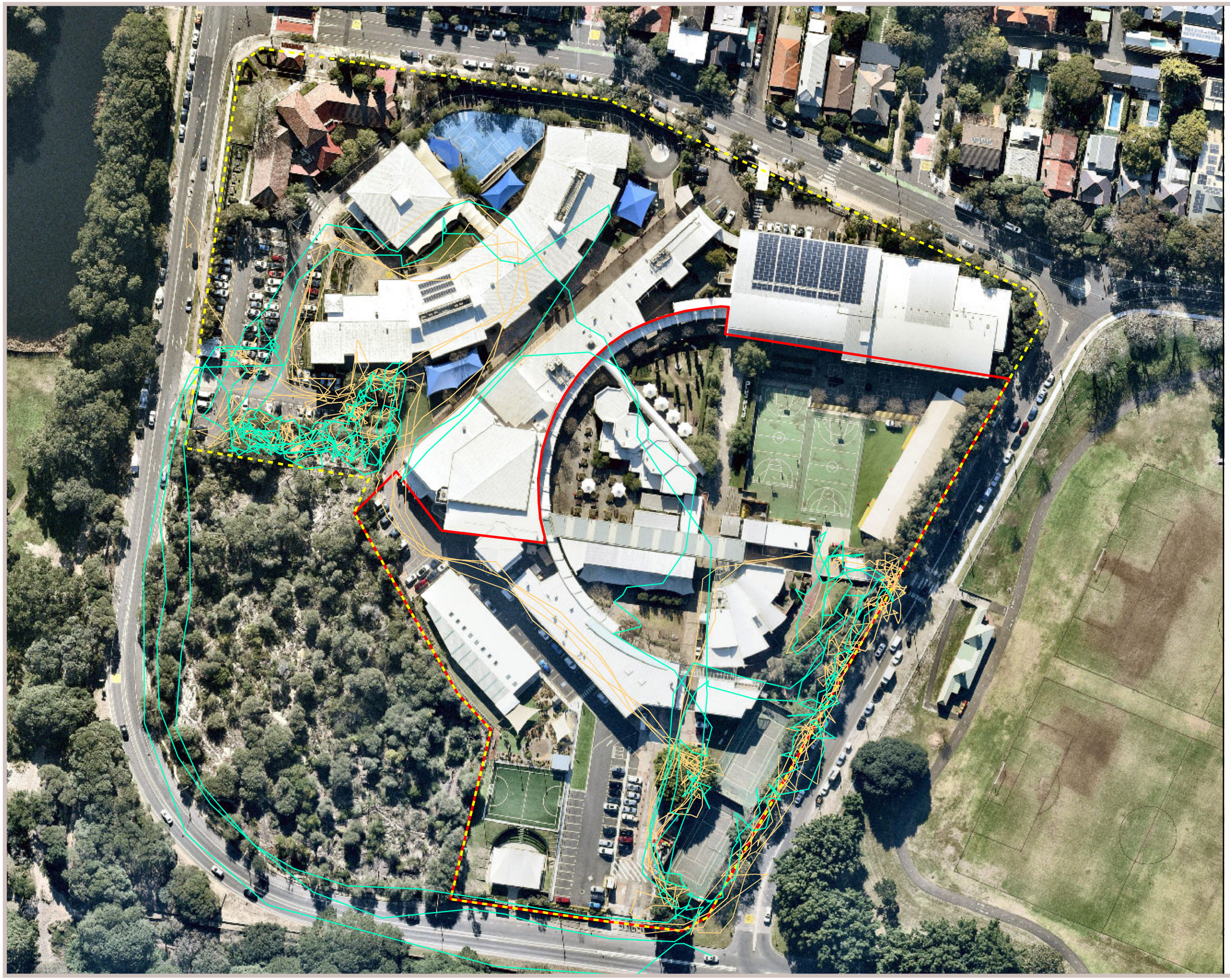


Figure 2. Maroubra Woodland Snail survey locations

Figure 3. Impacts to native vegetation and habitat