

10 May 2022

Our ref: 22SUT-1817

NSW National Parks and Wildlife Service
21 Cape Solander Dr,
Kurnell 2231

Attention: Phuong Le

Dear Phuong,

Kamay Botany Bay National Park Amphibian Test of Significance

Eco Logical Australia PTY LTD (ELA) was engaged by NSW National Parks and Wildlife Service (NPWS) to prepare a Test of Significance (ToS) to accompany the Kamay Master Plan Stage 1 Review of Environmental Factors (REF), which assesses proposed works within Kamay Botany Bay National Park (Figure 1). The ToS is required for ecological impacts associated under the proposed works and conducted in accordance with the *Environmental Planning and Assessment Act 1979* (EP&A Act). ToS for the *Litoria aurea* (Green and Golden Bell Frog – GGBF) and *Crinia tinnula* (Wallum Froglet) and its local occurrence are in Appendix A. Appendix B addresses the GGBF Assessment of Significance (AoS) required to meet the requirements of the Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act).

LITORIA AUREA (GREEN AND GOLDEN BELL FROG)

Listed as Endangered (BC Act) and Vulnerable (EPBC Act)

The GGBF is an endemic Australian tree frog that is a member of the family Hylidae. Broadly, the species has been previously recorded as far as Yuraygir National Park on the North Coast of NSW to around Lakes Entrance in south-eastern Victoria (DEWHA 2009). Breeding sites for the Green and Golden Bell Frog include a wide variety of natural waterbodies except fast flowing streams (DEWHA 2009). It has been found they tend to prefer to breed in waterbodies that are still, shallow, ephemeral, unshaded, with aquatic plants and free of the Plague Minnow (*Gambusia holbrooki*) and other predatory fish (DEWHA 2009). Breeding habitat also includes many human-created environments, including highly disturbed sites such as abandoned mines and quarries (DEWHA 2009) as well as artificial wetlands (DEWHA 2009). Non-breeding habitat for the GGBF appears to be within 50 m of waterbodies as the species is not found to disperse away from waterbodies into more terrestrial non-breeding habitats (100-300 m from the breeding site) such that is the case for other Australian frog species (Lemckert 2004). During the day they typically shelter in denser vegetation and often in emergent aquatic vegetation where they are known to bask in available sunlight.

The GGBF was not recorded during the surveys undertaken for this assessment. There are historical records of the species from Kamay Botany Bay National Park. It is assumed the GGBF could occupy any suitable habitat that occurs within its geographical range.

CRINIA TINNULA (WALLUM FROGLET)

Listed as *Vulnerable* (BC Act)

The Wallum Froglet occurs in lowland coastal areas of subtropical eastern Australia from Littabella National Park, south-east Queensland, south to Kurnell, and central New South Wales. The Wallum Froglet can be found in acidic wetlands (pH 4.3-5.2) within Melaleuca swamps, sedgeland, wet or dry heathland and wallum/woodland areas in the sandy coastal lowlands (<100m asl) (OEH 2017). They can also be found along drainage lines within other vegetation communities and disturbed areas, and occasionally in swamp sclerophyll forests, but only where the waters are acidic. The Wallum Froglet is a nocturnal, terrestrial and cryptic species. Males call from secluded positions at the water’s edge or from among sedge tussocks near the water level (OEH 2017). Calling typically follows rains heavy enough to fill the breeding site and the tadpoles are physiologically adapted to acidic waters.

In accordance with Section 7.3 of the BC Act, impacts to threatened species and threatened ecological communities are required to be assessed. As such, ELA undertook the required ToS (5-part test) for both species in accordance with the BC Act. An AoS for the GGBF was also completed in accordance with the EPBC Act.

METHODOLOGY

The study area boundary was provided by NPWS. The extent of works boundary (shown in Figure 2) was mapped by georeferencing designs within the masterplan document, and creating polygons as ESRI Shapefiles. This boundary was used for impact area calculations, and totals 6.67 ha.

ELA identified any hydrolines mapped within the study area (Figure 2), and focused the survey effort along these, keeping survey transect start points to less than 500 m apart. Visual spotlighting and call playback surveys were completed along the survey transects where edges of suitable breeding habitat were identified. Surveys sampled the available range of waterbodies within the study area including creek lines, sodden grassy areas, sedgeland and heathy melaleuca vegetation.

The surveys were undertaken over two weeks between 16 – 30 March 2022 by two ecologists (Table 1, Figure 2). Surveys started after sunset when it was deemed dark enough for frogs to become active and so more visible. Sites 1-5 were surveyed four times, site 6 was surveyed twice before it was deemed to not contain appropriate habitat for either the GGBF or the Wallum Froglet, no other threatened amphibian habitat were identified in the vicinity.

RESULTS

Table 1: Survey effort

| Date | Weather (BOM station 066037) | Team |
|------------|---|--|
| 16/03/2022 | Temperature: 25.6°C Rain total: 20.4mm Relative Humidity: 95% | Leura Kowald – Ecologist Alice Ridyard – Graduate Ecologist |
| 22/03/2022 | Temperature: 28.8°C | Leura Kowald – Ecologist |

| Date | Weather (BOM station 066037) | Team |
|------------|---|--|
| | Rain total: 0.8mm Relative Humidity: 73% | Aleksei Atkin – Senior Ecologist |
| 24/03/2022 | Temperature: 22.1°C Rain total: 1.4mm Relative Humidity: 93% | Leura Kowald – Ecologist Aleksei Atkin – Senior Ecologist |
| 30/03/2022 | Temperature: 22.6°C Rain total: 18.2mm Relative Humidity: 92% | Leura Kowald – Ecologist Michael Gregor - Ecologist |

Table 2: Summary of species identified during targeted survey

| Site | Scientific name | Common name |
|------|---|---|
| 1 | <i>Limnodynastes peronii</i> <i>Crinia signifera</i> <i>Litoria verreauxii</i> | Striped Marsh Frog Common Eastern Froglet Whistling Tree Frog |
| 2 | <i>Limnodynastes peronii</i> | Striped Marsh Frog |
| 3 | <i>Limnodynastes peronii</i> <i>Crinia signifera</i> | Striped Marsh Frog Common Eastern Froglet |
| 4 | <i>Limnodynastes peronii</i> <i>Crinia signifera</i> <i>Uperoleia laevigata</i> | Striped Marsh Frog Common Eastern Froglet Smooth Toadlet |
| 5 | <i>Limnodynastes peronii</i> <i>Crinia signifera</i> <i>Litoria verreauxii</i> | Striped Marsh Frog Common Eastern Froglet Whistling Tree Frog |
| 6 | N/A | N/A |

MITIGATION MEASURES

ELA considers that with appropriate implementation of mitigation measures the impacts to potential GGBF population will be minimised and mitigated. These include:

- access,
- protection and demolition plans,
- the Technical Specification,
- the Setout plans
- additional details defining the demolition and construction methodology.

Water retention tanks in the form of rainwater tanks are to be added to catch initial rainfall from the proposed new Information Centre roof and allow the water to be redirected down the creek line over a longer time than currently is the case in order to reduce the impact of higher water volumes from the

increased roof catchment. During works in and along creek lines, soil compaction would be avoided by use of small (<3 tonne) earthmoving equipment. Repairs and upgrades to existing concrete pathways will have minimal impacts. Repairs to the sea wall will stabilise damage from past storm events and be designed to reduce erosion. Revegetation of sections of lawn to increase the area of native vegetation and fauna habitat forms part of the proposal. Additionally, pipes within which creeks currently flow will be removed in sections, further increasing potential habitat for the GGBF within the site.

ELA recommends the following controls to minimise potential impact to the GGBF and Wallum Froglet:

- Erosion and sediment control, water quality management.
- Identifying measures to protect areas of significant habitat value from construction activities and vehicle access.
- Protection of vegetation outside the immediate works area.
- Pollution control and protection.
- Zero waste policy and safe disposal of all wastes off site.
- Containment and management of spills (oil, fuel, or other products).
- Methods of contamination and removing spilt material from any vehicles including fuels and oils.
- Wash down procedures against introduction of chytrid, phytophthora and weed species to/from site in accordance with Saving Our Species Hygiene Protocols (DPIE 2020).
- Site environmental control on vehicle and materials storage.

CONCLUSION

The ToS has concluded that the impacts on GGBF and the Wallum Froglet listed under the BC Act will not be significant and no Species Impact Statement or further Biodiversity Assessment is required (Appendix A). The AoS has concluded that the impacts on GGFB listed under the EPBC Act will not be significant, and the work will not be a controlled action and therefore no Commonwealth referral is required (Appendix B).

If you have any questions regarding these assessments, please do not hesitate to contact me at Aleksei.Atkin@ecoaus.com.au.

Regards,



Aleksei Atkin
Senior Ecologist

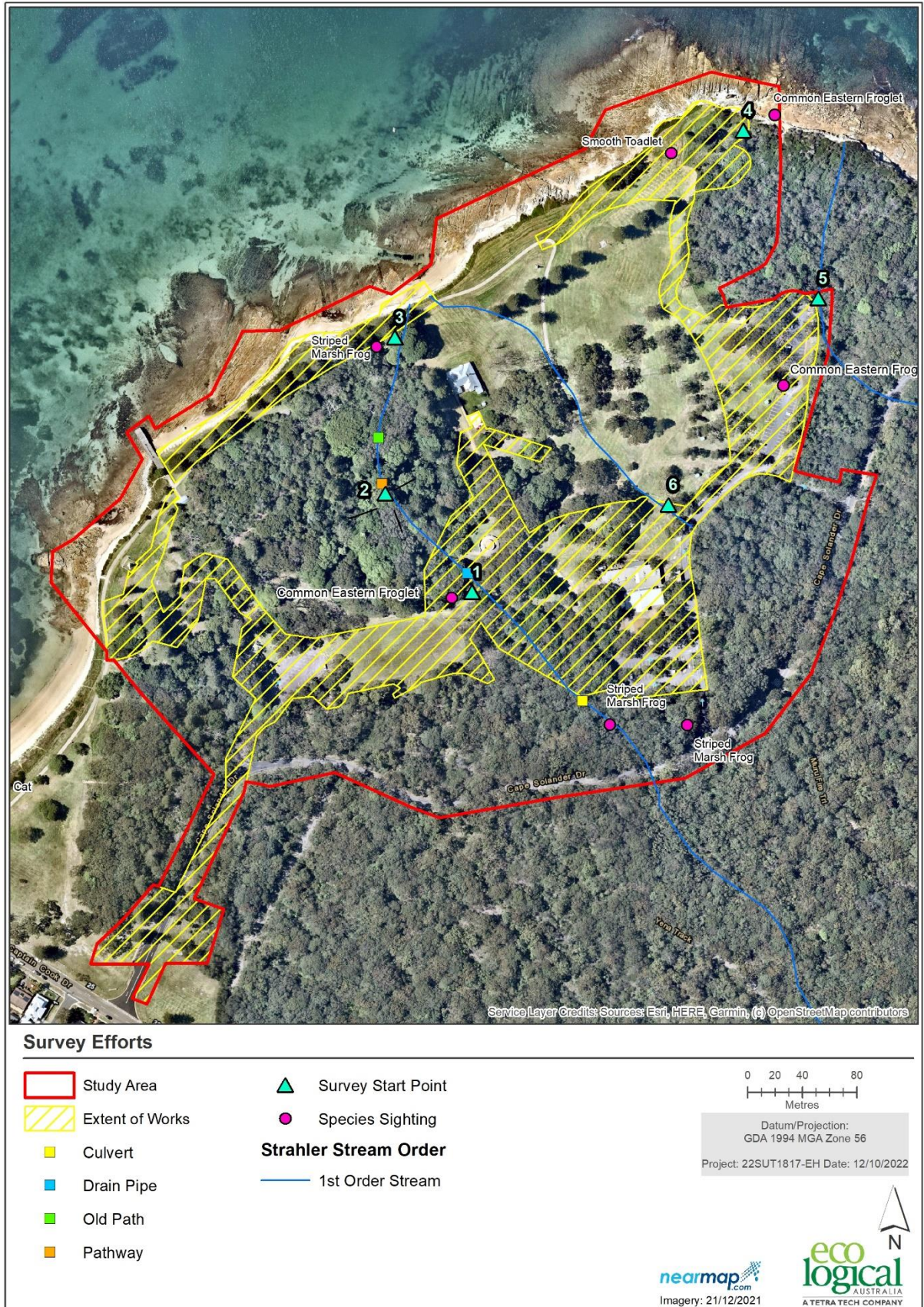


Figure 2: Survey effort



Figure 3: *Crinia signifera* (Common Eastern Froglet) next to a bottle cap



Figure 4: *Limnodynastes peronii* (Striped Marsh Frog) in leaf litter



Figure 5: Creek line between site 2 and 3



Figure 6: Culvert in figure 2

REFERENCES:

Commonwealth of Australia (2013). *Matters of National Environmental Significance -Significant Impact Guidelines*.

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Darcovich, K. and O'Meara, J. (2008). *An Olympic legacy: Green and golden bell frog conservation at Sydney Olympic Park 1993-2006*. Australian Zoologist 34: 236-248.

DEWHA (2009). *Significant impact guidelines for the vulnerable green and golden bell frog (Litoria aurea)*. Department of the Environment Water Heritage and the Arts. Barton, ACT.

DoE (2014). *Approved Conservation Advice for Litoria aurea (green and golden bell frog)*. <http://www.environment.gov.au/biodiversity/threatened/species/pubs/1870-conservation-advice.pdf>

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Lemckert, F. (2004). *Variations in anuran movements and habitat use: implications for conservation*. Applied Herpetology 1: 165-181.

National Parks and Wildlife Services (NPWS) (2002). *Environmental Impact Assessment Guidelines: Green and Golden Bell Frog Litoria aurea* (Lesson, 1829), NPWS, Sydney.

OEH (2018). *Threatened Species Test of Significance Guidelines*. Sydney ISBN 978 1 76039 957 3.

Office of Environment and Heritage (OEH) (2017). *Green and Golden Bell Frog – profile*. NSW Office of Environment and Heritage, DPE, Sydney.

Office of Environment and Heritage (OEH) (2017). *Wallum Froglet – profile*. NSW Office of Environment and Heritage, DPE, Sydney.

Appendix A Test of Significance (BC Act)

The 'Test of Significance' (ToS) or 5-part test is applied to species, populations and ecological communities listed on Schedules 1 and 2 of the BC Act and Schedules 4, 4A and 5 of the *Fisheries Management Act* (FM Act). The assessment sets out 5 factors, which when considered, allow proponents to undertake a qualitative analysis of the likely impacts of an action and to determine whether a significant impact is likely. All factors must be considered, and an overall conclusion made based on all factors in combination.

LITORIA AUREA (GREEN AND GOLDEN BELL FROG)

Endangered under the BC Act

| BC Act | Question | Response |
|--------------|---|---|
| 7.3.1 a) | In the case of a threatened species: whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction | Green and Golden Bell Frogs have been historically recorded within Kamay Botany Bay National Park. Applying a cautionary principal and assuming anywhere within the GGBF range they could occur it is assumed there could be a population of GGBF within the study area. Targeted survey for the GGBF consistent with the NSW Survey Guide for Threatened Frogs were undertaken between 16- 30 March 2022. GGBF were not detected during the survey period. |
| 7.3.1 b) i | In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or | Not applicable. GGBF is an endangered species. |
| 7.3.1 b) ii | In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction. | Not applicable. GGBF is an endangered species. |
| 7.3.1 c) i | In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity | The proposed works will directly impact on potential GGBF habitat. The proposed works cover an area totalling 6.67 ha. The proposed works will not result in the substantial modification of the composition of the GGBF potential habitat. |
| 7.3.1 c) ii | In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity | The area of disturbance is located around the current Kurnell information centre. Post construction, further isolation or fragmentation is not expected. |
| 7.3.1 c) iii | In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality. | The proposed activity will require a works area of 6.67 ha. As such, there will be no significant reduction of structure of species complexity will occur. |

| BC Act | Question | Response |
|-------------------|--|--|
| 7.3.1 d) | Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly). | The proposed activity would not affect any declared areas of outstanding biodiversity value. |
| 7.3.1 e) | Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process. | <p>Key Threatening Processes (KTP) relevant to this proposal with respect to GGBF include:</p> <ul style="list-style-type: none"> Invasion of chytrid. <p>The proposal will not increase KTP operating on GGBF. Construction techniques should adopt pathogen management techniques and specific amphibian hygiene protocols. Any weed invasion should be controlled by NPWS.</p> |
| Conclusion | Is there likely to be a significant impact? | No. |

The proposed activity will require a works area of 6.67 ha of potential GGBF habitat. In conclusion, it is unlikely to constitute a significant impact given:

- The proposed works are unlikely to result in fragmentation or isolation of fauna habitat beyond that already occurring, and the water bodies available for breeding will remain connected and untouched.
- Revegetation of sections of lawn to increase the area of native vegetation and fauna habitat forms part of the proposal. Additionally, pipes within which creeks currently flow will be removed in sections, further increasing potential habitat for the GGBF within the site.

Consequently, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not recommended for the proposal with respect to GGBF endangered species listed under the BC Act.

CRINIA TINNULA (WALLUM FROGLET)

Vulnerable under the BC Act

| BC Act | Question | Response |
|--------------|---|--|
| 7.3.1 a) | In the case of a threatened species: whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction | The Wallum Froglet have been recorded within Kamay Botany Bay National Park. Targeted survey for the Wallum Froglet consistent with the NSW Survey Guide for Threatened Frogs were undertaken between 16- 30 March 2022. The Wallum Froglet was not detected during the survey period. |
| 7.3.1 b) i | In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or | Not applicable. The Wallum Froglet is a vulnerable species. |
| 7.3.1 b) ii | In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction. | Not applicable. The Wallum Froglet is a vulnerable species. |
| 7.3.1 c) i | In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity | The proposed works will directly impact on potential Wallum Froglet habitat. The proposed works will result in an area totalling 6.67 ha being disturbed. The proposed works will not result in the substantial modification of the composition of the Wallum Froglet habitat. |
| 7.3.1 c) ii | In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity | The area of disturbance is located around the current Kurnell information centre. Further isolation or fragmentation is not expected post construction. |
| 7.3.1 c) iii | In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality. | The proposed activity will require a works area of 6.67 ha. This is a relatively small area of more widespread habitat. As such, there will be no reduction of structure of species complexity will occur. |
| 7.3.1 d) | Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly). | The proposed activity would not affect any declared areas of outstanding biodiversity value. |

| BC Act | Question | Response |
|-------------------|---|--|
| 7.3.1 e) | Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process. | Key Threatening Process (KTP) relevant to this proposal with respect to the Wallum Froglet includes: <ul style="list-style-type: none"> Invasion of chytrid. The proposal will not increase KTP operating on the Wallum Froglet. Construction techniques should adopt pathogen management techniques. Any weed invasion should be controlled by NPWS. |
| Conclusion | Is there likely to be a significant impact? | No. |

The proposed activity will require a works area of 6.67 ha of potential Wallum Froglet habitat. In conclusion, it is unlikely to constitute a significant impact given:

- The proposed works are unlikely to result in fragmentation or isolation of fauna habitat beyond that already occurring, and the water bodies available for breeding will remain connected and untouched.
- Revegetation of sections of lawn to increase the area of native vegetation and fauna habitat forms part of the proposal. Additionally, pipes within which creeks currently flow will be removed in sections, further increasing potential habitat for the Wallum Froglet within the site.

Consequently, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not recommended for the proposal with respect to the Wallum Froglet vulnerable species listed under the BC Act.

Appendix B Assessment of Significance (EPBC Act)

LITORIA AUREA (GREEN AND GOLDEN BELL FROG)

Vulnerable under the EPBC Act

| Criterion | Question | Response |
|---|---|---|
| An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will: | | |
| 1) | lead to a long-term decrease in the size of an important population of a species | Green and Golden Bell Frogs have been historically recorded within Kamay Botany Bay National Park. Applying a cautionary principal and assuming anywhere within the GGBF range they could occur it is assumed there could be a population of GGBF within the study area. Targeted survey for the GGBF consistent with the NSW Survey Guide for Threatened Frogs were undertaken between 16- 30 March 2022. GGBF were not detected during the survey period. It is unlikely the proposed works would result in a further decrease in GGBF population. |
| 2) | reduce the area of occupancy of an important population | The proposed works area is unlikely to have long term impact on the potential population due to it being an upgrade to existing infrastructure and also formalises informal pathways and reduce trampling. |
| 3) | fragment an existing important population into two or more populations | Fragmentation is unlikely as there is no further impact to the study area due to the works being an upgrade of existing infrastructure around the information centre and formalising existing informal carparks. |
| 4) | adversely affect habitat critical to the survival of a species | Limited clearing of vegetation or creek lines is anticipated in association with the proposed works. The replacement of one creek line and removal of a pipe will reinstate more creek line and improve habitat quality. Habitat critical to the survival of GGBF is unlikely to be adversely impacted. |
| 5) | disrupt the breeding cycle of an important population | The proposed works are unlikely to disrupt the breeding cycle of GGBF due to the works upgrading existing infrastructure and reinstating one section of creek line. This will not impact on the potential GGBF population as breeding habitat will not be reduced or modified. |
| 6) | modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | The quality of habitat long term will not be destroyed, removed or isolated. The habitat will be modified and aimed to be improved. |
| 7) | result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat | Mitigation measures are recommended and if followed a low likelihood of invasive species causing decline of a potential population or its habitat. |
| 8) | introduce disease that may cause the species to decline, or | Potential for Chytrid to be introduced during the construction process. Mitigation measures are recommended and, if followed, a low likelihood of a disease-causing decline of a potential population. |

| Criterion | Question | Response |
|-------------------|---|---|
| 9) | interfere substantially with the recovery of the species. | The proposed works align with the Saving our Species recovery plan and will not interfere with the recovery of the species but improve the habitat should a GGBF population be present in the study area. |
| Conclusion | Is there likely to be a significant impact? | No |

In conclusion, the impacts on potential GGBF population listed under the EPBC Act will not be significant, and the work will not be a controlled action and therefore no Commonwealth referral is required under the EPBC Act.

DISCLAIMER

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