ECOLOGY, BIODIVERSITY AND HERITAGE
Specific Comments
PLR2 - 2 December 2022

Background:

Sydney Olympic Park Authority (SOPA) is the NSW State Government agency charged with the operation and management of Sydney Olympic Park, with statutory responsibilities including:

- to promote, co-ordinate and manage the orderly and economic development and use of Sydney Olympic Park,
- to promote, co-ordinate, organise, manage, undertake, secure, provide and conduct cultural, sporting, educational, commercial, residential, tourist, recreational, entertainment and transport activities and facilities
- to protect and enhance the natural and cultural heritage of Sydney Olympic Park, particularly the Millennium Parklands

SOPA supports development of the Parramatta Light Rail Stage 2, and is collaborating with Transport NSW to assist delivery of this project in a manner that is consistent with the 2050 Vision for Sydney Olympic Park and addresses relevant legislative provisions of the *Sydney Olympic Park Authority Act*, particularly obligations for protecting and enhancing the natural heritage of the Millennium Parklands.

Ecological context:

Sydney Olympic Park is an urban biodiversity hotspot, supporting 3 endangered ecological communities, over 250 species of native wildlife (including threatened and migratory species) and over 400 species of native plants.

Sydney Olympic Park is classified as a 'key management site' for the Green and Golden Bell Frog under the NSW Government's Saving Our Species program. This program aims to increase the number of threatened species that are secure in the wild in New South Wales for 100 years and control the key threats facing threatened plants and animals. The Sydney Olympic Park population is considered to be part of the 'Parramatta population' which includes Camelia and Merrylands populations.

The habitat of the Green and Golden Bell Frog (GGBF) of Sydney Olympic Park span some 120 hectares and are largely a designed system of aquatic and terrestrial habitats built as offsets and compensatory habitats during redevelopment of Sydney Olympic Park in the 1990s as a legacy of the 'Green Games'. Development consent to construct Narawang Wetland was based on the findings of a Species Impact Statement prepared for the GGBF, and specific development consent conditions apply to the ongoing management of the wetland to promote the viability of the GGBF population within it.

Expert herpetologists were and continue to be closely involved in the design and management of all the frog habitats at Sydney Olympic Park to promote the viability of the various frog sub-populations and the population as a whole, and there has been ongoing extensive research into conservation management of the species at the Park.

Detailed comments

1. SOPA Act provisions for the parklands

The EIS discussion of statutory context (chapter 4) and land acquisition (Chapter 13) does not consider the provisions of the SOPA Act with respect to the parklands of Sydney Olympic Park. Section 31 of the SOPA Act prohibits the compulsory acquisition of the parklands except by Act of Parliament:

Prohibition against disposal or compulsory acquisition

(1) The Authority must not sell, mortgage or otherwise dispose of the Millennium Parklands, or any part of the Millennium Parklands.

(2) Despite any other Act, the Millennium Parklands, or any part of the Millennium Parklands, cannot be compulsorily acquired except by an Act of Parliament.

The SOPA Act does provide for entering into leases, licences and easements for land within the parklands in accordance with s32 of the SOPA Act and the Parklands Plan of Management. Construction of the PLR within the parklands may be considered under these provisions; factors for consideration in granting approval are set out in Appendix 4.2 of the Parklands Plan of Management 2010 and are not assessed in the EIS. The proposal will need to be assessed against these factors prior to entering into any agreement for use of land within the parklands.

Impacted land within the parklands

The EIS identifies the following land acquisition is required within the parklands of Sydney Olympic Park: (chapter 13; Table 13.4).

	RE1 Public Recreation[2]	1.4	Millennium Parklands (The Brick Pit), Australia Avenue (Sydney Olympic Park)
Environmental	C2 Environmental Conservation[2]	1.2	Millennium Parklands, including Nuwi Wetland, Narawang Wetland, Haslams reach, Kronos Hill and The Brick Pit precincts (Sydney Olympic Park)
	C3 Environmental Management[2]	1.8	Millennium Parklands, including Woo-la-ra precinct (Sydney Olympic Park)

This totals a permanent loss of 3 hectares of conservation-zones lands and 1.4 hectares of recreation-zoned lands from the parklands of Sydney Olympic Park, as well as temporary acquisitions during the construction period. The EIS dismisses this loss of public open space and conservation lands in terms of percentage loss, rather than considering the role the affected lands play in wider parklands values and functioning for wildlife and visitors and the provisions of the Parklands Plan of Management. The legislated obligations of the parklands under the *Sydney Olympic Park Authority Act 2001* or provisions of the Parklands plan of Management are not addressed in the EIS. No on-site offsets, compensatory habitats or compensatory recreational facilities are currently proposed.

Requirement for local offsetting

The objects of the *SOPA Act 2001* relevant to the parklands include:

- *ensure the protection and enhancement of the natural heritage of the Millennium Parklands.*
- to *maintain and improve the Millennium Parklands,*
- *to encourage the use and enjoyment of the Millennium Parklands by the public by promoting and increasing the recreational, historical, scientific, educational and cultural value of the Millennium Parklands,*
- *to ensure the protection of the environment within the Millennium Parklands*

The PLR proposal includes loss of and impacts to environmental conservation lands and recreational lands within the parklands, which is inconsistent with these legislated objectives. Local offsetting for loss and impacts to these lands is required to maintain consistency with the objectives of the SOPA Act – see recommended consent condition.

Recommended consent conditions

Land Acquisition

Land acquisition of lands within Sydney Olympic Park must comply with the Sydney Olympic Park Authority Act 2001 (s31,32)

Parklands Approval Permit

Prior to the issue of a Construction Certificate, a Parklands Approval Permit must be obtained from SOPA in accordance with requirements of the Plan of Management for the Parklands at Sydney Olympic Park 2010 and the *Sydney Olympic Park Authority Act 2001*. An application for a Parklands Permit must address the matters listed at Appendix 4.2 - Parkland Uses Compliance Test of the Parklands Plan of Management 2010.

Offsetting of impacts to the parklands

A Compensation Plan for parklands conservation and recreation lands affected by the development must be endorsed by SOPA prior to commencement of construction works within Sydney Olympic Park. This plan is to include:

a) Sydney Turpentine Ironbark Forest to be destroyed by the proposal (1.05ha at the Footbridge Boulevard stop and associated alignment) is replaced on a 2 for 1 basis within the parklands, with establishment maintenance undertaken for a minimum 12 month period.
b) Offset credits calculated under the Biodiversity Assessment Method for biodiversity loss at Sydney Olympic Park are to be expended at Sydney Olympic Park by way of an approved Biodiversity Action that will benefit the affected species and ecosystems of Sydney Olympic Park
c) Replacement screening is installed at Hill Road alongside Green and Golden Bell Frog habitat in Narawang Wetland
d) The Footbridge Boulevard stop area to the north of Silverwater Marker is rehabilitated and developed as parklands recreational space, with design of this area to be approved by SOPA.

e) Local offsetting of street trees within Sydney Olympic Park lost due to the development, with replacement plantings to be installed in agreed locations across Sydney Olympic Park
f) Consideration of compensatory payment for mangrove and saltmarsh loss (as determined under the *Fisheries Management Act 1994*) for the entire project footprint to be allocated to improving and future-proofing the estuarine ecosystems of Newington Nature Reserve
g) Timeframes for implementation of the compensatory measures

2. Parklands visitor impacts

The PLR track and associated infrastructure will introduce new patterns of and opportunities for public use to affected part of the parklands and necessitate adjustments to existing parklands pathways, service roads, infrastructure and services. The EIS includes concept designs for affected parklands on the northern side of the Parramatta River that show how the PLR alignment will be integrated with affected parklands and how parklands will function as recreational spaces post-construction; no such concept plans are included for the parklands of Sydney Olympic Park, and there has been little detailed discussion of this with SOPA to date.

Affected areas of the parklands include:

- The Footbridge Boulevard stop and associated track corridor (north of Silverwater Marker, adjacent to Wentworth Point). Works will significantly transform this area from dense bushland wildlife habitat into open space suited to various public uses.
- The Hill Street and Holker Street stops, where visitor connectivity with adjacent parklands areas needs to be addressed
- Traction power station area adjacent to P5 carpark Pod C – this locality is slated to undergo considerable transformation in future development of the parklands; detailed placement and design of the power station needs to be closely integrated with SOPA masterplanning for this site
- Multiple existing connections to parklands entry points, shared walking/cycling paths, and parklands service roads that will be removed or temporarily or permanently blocked by trackworks.

These areas need to be addressed in concept plans and rehabilitation works.

Recommended consent condition

Concept designs for the following parts of the parklands of Sydney Olympic Park that integrate the PLR with the parklands and are consistent with the Vision, Masterplan and Parklands Plan of Management are to be approved by SOPA prior to commencement of construction at each location:

- Footbridge Boulevard stop and associated track corridor
- Hill street and Holker Busway stops
- Traction power station (P5 carpark)
- Parklands entry points, service roads and shared walking/cycling tracks

The sites are to be rehabilitated in accordance with the concept plans at completion of works.

3. Expert herpetologist advice

The EPBC assessment of significance for the GGBF has concluded that the project will cause a significant impact to the GGBF (Technical Paper 9 - BDAR Appendix G). SOPA has obtained independent expert herpetologist advice on this assessment and the proposed mitigative measures, noting that this expertise was missing from the EIS assessment (Attachment 1). The advice concluded that:

'The impacts identified in the EIS and associated technical papers are understated in some cases, not considered in others, and mitigation measures generalised to qualifying statements that show no firm intent to minimise impact to the viability of the species. Of the greatest concern are the clear inconsistencies in the project footprint between the EIS and Tech Paper 9 Biodiversity Development Assessment. We believe these inconsistencies require an update of the assessment of significance associated with the EPBC Act referral in relation to Matters of National Environmental Significance as they relate to biodiversity at Sydney Olympic Park.'

They further recommend:

'The proponent should therefore update the BDAR to:

a) *confirm the correct physical footprint in relation to green and golden bell frog habitat at Sydney Olympic Park, and*
b) *include the data that characterises the nature and extent of noise, vibration and lighting impacts to affected green and golden bell frog habitats during construction and operation, and*
c) *have the data reviewed by an experienced specialist in the ecology of pond-breeding amphibians to assess impacts with particular consideration of frog ecology and population dynamics, and propose appropriate mitigative measures'*

Recommendation:

That the response to submissions comprehensively addresses the points above and consults further with SOPA on these issues.

4. Contradictory information about project physical footprint within C2 conservation areas; qualifications attached to proposed mitigative measures provides no certainty that any mitigation will occur

The EIS does not definitively identify the physical construction footprint or finished works footprint within C2-zoned Green and Golden Bell Frog habitat or estuarine habitat at Sydney Olympic Park, and contains contradictions of the areas affected. SOPA understands that the design is continuing to evolve and that options that avoid or minimise intrusion to frog habitats are being actively pursued, however the EIS does not commit to these options, instead containing generalised mitigative approaches that are highly qualified, and that to a large extent will not be determined until after a construction contractor is appointed. Ecological impacts cannot be properly assessed and mitigated in accordance with legislative requirements if the footprint within ecological areas is not clearly defined.

Particular concerns are:

a) biodiversity mitigative measures (Chapter 16) contain extensive qualifiers such as 'the minimum necessary', 'as far as practicable', 'where reasonable and feasible', 'where appropriate', 'where feasible and reasonable', and 'where practicable', providing no certainty that stated mitigation measures will be applied or that impacts will be avoided. Thus the extent of impact cannot be assessed.

b) the project footprint shown in mapping throughout the EIS still includes Narawang Wetland Ponds N17 and N22. Duplication of the Hill Road bridge (which involves removal of Narawang Wetland Ponds N22 and N17 with flow-on impacts to associated ponds) is still included in the description of works (eg chapter 6, s6.5.4). The BDAR and EPBC Assessment of Significance clearly state that no GGBF breeding ponds will be removed. The physical footprint of the project with respect to frog habitat and particularly frog breeding ponds must be confirmed to provide for accurate ecological impact assessment.

c) SOPA notes that project design is continuing to evolve, and that new designs are reducing some ecological impacts while increasing others – eg the alternate Hill Road bridge design would avoid the majority of footprint within Narawang Wetland, but would cause impacts to Nuwi Wetland including removal of mangroves and additional street trees. SOPA supports this new design in principle, but notes that the EIS does not address impacts to Nuwi Wetland resulting from this new design, including additional offsetting requirements for mangroves and street trees.

d) The EIS states that works to strengthen the Holker Busway bridge will be undertaken via scaffolding attached to the bridge '*where practicable'* (Chapter 16, Table 16.13); elsewhere the EIS states that there will be addition of '*external structural elements'* (chapter 6, s6.5.4). The bridge landing point is located within Green and Golden Bell Frog habitat, with multiple frog ponds in the immediate vicinity. Should it not '*be practicable*' to conduct these works from scaffolding, or the footprint required to install the '*external structural elements'* requires works within estuarine or frog habitats, the impact to mangroves and to Green and Golden Bell Frogs could be significant – yet the EIS does not identify or assess the footprint of the works, potential ecological impacts, or the criteria to be applied in determining 'practicality'.

e) The EIS provides for temporary removal and replacement of frog underpasses, simply stating that any such underpasses will be replaced with a similar structure (Chapter 16, table 16.13), and failing to consider that the construction footprint would directly affect the frog breeding ponds on either side of the underpass that form part of the underpass element as a whole. Such works have been flagged at Underpass U1 at Holker Busway; frog breeding ponds GC7 and GE9 located at the underpass openings on either side of Holker Street are likely to also be within the works footprint and directly affected, and additional adjacent breeding ponds and terrestrial habitats would be indirectly affected. This impact has not been considered in the BDAR, which states that no frog breeding ponds would be directly affected. Evaluation of potential direct and indirect impacts to frog movement and frog habitats requires further information regarding the scale and nature of works at Holker Street, how the underpass and associated ponds and their pond clusters will be impacted (including any direct impacts to breeding ponds), the period where the underpass and ponds will be unavailable for fauna use, and whether scheduling of works can be managed to avoid the frog breeding and activity season

Recommendation

- The Response to Submissions confirms the exact physical footprint of the works within ecological areas
- The ecological impact assessment including Commonwealth Assessment of Significance, is updated where necessary to reflect this footprint by a suitably qualified ecologist who demonstrates extensive experience and success with landscape protection of green and golden bell frog populations.
- Note that any subsequent proposal to extend the physical footprint to meet construction needs may require a new ecological assessment (and potentially new

EPBC Referral and BDAR assessment). In particular note that any additional physical footprint that impacts GGBF ponds will require a new EPBC Referral and BDAR assessment, as the BDAR in the EIS is based on the premise that no ponds will be impacted.

5. Assessment of noise, light, vibration and disturbance impacts to fauna including GGBF, Latham's Snipe and Southern Myotis within Narawang Wetland and Kronos Hill parklands precincts

The proposal will create new and exacerbated noise, light, vibration and disturbance impacts to Narawang Wetland and Kronos Hill habitats (adjacent to the Holker Busway) through removal of existing roadside screening trees at Narawang Wetland, construction noise over an extended period (including provision for night works), and operational impacts of the light rail (hours of operation 5am-1am).

These impacts are dismissed in the EIS solely because the habitats are currently subject to a level of disturbance from traffic on Hill Road and Holker busway; new and different impacts attributable to the PLR are not quantified, assessed or considered in offset calculations. The proposed mitigative measures for noise and vibration (Chapter 10, Table 10.13) are silent on managing impacts to ecological receivers.

- There is particular potential for construction impacts of vibration to affect frog breeding ponds situated close to the construction site at Narawang Wetland and Holker Busway, and to frog underpass U1 at the Holker Busway. There is also potential for operational vibration impacts to U1 at Holker Busway.
- Noise is likely to affect adjacent habitats and needs to be managed for all wildlife receptors, not just breeding threatened fauna.

Recommendation:

The Response to Submissions provides:

- a detailed quantitative assessment of likely noise, vibration and light impacts during construction and operation in C2 and C3-zoned habitats along the alignment, and comparison against current levels. The assessment must account for removal of existing screening trees along Hill Road.
- Mitigative measures during both construction and operations that reflect the data provided and that are endorsed by a suitably qualified ecologist who demonstrates extensive experience and success with landscape protection of green and golden bell frog populations.

6. Lighting

New lighting is to be installed along the PLR alignment and at 'stops' and traction power stations. The EIS states that '*Fauna in the vicinity of the project site is considered to be habituated to lighting, given the existing urban setting*.' (Chapter 16; 16.4.3). This may be true for some parts of the alignment, however is not true for many of the habitats of Sydney Olympic Park which adjoin the alignment, where there is currently no lighting in a deliberate decision to protect dark habitats, or where vegetative screens currently shield habitats from lightspill impacts. The project will remove some of these vegetative screens, thereby exposing habitats to new light impacts originating from both new PLR lighting and existing street and building lights, and introduce a band of new lighting bisecting the Parramatta River waterway at the Wentworth Point bridge.

The EIS proposes the following mitigative measure (Chapter 16; Table 16.13, BD7): *Opportunities to minimise light pollution to ecologically sensitive areas, particularly the Parramatta River, Newington Nature Reserve and the Millennium Parklands, will be investigated and implemented where reasonable and feasible, with regard to the National Light Pollution Guidelines for Wildlife (Department of the Environment and Energy, 2020).* SOPA supports minimisation of light pollution in accordance with the National Light Pollution Guidelines but notes that the qualification of '*implemented where reasonable and feasible'* provides no certainty that lighting will be effectively managed in any of these areas, and recommends this measure is strengthened by including additional clauses in the consent conditions.

Recommended consent conditions

Prior to the issue of a Construction Certificate, the Applicant must prepare a detailed **Lighting Plan** which includes details of luminaire design, post height, placement and operation, and compliance with relevant standards. The Plan must be endorsed by a suitably qualified ecologist and submitted to the consent authority for approval. Sections of this plan relating to Sydney Olympic Park must be prepared in consultation with, and approved by, SOPA prior to submission to the consent authority.

Lighting of ecologically-sensitive areas including the Parramatta River, Newington Nature Reserve and the Millennium Parklands (Woo-la-ra, Narawang Wetland, Nuwi Wetland, Kronos Hill and Brickpit precincts) shall be designed and operated with regard to the National Light Pollution Guidelines for Wildlife (Department of the Environment and Energy, 2020). This includes the following best practice lighting principles:

- Avoidance of lightspill to ecologically-sensitive areas to the extent practicable
- No upward shining light or spill outside of the target area – all luminaires to be fully shielded and as close to the ground as possible.
- Use between 2000-3000K colour correlated temperature to reduce blue and ultraviolet light (400 – 500 nm) content
- Use the appropriate light intensity for the site - for example in sensitive natural environments use ≤5000 delivered lumens (or ~1.77 lux over a spherical area with a radius of 15m);
- In-built control to allow dimming and turning off when not in use

The Lighting Plan is to describe how these principles have been applied to lighting design of the various sections of the alignment.

7. Wentworth Point bridge design

The design of the Wentworth Point Bridge is yet to be determined, so impacts to fauna using the Parramatta River corridor cannot be fully assessed. Risk factors include collision, entanglement, lightspill, noise, reflectivity, and electrocution in quaternary wires.

- Threatened and migratory species common in the area and potentially affected by the bridge include Bar-tailed Godwit, Sharp-tailed Sandpiper, Powerful Owl, Fishing Bats, Large Bent-wing Bat, and the White-bellied Sea-Eagle. Other waterbird, shorebird, raptor and microbat species will also potentially be affected.

- The Parramatta River estuary supports a network of migratory shorebird habitats which include Newington Nature Reserve Wetland (immediately to the west of the bridge alignment) and the Waterbird Refuge, Hen and Chicken Bay and Homebush Bay (to the east of the bridge alignment). The most abundant species are the Bar-tailed Godwit and

the Sharp-tailed Sandpiper. These birds move between roosting and feeding habitats within this network, using different wetlands on either side of the bridge alignment at different times, depending on food resources, tides, time of day and localised disturbance. Movement within this network of shorebird habitats is not addressed in the EIS.

- Mitigation measure BD8 (Chapter 16, Table 16.13) states that: *The design of the proposed bridges over the Parramatta River, and works to bridges in Sydney Olympic Park, will include provision for bat-friendly roost features.* Inclusion of such features is supported, however deliberately attracting fauna to the bridge increases the importance of risk mitigation in bridge design

Risks posed to fauna using the Parramatta River corridor for movement or habitat can be avoided and/or minimised to some extent through ecologically-sensitive bridge design, and consent conditions should require this to be demonstrated.

Recommended consent condition

A report detailing how ecological risks to migratory shorebirds, raptors, bats and waterbirds have been avoided and minimised in bridge design is submitted to the satisfaction of the Consent Authority for approval prior to commencement of construction. The report shall be prepared by a suitably qualified ecologist experienced in bird and bat ecology, and consider risks including but not limited to: entanglement, collision, lightspill, reflectivity and electrocution.

8. Works affecting Nuwi Wetland

A proposal to reduce ecological impacts to Narrawang Wetland by relocating part of the project footprint to Nuwi Wetland has been discussed with SOPA. SOPA supports this proposal in principle, but notes that the EIS does not address impacts to Nuwi Wetland resulting from this new design, including additional offsetting requirements for mangroves and street trees.

Recommendation

The response to submissions identifies any physical footprint proposed within Nuwi Wetland, includes an updated biodiversity assessment, and identifies any additional offsetting requirements and mitigative measures.

9. Timing of works

Consent conditions should address scheduling of works within or affecting wildlife habitats to avoid and minimise peak impacts. Peak impacts include vegetation clearance, night works, and noisy works that may disturb breeding populations and migratory shorebirds.

The EIS contains a mitigative measure that addresses impacts to breeding threatened fauna (Chapter 16, Table 16.13, BD10), however this needs augmenting to address additional species of threatened and non-threatened breeding fauna (GGBF, woodland birds), migratory shorebirds (nationally-significant population of Latham's Snipe), and additional known or future threatened fauna breeding sites (noting that construction of the project may not commence for some years and fauna may choose additional breeding sites in the interim). Additionally, the qualification of 'where feasible and reasonable' in the proposed mitigative measure provides no certainty that any mitigative measures will actually be applied.

The EIS identifies that White-bellied Sea Eagles breed in Newington Nature Reserve close to the project site and includes various mitigative and monitoring measures to avoid disturbance of the nest site. It must be noted that nesting of the White-bellied Sea-Eagle is not limited to this location – the species has previously nested in a mangrove tree on the northern side of the Parramatta River, opposite Sydney Olympic Park, and may choose to do so in the future. Mitigative measures need to address the possibility of this species nesting in additional sites, in areas that may be impacted by construction works. Nesting and rearing of young typically occurs May-November.

Mitigative Measure NV10 provides for development of an Out of Hours work protocol to *define the process for considering, approving and managing out-of-hours work*, with *a focus on proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels*. Such measures must also be considered for affected ecological receivers, along with avoiding such works at key times in breeding cycles.

Recommended consent condition

Mangrove trees within 500m of the Wentworth Point Bridge landing sites shall be surveyed by an ecologist experienced in bird ecology for the presence of nesting White-bellied Sea-eagles prior to the commencement of bridge construction, and fortnightly during construction of the bridge may-july to identify nest-building activity. If nesting is recorded in this location, a report prepared by a suitably-qualified ecologist with expertise in raptor management that identifies mitigative measures to avoid nest disturbance shall be submitted to the consent authority for approval within 14 days. These measures shall be included in the Biodiversity Construction Management Plan.

(Amendment to BD10)

Scheduling of works within habitat areas must reflect seasonal restrictions and considerations:

- vegetation clearance works in GGBF habitat is only conducted during the frog activity season September to May, when sheltering frogs are less likely to be in torpor
- vegetation clearance in identified STIF habitat north of Silverwater Marker (Footbridge Boulevard stop area) avoids the peak woodland bird breeding season (May – November)
- Wildlife-sensitive construction methods such as seasonal scheduling of works, avoidance of night works, quieter construction methods, and/or the use of temporary noise barriers, will be implemented for works at
    - Wentworth Point near Newington Nature Reserve
    - Hill Road near the White-bellied Sea-eagle nest
    - Narawang Wetland
    - Holker Busway near GGBF breeding ponds in Kronos Hill precinct
    - Australia Avenue adjacent to the Brickpit

The Biodiversity Construction Management Plan will identify these seasonal restrictions and considerations, and identify the specific construction measures to be applied at each location to avoid and reduce impacts.

Noise and Vibration mitigative measure NV10 is adopted as a consent condition, with an amendment requiring the out-of-hours work protocol to also consider avoidance and mitigation of impacts to ecological receivers.

10. Overhead wiring

Sydney Olympic Park and the Parramatta River are a hotspot for wildlife, with over 200 bird species and 12 microbat species, as well as flying foxes, recorded over the past 20 years. These wildlife species routinely move to, from and within the habitats of Sydney Olympic Park and are at risk of collision or electrocution from new quaternary wiring along the PLR alignment. Wildlife habitats are primarily located within the parklands of Sydney Olympic Park, which are also valued by the community for their aesthetic qualities.

The EIS commits to the alignment being wire-free in the urban areas of Sydney Olympic Park to reduce visual clutter. No firm commitment is made to avoiding wiring in ecologically-sensitive or parklands areas to reduce visual clutter or ecological risk. Approximately 3km of the alignment runs through or immediately adjacent to the parklands; installation of quaternary wiring along the parklands alignment and over the Wentworth Point bridge poses a risk to flying fauna, and impacts the aesthetic qualities of the parklands by adding visual clutter to a natural setting.

The EIS dismisses the risk of collision or electrocution to wildlife due to '*the presence of existing overhead wiring and/or other built structures throughout the project site*'. The impact of existing wiring and built structures to fauna within Sydney Olympic Park is very real (SOPA routinely comes across dead and injured wildlife that has collided with power lines and buildings), however this does not justify exacerbating the impact by installing additional obstacles and risks. In particular juvenile sea-eagles are particularly vulnerable to collision with obstacles within the first few weeks of fledging; additional obstacles caused by new overhead wiring would pose additional risk to these birds.

The EIS proposes the following mitigative measure (Chapter 16; Table 16.13, BD4):

The use of overhead wiring will be minimised as far as practicable in areas adjoining Grey-headed Flying-fox foraging habitat and the flight paths of the White-bellied Sea-eagle and migratory waders, particularly on the bridges over the Parramatta River, adjacent to Newington Nature Reserve, and around Hill Road and the Holker Busway.

SOPA supports avoiding use of overhead wiring in the areas identified in this mitigative measure but notes that the qualification of '*as far as practicable'* provides no certainty that overhead wiring will be avoided in any of these areas and recommends this is more strongly worded to avoid ecological risk and visual clutter in parklands areas, commensurate with the parklands setting, and that any decision to install overhead wiring in these locations is appropriately justified.

Recommended consent condition

The use of overhead wiring is to be avoided in areas adjoining Grey-headed Flying-fox foraging habitat and the flight paths of the White-bellied Sea-eagle, migratory waders, and other flying fauna, particularly on the bridges over the Parramatta River, adjacent to Newington Nature Reserve, and alongside Hill Road, Narawang Wetland and the Holker Busway. Should installation of overhead wiring be proposed in any of these areas, a report justifying this installation against wire-free alternatives and detailed consideration of fauna risk shall be submitted for the Consent Authority's approval prior to works.

11. Construction Biodiversity Management Plan

The EIS proposes the following mitigative measure (Chapter 16; Table 16.13, BD13):

A biodiversity management plan will be prepared prior to construction and implemented as part of the CEMP. The plan will include measures to protect biodiversity and minimise the potential for impacts during construction. The plan will include but not be limited to:

a) *measures to manage biosecurity risks (including pathogens and weeds) in accordance with the Biosecurity Act 2015 (NSW)*
b) *locations and requirements for pre-clearing surveys, including where clearing is required within Sydney Olympic Park and areas of mangrove, saltmarsh or other riparian vegetation (see mitigation measure BD14)*
c) *an unexpected finds procedure*
d) *hygiene controls in relation to chytrid fungus, cinnamon fungus (*Phytophthora cinnamomi*) and myrtle rust (*Pucciniales fungi*)*
e) *locations and procedures for monitoring (see mitigation measures BD16 to BD18).*

The plan will be developed in accordance with the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Roads and Traffic Authority (RTA), 2011). Management measures for works within Sydney Olympic Park and the Millennium Parklands will be developed in consultation with Sydney Olympic Park Authority.

BM13 should be augmented to expand its scope as set out below and adopted as a consent condition.

Recommended consent condition

Prior to the commencement of works, the Applicant shall prepare and implement a **Construction Biodiversity Management Plan** (BEMP) that identifies *measures to protect biodiversity and minimise the potential for impacts during construction. The BEMP must be co-written by, or endorsed by, a suitably qualified ecologist who demonstrates extensive experience and success with landscape protection of green and golden bell frog populations. T*he BEMP must be prepared in consultation with and approved by SOPA with respect to works within Sydney Olympic Park, and must be submitted to the consent authority prior to commencement of works. The BEMP must:

a) be specific to each location and stage of construction along the alignment
b) include plans demonstrating the boundary of each construction site, any associated temporary or permanent wildlife fencing, and 'no-go' environmental protection areas
c) describe all activities to be undertaken on the site during site establishment and construction
d) clearly outline the stages/phases/locations of construction that require application of the Biodiversity Measures
e) describe the roles and responsibilities for all relevant employees involved in the implementation of the Biodiversity Measures;
f) Induction, awareness, audit, compliance and reporting procedures and responsibilities appropriate to each stage/location of the works
g) Provide for clear on-ground identification of 'no-go' habitat areas outside the works footprint
h) Installation and maintenance of temporary frog fencing adjacent to GGBF habitat areas; protection of temporary and permanent frog fencing from incidental damage

i) Include relevant provisions of the SOPA Environmental Procedures for works in GGBF and estuarine habitats

j) Identify locations and requirements for pre-clearing surveys, including where clearing is required within Sydney Olympic Park and areas of mangrove, saltmarsh or other riparian vegetation

k) Identify locations and procedures for staged vegetation removal and frog clearance in areas of identified GGBF habitat in accordance with SOPA Environmental Procedures

l) Detail timing of particular works to avoid impacts to fauna, and the special measures to be applied to avoid impacts to breeding fauna

m) contain measures to address:

- protection of aquatic habitats from sediment and chemical pollution, including avoidance of groundwater discharges to aquatic threatened species habitats
- application of controls for night works within or adjacent to habitat areas (to address biodiversity measure BM10)
- Noise and vibration
- Lighting controls during night works
- biosecurity risks (including pathogens and weeds) in accordance with the Biosecurity Act 2015 (NSW)
- an unexpected finds procedure
- hygiene controls in relation to gambusia holbrooki, chytrid fungus, cinnamon fungus (Phytophthora cinnamomi) and myrtle rust (Pucciniales fungi)

n) Procedures for impact assessment of minor works within habitat areas that are not identified in this EIS eg relocation of services or pathway connections requiring works beyond the identified project footprint

o) locations and procedures for monitoring, including trigger levels and adaptive management responses for monitoring program elements described in BD16, BD17 and BD18.

p) Ongoing communication with SOPA regarding works impacting habitats

q) clearly identify the process and requirement for reporting of additional or unexpected impacts.

r) 6 monthly reports provided to the consent authority

12. Site rehabilitation and landscaping

Chapter 15 states that 4000 trees are to be removed in the course of the project and proposes development of a 'tree offset strategy'.

Recommended consent conditions

Landscape plans and plant species palettes for Wentworth Point and Sydney Olympic Park must be consistent with planting plans for Sydney Olympic Park and must be endorsed by SOPA.

A 'tree offset strategy' for Sydney Olympic Park is developed in consultation with Sydney Olympic Park Authority

13. Newington Nature Reserve

SOPA manages Newington Nature Reserve on behalf of the National Parks and Wildlife Service. The EIS identifies impacts of shadowing to mangrove and saltmarsh communities and increased flood levels of between 10-50mm, which may have ecological impacts to estuarine communities. Newington Nature Reserve wetland is a significant breeding site for the saltwater mosquito *Aedes vigilax;* this mosquito species causes pest biting impacts to nearby residents and to parklands visitors and SOPA implements a helicopter-based treatment program to control mosquito breeding. Increased flooding of the wetland is likely to increase the area of suitable breeding habitat in the upper saltmarsh, and exacerbate mosquito numbers emanating from the wetland, affecting the mosquito treatment regime.

The EIS calculates the financial compensation required to offset impacts to mangroves and saltmarsh due to the PLR within and outside Sydney Olympic Park to be in the order of $1.1M.

SOPA requests that this funding is directed to drainage works within the wetland of Newington Nature Reserve to promote the long-term viability of the estuarine communities directly affected by the project and rehabilitate mosquito breeding hotspots. Drainage works would address impacts caused by the PLR as well as historic drainage issues; preliminary cost estimates for necessary works are in the order of $1M.

14. Flooding

Mitigative Measure W1 proposes that a flood management strategy will be prepared in consultation with SOPA that identifies design responses and management measures to minimise flooding impacts to flood sensitive areas and infrastructure within Sydney Olympic Park, including the Narawang Wetland, the Brick Pit and the existing leachate system

The EPBC Assessment of Significance (Technical Paper 9; Appendix G) concludes that the project will have a significant impact on the GGBF due to factors including potential *spread of the noxious fish Gambusia holbrooki into currently fish-free breeding ponds as a result of changes to flooding regimes*. The assessment goes on to say that: *A flood management strategy would be prepared to build on the flood assessment in Technical Paper 10 (Hydrology, Flooding and Water Quality) and inform design development by minimising flooding impacts to flood sensitive areas and infrastructure within Sydney Olympic Park, including the Narawang Wetland, the Brick Pit and the existing leachate management system This would help to limit the potential for movement of Gambusia holbrooki into breeding ponds where it does not currently occur.*

It is noted that the intent is to minimise potential flood impacts through design, however no mitigative or management response to increased spread of Gambusia is currently proposed, and increased Gambusia risk to GGBF is not considered in calculation of offset credits. It may be that additional ongoing active management of Narawang Wetland will be required to address this risk on an ongoing basis, or that works within Narawang Wetland to mitigate the risk will be required. This can only be determined following completion of the flood study.

Recommendation:

The response to submissions will include the Flood Management Strategy referenced at Water Mitigation Measure W1. This study will consider spread of *Gambusia Holbrooki* within Narawang Wetland due to flooding; the EPBC Assessment of Significance for the GGBF will be updated to reflect data arising from this study.

15. Stormwater drainage works

All stormwater systems at Sydney Olympic Park flow to small freshwater waterbodies that are aquatic threatened species habitats, prior to discharging to the Parramatta River system. It is imperative that these sensitive receiving waters are protected from pollution during construction and operation of the facility.

The stormwater diagram in the EIS Figure 17.4 that has been used in MUSIC modelling is incorrect – it mis-identifies the boundaries and discharge points of several sub-catchments within Sydney Olympic Park – for example –the RAS site drains to Eastern Pond GGBF habitat; P6 carpark drains to Grebe Pond GGBF habitat; Olympic Boulevard precinct drains to Northern Water Feature GGBF habitat; Murray Rose Avenue partially drains to Bennelong Pond *Zannichellia palustris* habitat.

Water mitigative measure W3 states: *The location and specification of water quality treatment measures will be determined with reference to the NSW and project-specific water quality objectives and existing water quality.*

It is imperative that these water quality treatment measures are based on an accurate understanding of Sydney Olympic Park's stormwater network for the various sub-catchments, discharge points, size and characteristics of the individual water bodies that comprise the receiving waters, and presence of threatened aquatic species in the respective receiving waters. It is inappropriate to discharge construction stormwater or groundwater to some of these receiving waters due to their small size, shallow nature and/or ecological sensitivity.

Recommendation

The response to submissions includes a revised stormwater assessment and mitigative measures that is based on an accurate understanding of Sydney Olympic Park's sub-catchments and receiving waters including consideration of the s*ize and nature of respective receiving waters, and threatened aquatic species inhabiting receiving waters.*

16. Heritage

The EIS (Tables 12.4, 12.6) identify that vibration impacts to the Abattoir buildings may be above screening level for cosmetic damage, and that wire-free track is proposed adjacent to these buildings to reduce visual impact to the curtilage by reducing clutter.

Recommended consent conditions

Mitigative measure NAH11 (potential vibration impacts on built heritage items) is adopted as a consent condition

Wire-free track is installed adjacent to the State Abattoir heritage precinct to minimise visual impact

17. EIS proposed mitigative measures

All biodiversity mitigative measures proposed in the EIS (Chapter 16, Table 16.13) should be adopted as consent conditions, with amendments as proposed in this review to BM4; BM7; BM8; BM10, BM13

18. Operating plan

Recommended consent condition

Prior to commencement of operations, an operational plan is pro be prepared that addresses management of Ecological risks pertaining to operation of the facility – including maintenance, cleaning, lighting, noise including from public address system and tram operation. The plan is to be co-written or endorsed by a suitably qualified ecologist who demonstrates extensive experience and success with landscape protection of green and golden bell frog populations. The Plan must be endorsed by SOPA for activities within Sydney Olympic Park.

19. EIS factual errors

The EIS contains factual errors pertaining to the following key ecological matters:

- The number of Latham's Snipe occupying Narawang Wetland exceeds the threshold for a Commonwealth-significant population - annual surveys conducted by SOPA have recorded up to 22 individuals within Narawang Wetland, and additional birds spread across other parts of the Park. This is not recognised in the EIS.
- Indirect impacts of increased lighting, noise and disturbance to GGBF, Latham's Snipe or waterbirds within Narawang Wetland, including due to removal of screening vegetation, are not considered.
- Known nesting sites for White-bellied Sea Eagle – the eagle has also been recorded nesting in mangroves on the northern bank of the Parramatta River opposite Sydney Oympic Park
- Utilisation of GGBF breeding ponds close to Hill Road and Holker Street – GGBF breeding indicators have been recorded in these ponds within the past three years – their ecological value should not be arbitrarily dismissed due to their proximity to roads
- Curlew Sandpiper is recorded at the park in small numbers, as is the Eastern Curlew; the Sharp-tailed Sandpiper is regularly recorded, with flocks moving between the Waterbird Refuge and Newington Nature Reserve wetlands (on either side of the proposed new Wentworth Point bridge)

ENDS