Sydney Olympic Park – State Significant Development Site 68

Interim Biodiversity Offset Strategy

Prepared for
Urbis on behalf of Ecove Group Pty Ltd

7 November 2014

DOCUMENT TRACKING

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ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Samantha Wilson, Urbis.

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Abbreviations

Abbreviation	Description
BBAM	Biobanking Assessment Methodology
Bd	*Batrachochytrium dendrobatidis*
BOS	Biodiversity Offset Strategy
dGPS	differential Global Positioning System
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
ELA	Eco Logical Australia
EOI	Expression of Interest
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
FBA	*Framework for Biodiversity Assessment for NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014)
GGBF	Green and Golden Bell Frog
OEH	NSW Office of Environment and Heritage
SEARs	Secretary's environmental assessment requirements
SOPA	Sydney Olympic Park Authority
SSD	State Significant Development
SWQPC	Southern Water Quality Control Pond
TSC Act	NSW *Threatened Species and Conservation Act 1995*

1 Introduction

Eco Logical Australia (ELA) have been engaged by Urbis on behalf of Ecove Group Pty Ltd to prepare an Interim Biodiversity Offset Strategy (BOS) for the Green and Golden Bell Frog (GGBF) (*Litoria* aurea) for the development of Site 68, on the corner of Australia Avenue and Bennelong Parkway in Homebush, New South Wales (NSW). The site is owned by the Sydney Olympic Park Authority (SOPA). The subject site is 1.31 ha and its location is shown in **Figure 1**. Site 68 has been referred to as the Southern Water Quality Control Pond (SWQCP) in the past.

In July 2014, the NSW Department of Planning and Environment (DPE, at the time Planning and Infrastructure) issued the Secretary's environmental assessment requirements (SEARs) for the proposed mixed use development under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Office of Environment and Heritage (OEH 2014a) provided advice for input into the SEARs, as outlined in their letter in **Appendix A**.

The SEARs require a detailed assessment of then impacts of the proposal to flora and fauna, in particular the GGBF and a BOS prepared in accordance with relevant principles and polices of the NSW OEH for assessing and offsetting biodiversity impacts. OEHs requested the use of the BioBanking Assessment Methodology (BBAM) (DECC 2008a) to assess the direct and indirect impacts of the proposal on the GGBF. As the project is State Significant Development (SSD) this request was later clarified as using the relevant equations from the *Framework for Biodiversity Assessment – NSW Biodiversity Offset Policy for Major Projects* (FBA) (OEH 2014b) (e-mail from Sarah Burke of OEH to Robert Humphries of ELA, dated 28 October 2014).

The GGBF is an endangered species listed under the NSW *Threatened Species and Conservation Act 1995* (TSC Act). It is also a vulnerable threatened species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act requirements are not addressed within this report.

The proposed mixed use development would comprise a residential tower, basement parking, ground floor retail tenancies, landscaping and public domain works. The proposed works will involve dewatering of the existing SWQCP, removal of all existing vegetation and earthworks for the construction of a basement level stormwater storage tank and onsite bio-retention features. The site is identified in SOPA Biodiversity Management Plan (SOPA 2014b) as potential frog habitat. No potential GGBF habitat is proposed to be retained as a result of the proposed works. Potential mitigation measures are discussed in **Section 4.1**. ELA understand that OEH has indicated that regardless of further targeted survey for the GGBF, Site 68 would be considered potential habitat for the GGBF and that offsetting would be required (Rachel Lonie, OEH via email to Samantha Wilson, Urbis, 15 October 2014).

ELA have been engaged to prepare an Interim BOS to address the offsetting principles under the FBA (OEH 2014b) for the GGBF. This report does not address other threatened or migratory species, as the latter are understood to be addressed by Applied Ecology (2014) and the Environmental Impact Statement (EIS) being prepared by Urbis.

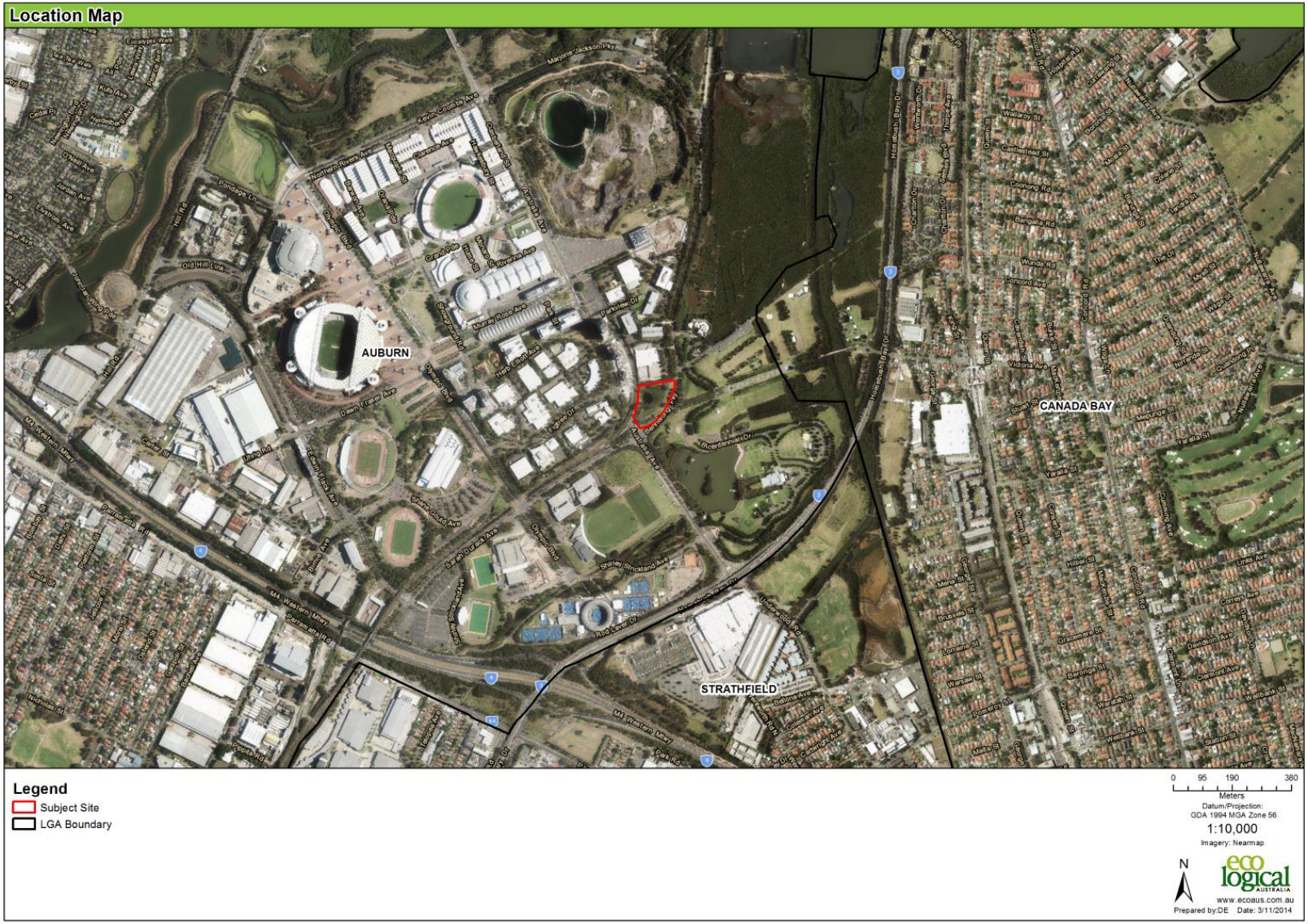

Figure 1: Location map

2 Biodiversity assessment

2.1 Planning context

OEH (2014a) provided advice for input into the SEARs, as outlined in their letter in **Appendix A**. In terms of biodiversity assessment, OEH required the BBAM (DECC 2008a) be used to identify and describe biodiversity values of the site. ELA understand the requirements to address 'flora and fauna' and 'ecology' within the SEARs are addressed by Applied Ecology (2014) and the EIS being prepared by Urbis. ELA were not engaged to undertake biodiversity assessment for the proposed works, except for those works required to prepare this Interim BOS.

Under the FBA (OEH 2014b), in force from 1 October 2014, a Biodiversity Assessment Report (BAR) is required to be submitted with the EIS. This Interim BOS only addresses the BAR requirements to the following extent as discussed with OEH:

- OEH have advised that habitat on Site 68 is considered potential habitat for the GGBF and should be assumed to be present per the FBA, Section 6.5, Step 3, *Determine whether the candidate species is present* (OEH 2014b)
- Determination of the location and area of a species polygon for potential habitat for the GGBF per the FBA, Section 6.5, Step 5, *Prepare species polygon* (OEH 2014b)
- The assessment must be carried out by a person accredited in accordance with section 142(B) of the TSC Act (i.e. an assessor) (OEH 2014b).

2.2 Background information

A review of existing information and available reports was used to determine the type of GGBF habitat at Site 68, the abundance of GGBF using the site and the importance of this habitat in the context of the local landscape.

Site 68 was established as a water quality control pond for the construction of Sydney Olympic Park (Cardno 2012 in Applied Ecology 2014). It is an artificial wetland with water entering from a culvert to the west into a small open water section and flows to the east through a macrophyte zone. Water is then transported via a pipe under Bennelong Parkway before being discharged into Bennelong Pond. Applied Ecology (2014) suggested that Site 68 is important as GGBF breeding habitat because predatory fish are absent and can continue to be excluded (Applied Ecology 2014).

GGBF have been recorded at the site, but in low numbers. There have been a total of four records for GGBF at Site 68 in the period 2001 – 2014 (SOPA 2014a), and the site is identified as potential habitat under the *Biodiversity Management Plan: Legal compliance and risk management*: POL 10/10 (SOPA 2014b). The potential frog habitat within the SWQCP is mapped within the *Biodiversity Conservation Strategy* (SOPA 2014c), as shown in **Figure 2**.

Figure 2: Sydney Olympic Park – Frog Habitats – Map 3 (SOPA 2014c)

A recent frog clearance program aimed at removing frogs (under Scientific Licence – SL100244) from non-aquatic parts of the site in July / August 2014 did not find any frogs and found little evidence of any fauna activity at the site (Australian Museum Consulting 2014). A subsequent two person hour daytime survey on the 28 August 2014 (Applied Ecology 2014) did not record GGBF. It should be noted that the 2014 surveys were not conducted at a time to maximise the chance of detecting the species.

Habitat in close proximity to Site 68 is important for the GGBF with 298 records for GGBF within 1 km of the site (Applied Ecology 2014). Bennelong Pond (immediately downstream and to the north-east of the site) provides GGBF habitat (DECC 2008b and SOPA 2014b). Lake Belvedere (to the south-east of the site) also provides potential GGBF habitat (SOPA 2014c). Sydney Olympic Park includes 304 ha of land zoned as either 'Nature Reserve', 'Environmental Conservation' or Environmental Management' (SOPA 2014b). The parklands have extensive wetland areas and habitat for the GGBF (Applied Ecology 2014). GGBF are capable of moving 1 – 1.5 km in a single day / night, with suggestions that longer movements may be common (DotE 2014), therefore Site 68 may be part of a habitat matrix used by GGBF.

In its risk assessment, SOPA (2014b, page 10) identified inappropriate management practices as a risk to biodiversity. Inappropriate management practices include failure to pro-actively manage for target species, and conflicting site management objectives. The consequence of this risk is considered to be major and the risk level high.

3 Determining the offset requirement

3.1 Methods

3.1.1 Field work

The subject site was surveyed by ELA Ecologist and Accredited BioBank Assessor, Rebecca Dwyer, and Aquatic Ecologist, Ian Dixon, on 3 November 2014. Areas of potential GGBF habitat including breeding, foraging, shelter and movement requirements were mapped by a combination of differential Global Positioning System (dGPS) and desktop mapping in ArcGIS (10.2) using NearMaps aerial photography.

3.1.2 Species credit calculations method

The GGBF is classified as a 'species credit' species under the FBA (OEH 2014b). The GGBF has a Tg score (threatened species response to management) of 0.375. Species credit species require targeted survey to determine presence, and if recorded, a '*species habitat polygon*' is determined.

The potential GGBF habitat identified during the field work was digitised on an aerial photograph using the dGPS waypoints recorded. The extent of the 'area' mapped as potential habitat (breeding, foraging, shelter and movement) was prepared using the methodology described within the FBA, Section 6.5, Step 5, *Prepare species polygon* (OEH 2014b).

The required GGBF species credits for the proposal were calculated manually using '*Equation 6 – Determine the number of species credits required for loss of individual threatened species*' in Appendix 1 of the FBA (OEH 2014b), using the area of habitat in the species polygon identified during the mapping task discussed above and the species Tg score.

Summary of Equation 6: Determine the number of species credits required for the loss of individual threatened species:

$$\text{Number of species credits required for a threatened species at the development site} = H_{loss} \times \frac{1}{T_{Gspp1}} \times 10$$

Table 1: Explanation of element in Equation 6

Element	Explanation of elements in Equation 6
H_{loss}	This is the area of habitat for the species impacted on by the development.
$1 / T_{Gspp1}$	The threatened species offset multiplier is only applied at the development site. It reflects the ability of a species to respond to improvements in vegetation condition from management actions undertaken at an offset site. Species 1 (spp1) is the species which is being impacted on by the development. In the case of the GGBF, **0.375** is the threatened species offset multiplier.
10	This is a general scaling factor that is applied equally to species credits at a development site and at an offset site.

Source: Summary of Equation 6 from Appendix 1 of the *Biobanking Assessment Methodology* (OEH 2014c).

To estimate the habitat area (ha) required to offset the impacts to a species credit species, the number of species credits determined by Equation 6 is divided 7.1 (being the number of species credits generated per hectare of habitat protected and actively managed for conservation in accordance with '*Equation 11- Species credits –number of credits created at the biobank site'* under the Biobanking Assessment Methodology 2014 (OEH 2014c).

3.2 Results

3.2.1 Vegetation

The vegetation within the site consists of emergent wetland vegetation and planted open Casuarina woodland. The bank of the wetland consists of a canopy of *Casuarina glauca* (Swamp Oak) with an absent mid-storey and a groundcover dominated by *Lomandra longifolia* (Many-flowered Mat-rush), leaf litter and bare soil. At the time of field work, *Casuarina glauca* within the north-eastern portion of the study area had been removed with only stumps remaining and the groundcover had been recently slashed.

The wetland is heavily vegetated within emergent sedges, rushes and ferns including *Typha orientalis* (Bulrush), *Juncus usitatus* (Common Rush*), Lepidosperma* sp., *Schoenoplectus validus*, *Baumea articulata* (Jointed Twig-rush), *Gahnia* spp*.,* and *Calochlaena dubia* (False Bracken Fern). Areas of *Cynodon dactylon* (Couch Grass) also occur within shallow water.

3.2.2 Fauna

Nine fauna species were recorded during field survey, including eight bird species and one frog species, *Litoria fallax* (Eastern Dwarf Tree Frog). No threatened fauna species, including GGBF were recorded within the site during field work.

3.2.3 GGBF habitat

Field work confirmed the site provides potential habitat for the GGBF. The site provides breeding, foraging, shelter and movement habitat for the species. Potential habitat on the site for the GGBF is shown in **Figure 3**, and is described below.

Breeding habitat

The shallow pools within the permanent water body (SWQCP) at the site provides suitable breeding habitat for the species. The water is clean and free from *Gambusia holbrooki* (Plague Minnow), which is a known predator of eggs and tadpoles, and listed key threatening process to GGBF breeding success. A total of 0.18 ha of potential breeding habitat is available within the site.

Foraging and shelter habitat

Emergent vegetation within the wetland provides sheltering and foraging habitat for the species. There is little ground debris or rocks within the site and the recent clearing of native groundcover may limit the movement of the species. However, the *Lomandra longifolia* tussocks, leaf litter, tree stumps and dense emergent vegetation provide suitable sheltering habitat for the GGBF. A total of 0.60 ha of potential breeding habitat is available within the site.

Movement habitat

GGBF are mobile with a potential to travel up to 1.5 km in a night. Movement habitat is generally typified by wet areas such as creeklines, drains and stormwater canals connecting or partially connecting vegetation, easements, laneways and open areas that do not restrict movement (DECC 2008).

GGBF have been recorded 250 metres (m) to the north-east of the subject site within Bennelong Pond. This record is part of the key population within Homebush Bay. Movement habitat within the subject site and surrounding areas is provided by an existing stormwater drain connecting Site 68 with the known habitat to the north. Other potential movement corridors are provided by open areas of grass and laneways to the south-east that connect to Lake Belvedere (**Figure 3**).

3.3 Direct impacts

The proposed works will involve dewatering of the existing SWQCP and removal of all the existing vegetation. All potential GGBF habitat within the site will be removed as a result of the proposed works. Direct impacts include removal of potential GGBF habitat within the site and potential mortality of tadpoles and adult frogs as a result of the proposed works.

Species credits required at the offset site

The required GGBF species credits for the proposed works were calculated manually using Equation 6 in Appendix 1 of the FBA (OEH 2014b). The total species credits required for the project are **20.8** (rounded to 21). Therefore, the area required for an offset for the impacts to GGBF habitat is **2.95 ha**. The calculations for the species credits and offset area are provided below:

Number of species credits required for a threatened species at the development site	$= H_{loss} \times \frac{1}{T_{Gspp1}} \times 10$

$$= 0.78 \text{ ha} \times \frac{1}{0.375} \times 10$$

= 20.8 species credit (rounded to 21)

= 21 species credits / 7.1

= **2.95 ha**

Mitigation measures

To avoid significant impacts to the species it is recommended that the *Standard Procedures – Biodiversity* Management (SOPA, 2014d) be implemented, in particular as they relate to major works, frog clearance and management of amphibian skin disease chytridiomycosis or 'chytrid' caused by the fungus *Batrachochytrium dendrobatidis* (Bd).

The total area of offset required can be reduced by mitigating the direct impact to GGBF within the site. This would include landscaping the bio-retention areas using native vegetation plantings sympathetic to the GGBF and incorporating watering features to create a suitable moist habitat for the species (**Figure 4**). The total area of bio-retention areas is 0.17 ha. Through using the above mitigation measures the total offset area required could be reduced to 2.29 ha, per calculations shown below:

Number of species credits required for a threatened species at the development site	$= H_{loss} \times \frac{1}{T_{Gspp1}} \times 10$

$$= 0.61 \text{ ha} \times \frac{1}{0.375} \times 10$$

= 16.3 species credit (rounded to 16)

= 16 species credits / 7.1

= **2.29 ha**

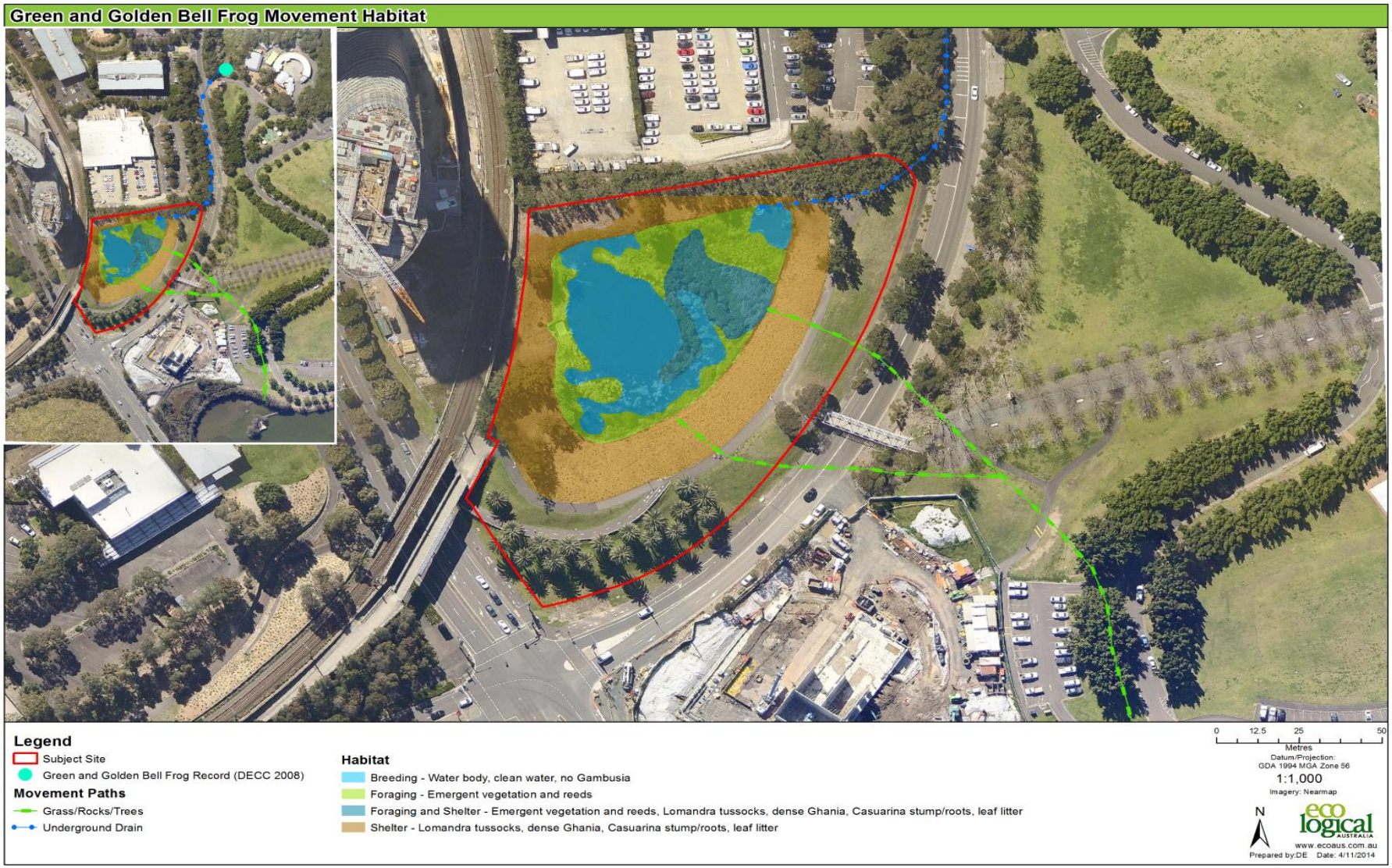

Figure 3: Green and Golden Bell Frog habitat within the subject site

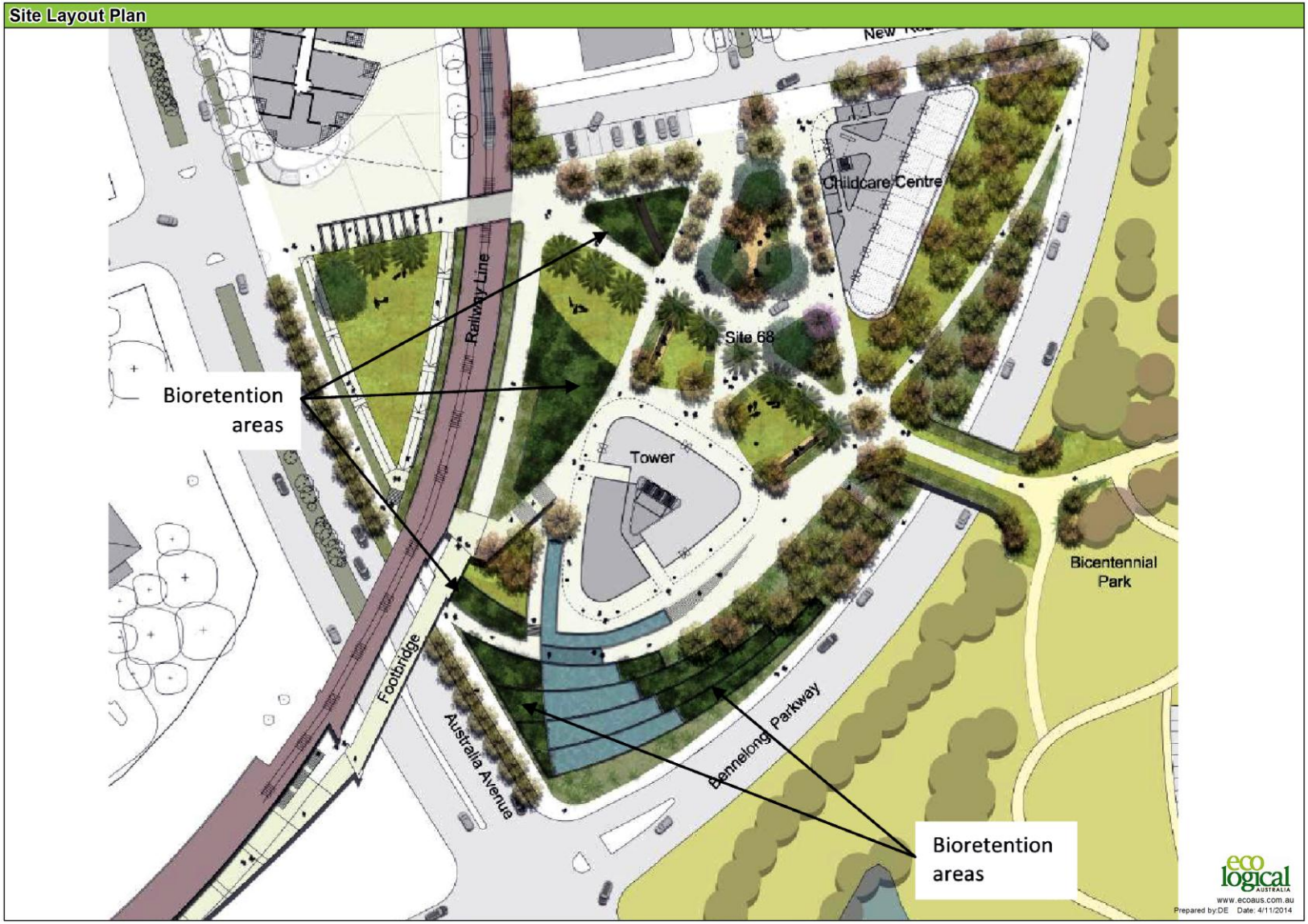

Figure 4: Potential on-site GGBF habitat mitigation areas associated with proposed bio-retention areas within the proposed development footprint

3.4 Indirect impacts

In the preparation of this interim BOS, ELA were engaged to assess the direct and indirect impacts within Site 68 only. As all potential GGBF habitat within Site 68 would be directly impacted upon, and no indirect impacts would occur within the site.

ELA understand Urbis are addressing the offsite indirect impacts of the proposed works within the EIS: The following potential indirect impacts to downstream and offsite environments would need to be addressed within the final BOS for the proposed works:

- Spread of amphibian skin disease
- Downstream water volume and quality as a result of dewatering the SWQCP
- Potential reduction in habitat connectivity for GGBF movement within Homebush
- Overshadowing
- Sedimentation and run-off during construction activities.

The movement of soil, water, waterplant materials and plant matter are most likely to transmit and spread amphibian skin disease chytridiomycosis or 'chytrid' caused by the fungus *Batrachochytrium dendrobatidis* (Bd). It is a potentially lethal parasitic fungus that infects amphibians. Mitigation measures for control of Bd are in the *Standard Procedures for Biodiversity Management* (SOPA 2014d).

The dewatering process should be undertaken in a staged manner to allow receiving waters to dissipate the flows. Detention for stormwater onsite should be designed in accordance with SOPA policies and to allow peak flows to be dissipated prior to reaching Bennelong Pond.

The proposed works may reduce habitat connectivity between areas of known frog habitat in the north and potential habitat in the south of Homebush Bay (**Figure 2**); however given the isolation of Site 68, and the availability of movement habitat between Bennelong Pond and Lake Belvedere, this reduction would be unlikely to preclude movement of the GGBF.

Earthworks and the use of vehicles and machinery have the potential to result in contaminated runoff entering adjacent known GGBF habitat (i.e. Bennelong Pond), via the stormwater drain. The runoff may include sediment laden water or pollutants such as fuels and oils. During earthworks, these potential impacts can be controlled through implementation of erosion and sediment control measures and appropriate storage, handling and use of chemicals and fuels.

There is limited potential for shadowing of GGBF basking areas off-site as a result of a proposed 20 story tower. A mid-winter / summer shadow diagram is required to assess the extent of the shadow into adjacent high quality GGBF habitat. If an area of GGBF habitat is found to be impacted by shadow the indirect impacts are considered to be relatively minor. However, additional offset calculations may be required.

With the implementation of the mitigation measures discussed there will be no indirect impact to GGBF, therefore no additional offset is required and additional species credits would not be required. If further information becomes available during the preparation of the final BOS, the need for offsets relating to indirect impacts may be required.

4 Offset strategy

4.1 Offset principles

When OEH provided input into the SEARs in July 2014 (**Appendix A**) the draft *Biodiversity Offsets Policy for Major Projects* was being developed and OEH advised that the project should be assessed using the seven interim offsetting biodiversity principles. In August 2014, the FBA (OEH 2014b) was finalised, and the offsetting principles were finalised into six principles, removing the principle relating to social and economic benefit. ELA sought clarification from OEH (Rachel Lonie and Sarah Burke via phone and email to Robert Humphries of ELA on 28 October 2014) to use the finalised version of the offset policy and the six principles. The six principles are outlined below:

- Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts
- Offset requirements should be based on a reliable and transparent assessment of losses and gains
- Offsets must be targeted to the biodiversity values being lost or to higher conservation priorities
- Offsets must be additional to other legal requirements
- Offsets must be enduring, enforceable and auditable
- Supplementary measures can be used in lieu of offsets.

These principles would need to be addressed in determining the final biodiversity offset strategy for the proposed works:

4.2 Offset options

Based on the offset calculations conducted, an offset containing suitable habitat and confirmed records for the GGBF of around 2.95 ha is required to meet the offset requirements for the direct impacts of the proposal. If appropriate mitigation measures are implemented, additional offsets for indirect impacts are not proposed. In accordance with the FBA, four potential offset options have been provided below.

Option 1 – Purchase and register as a Biobank Site land with a known GGBF population

One offset property has been identified that meets the offset requirements for the proposal and also contributes to regional conservation priorities and landscape connectivity. This property is privately owned, is not within the Sydney Metropolitan area and would require negotiations with the land owner to purchase the land. This option would take time for negotiations and is not likely a viable option. Further it is understood that OEH has expressed a clear preference that any GGBF offsets should be in the vicinity of the site.

Option 2 - Search expression of interest register and post a credits wanted request

Undertake a search on the Expression of Interest Register (EOI) for GGBF credits. There are currently no GGBF credits available for purchase from an existing Biobank site.

As per the FBA (OEH 2014b), an application for 'credits wanted' must be submitted to OEH via email for at least 6 months. ELA has been trying to locate GGBF credits for another project for over two years and considers this option unlikely to be successful.

Option 3 – Offset within the subject site and surrounds

Commit to purchasing / protecting an offset area of around 3 ha within the Homebush Bay precinct, which would include habitat creation measures aligned with ongoing management costs of the offset site. This would require agreement from SOPA to make a suitable area of land available. This option has not yet been explored as part of this interim BOS.

In consultation with OEH, it is understood that this option is their preference. This is also the most likely option, however in accordance with the FBA this option should only be considered once Options 1, 2 and 3 have been explored.

Option 4 – Supplementary measures

Provide supplementary measures in the form of a monetary amount, equivalent to the cost of a direct offset as outlined in Option 1, to provide ongoing management for the species within the Homebush Bay precinct. The quantification of any supplementary measures would need to be discussed with OEH and SOPA.

References

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Sydney Olympic Park Authority (SOPA) (2014a) Fauna database for SWQCP issued to Eco Logical 21 October 2014.

Sydney Olympic Park Authority (SOPA) (2014b) *Biodiversity Management Plan: Legal compliance and risk management.*

Sydney Olympic Park Authority (SOPA) (2014c) *Biodiversity Conservation Strategy – A supporting document to the SOPA Biodiversity Management Plan.*

Sydney Olympic Park Authority (SOPA) (2014d) *Standard Procedures for Biodiversity Management – A supporting document to the SOPA Biodiversity Management Plan*.

Appendix A - OEH input to SEARs

NSW GOVERNMENT | Office of Environment & Heritage

Your reference : SSD 6603
Our reference : DOC14/128039
Contact : Rachel Lonie 9995 6837

Mr Peter McManus
Senior Planner
Industry, Key Sites & Social Projects
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Mr McManus

I refer to your request to the Office of Environment and Heritage (OEH) for input to the Secretary's environmental assessment requirements (SEARs) for Site 68 Mixed Use Development, Sydney Olympic Park (SSD 6603). OEH provides the following comments in relation to biodiversity..

The subject site is located on the corner of Bennelong Parkway (opposite Sydney Olympic Parklands) and Australia Avenue. The subject site contains a large constructed wetland with fringing native vegetation and has been mapped on a *Key habitats map of Sydney Olympic Park* (undated). The constructed wetland protects water quality for the receiving waters leading into the Badu Mangroves wetland, Powells Creek and the Parramatta River. The parklands have extensive wetland areas and habitat for numerous migratory shorebirds, the Green and Golden Bell Frog, *Wilsonia backhousei* and other fauna and flora. It is possible the subject site also contains habitat for these or other threatened and migratory species.

OEH recommends that the SEARs for the Environmental Impact Statement (EIS) address the offsetting principles and policy as set out in Attachment 1. This requires the use of the Biobanking Assessment Methodology (BBAM) to assess biodiversity impacts arising from the proposal. The assessment should include considering impacts on the Green and Golden Bell Frog and indirect impacts of the proposal such as overshadowing of the tower building and impacts on water quality on the adjacent Sydney Olympic Parklands and receiving waters arising from the removal of this constructed wetland.

Mitigation measures should be identified such as procedures for the salvage and relocation of native fauna that may be using the wetland or its fringing vegetation as habitat, particularly for Green and Golden Bell Frog.

Should you have any queries in regard to this correspondence please contact Rachel Lonie, Senior Operations Officer, on 9995 6837 or by email at rachel.lonie@environment.nsw.gov.au.

Yours sincerely,

S. Harrison 30/07/14

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Attachment 1. Biodiversity offsetting for Major Projects – Interim Arrangements for assessing and offsetting impacts

The NSW Government is currently developing a new whole of government draft *Biodiversity Offsets Policy for Major Projects* which will be used in assessing impacts to biodiversity and determining acceptable offsets for state significant development and state significant infrastructure projects. This policy has been recently publicly exhibited and submissions are now being considered. In the interim, the following advice is provided.

Biodiversity Offsetting Principles

Projects must avoid and minimise impacts and offset any remaining impacts in accordance with the following seven offsetting principles:

1. Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts.
2. Offset requirements should be based on a reliable and transparent assessment of losses and gains.
3. Offsets must be targeted to the biodiversity values being lost or to higher conservation priorities.
4. Offsets must be additional to other legal requirements.
5. Offsets must be enduring, enforceable and auditable.
6. Supplementary measures can be used in lieu of offsets.
7. Offsets can be discounted where significant social and economic benefits accrue to NSW as a consequence of the proposal.

1. Avoiding and minimising impacts

The EIS should clearly identify how the proposed project has avoided and minimised, to the fullest extent practicable, impacts to biodiversity, particularly threatened species, populations, ecological communities and their habitats.

2. Assessing biodiversity impacts using the BioBanking Assessment Methodology.

The BioBanking Assessment Methodology (BBAM) is to be used to identify and describe the biodiversity values of the site, and to assess the impacts of a proposal and to determine required offsets, both ecosystem credits and species credits.

The EIS should contain a detailed biodiversity assessment and all components of the assessment must be undertaken in accordance with the BioBanking Assessment Methodology and Credit Calculator Operational Manual (DECCW, 2008).

The EIS should document the outcomes of the application of the BBAM to the site, and the required ecosystem and species credits. All relevant 'BioBanking files (e.g. *.xml output files), data sheets and documentation (including maps, aerial photographs, GIS shape files, other remote sensing imagery etc.) should be included to allow for a review of the assessment.

3. Achieving the offset requirement

The EIS should document the Offset Strategy that is proposed, demonstrating achievement of the offset being like-for-like (as per BBAM offset rules), or an ecosystem or species with a higher conservation status. It should set out the ecosystem and species credits required by the BioBanking Assessment Methodology and how these ecosystem and/or species credits will be secured and obtained.

4. The offset must be additional to other legal requirements

The Offset Strategy must demonstrate that the proposed offset site is not subject to a requirement to implement existing conservation obligations, or, that it will adhere to the 'additionality' rules within BBAM.

5. Offsets must be enduring

The Offset Strategy must identify the legal mechanism that will be used to secure the offset site. While biobanking agreements are the preferred mechanism for securing offsets, other conservation mechanisms may also be acceptable prior to formal commencement of the FBA. Interim mechanisms for securing offsets include (listed in order of preference):

- biobanking agreement (preferred)
- purchase and retirement of the appropriate biodiversity credits from a third party biobank site
- dedication of land under the *National Parks and Wildlife Act 1974* (NPW Act)
- Trust Agreements under the *Nature Conservation Trust Act 2001*
- a Property Vegetation Plan registered on title under the *Native Vegetation Act 2003*
- a Planning Agreement under s 93F of the *Environmental Planning and Assessment Act 1979.*

6. Use of Supplementary measures

If a suitable offset cannot be located, the Offset Strategy included in the EIS must demonstrate, and that all endeavours were undertaken to identify a suitable offset site, and how suitable sites were attempted to be located. In the event that it is agreed that a suitable offset site cannot be located, supplementary measures may be used.

Any proposal for the use of supplementary measures must be discussed with the Office of Environment and Heritage (OEH) prior to the EIS being submitted for exhibition.

7. Discounting of offsets

It is OEH's position that all impacts are to be fully offset. Discounting will only be applied in rare circumstances where the offset requirements would be so onerous as to prevent a project proceeding. In addition, that project would need to have significant net social and/or economic benefits.

The inclusion in the Offset Strategy of any such proposal should be first discussed with OEH.

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