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RE: MP01_0076; KIRRAWEE BRICK PIT CONCEPT PLAN. RESPONSE TO FROM SUTHERLAND SHIRE COUNCIL AND DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER

Dear Daniel

The purpose of this letter is to provide a response to comments from both the Sutherland Shire Council (Council) and Department of Environment, Climate Change and Water (DECCW) (now the Office of Environment and Heritage – OEH) on ecological matters relating to MP10-0076: *Concept Plan for Mixed Use Residential and Commercial Development at 566-594 Princes Highway, Kirrawee Brick Pit, Kirrawee NSW 2232.* The comments received from Council and DECCW relate to remaining concerns regarding the ecological impacts from the proposed development (the Project).

This letter initially addresses the specific comments from Council, titled: *Attachment C - Environmental Science Comments dated 27 January 2011* and comments from DECCW, provided in correspondence dated 15 February 2011, are addressed in **Section 2** of this letter. Comments received via public submissions are addressed in **Section 3.** Each subsection is titled according to the specific comment that the response addresses. Subheadings within each section have been added for clarity where appropriate to ensure specific points within the Council or DECCW comments are addressed. As the majority of issues raised through public submissions are of a general nature, comments have been addressed under appropriate general subheadings in **Section 3**.

Negotiations between Henroth and the Council over recent months regarding the proposed public park have progressed positively and are now concluded. Agreement at a concept level has been reached on all of the aspects of the park including the concept design of the compensatory water body (layouts, dimensions etc) and importantly the water quality standards suitable for threatened bat species that will utilise the water body as well as the proposed methods to supply and maintain water quality and quantities at the required

levels. Agreement has also been reached on the required amount of compensatory Sydney Turpentine Ironbark Forest (STIF) planting that result from the development. Council has nominated a number of existing parkland reserves and has agreed to make these reserves available for the required compensatory STIF planting and also nominated the desire to replant some of the compensatory STIF on-site in the park adjoining the retained STIF.

Documentation reflecting the agreed designs and specifications have been finalised and will form the basis of a Voluntary Planning Agreement (VPA) between Henroth and the Council. The VPA documents also outline the agreed arrangements regarding compensatory STIF maintenance, as well as staging and delivery provisions, as well as the legal instruments required to implement the terms of the VPA including maintenance of water quality and quantity at the agreed levels and maintenance of on and off-site STIF in perpetuity.

The Council's Environment and Planning Committee on 26 September 2011 made recommendations to the Council including,

"*That the concept plan for a public park attached as Appendix 1 and 2 be endorsed by Council as the basis for the preparation of a draft Voluntary Planning Agreement.*"

The Committee Recommendations were adopted in full by Council on 10 October 2011. It is agreed that the VPA will be finalised and executed only after Concept Plan approval and before the first Project Application.

As part of the preparation of this response document, a number of reports, documents and plans relating to the Project have been reviewed and information drawn from these sources as appropriate. These documents have included:

- Lower Ground Floor Plan for the Project (Woodhead September 2011);
- Final Report on Grey-headed Flying-fox Water Quality Requirements prepared for the Project (Equatica September 2011).
- Proposed Development– Former Kirrawee Brick Pit Compensatory Habitat Water Body (Northrop, 14 September 2011)
- Landscape Design Report (Site Image, August 2011)
- Landscape Specifications (Sutherland Shire Council August 2011);
- Final Updated Biodiversity Management Plan (BMP) prepared for the Project (Cumberland Ecology October 2011);
- Flora and Fauna Assessment prepared for the Project (Cumberland Ecology 2010);
- Ecological Impact Assessment prepared for the Project (ERM 2008); and

- Flora and Fauna Survey and Assessment of Kirrawee Brickpit prepared for Planning NSW (URS 2002).

1. RESPONSE TO COUNCIL - ENVIRONMENTAL SCIENCE COMMENTS

1.1 Ecological Impacts - Endangered Ecological Community

1.1.1 Provision of 2:1 Offset Area

Council has raised the following concerns regarding the removal of STIF and proposed offsets to compensate for this removal:

- The uncertainty of Council taking ownership of the proposed park representing off site offset area; and

- The capability of the Project site to provide sufficient on-site offset area should Council decline to take ownership of the park.

Council have now resolved to take ownership of the park subject to the VPA being finalised and executed after the concept plan approval. Council has nominated, within the agreed VPA documents, a number of existing parkland reserves and has agreed to make these reserves available for the required compensatory STIF planting and also nominated the desire to replant some of the compensatory STIF on-site in the park adjoining the retained STIF.

In the event that the VPA is not entered into and Council does not take ownership of the park, the extent of STIF to be removed for the proposed development, based on the proponent developing and retaining ownership of the park is 1,293 sq m (0.129 ha). It has been demonstrated that the required offset amount of compensatory STIF planting (2:1 ratio) can be accommodated on the site. For further detail on the compensatory STIF planting, please refer to the revised Biodiversity Management Plan by Cumberland Ecology (October 2011).

The same general principles for replanting as described in the Biodiversity Management Plan (BMP) for the project (Cumberland Ecology 2010) will be applied to both off-site or on-site offset area, these principles being, with minor variations and including Council specifications, in bold type as follows:

- Following any earthworks that may be required, if deemed appropriate the area should be capped with clean bushland topsoil (translocated from the area of STIF vegetation to be removed as part of the proposed action if practical). This work will be completed under the supervision of the bush regeneration contractor as soon as possible following excavation;

- This translocated soil will be weeded as required and replanted;

- Provenance seed and propagation material will be collected from remnant STIFF vegetation within a 1km radius;
- Additional plants might be salvaged from the development site and planted in the fill;
- Provenance specific tubestock should be used and the site brush matted;
- Tubestock (**forestry size tubes)** of canopy tree, shrub and groundcover species or salvaged plants are to be planted at the densities **specified by Council, i.e**. **trees are to be planted at an average rate of 1 plant per 5m2; shrubs are to be planted at an average rate of 1 plant per m2.**
- Planting densities for groundcovers shall be 5 grow cells/m2 (Not Viro Cells) and **native leaf mulch applied to revegetation areas to a depth of 75mm;**
- **Planting design will reflect natural informal community structure;**
- Slope stabilisation prior to planting will be carried out on any slopes where necessary as determined by the bush regeneration contractor. **Biodegradable erosion control mat such as CoirMesh™ or equivalent will be laid over the soil surface in accordance with manufacturer's recommendations in any areas where grades are 1:3 or greater ;**
- **Areas where the existing ground level is to be re-profiled site soils or VENM, of similar structure and texture to the existing soils, is to be used as a sub grade. Re-profiled areas are to be topped with a native garden growing media to a depth of 300mm. The native garden media is to be lightly ripped or cultivated into the sub-grade material to prevent stratification of the soil profile.**
- Plantings should be watered on installation, daily for the next week and then weekly for four weeks;
- Replanting on slopes will be carried out with proper respect given to the safety procedures outlined in the OH&S section **of the BMP**; and
- Planting will take place at the commencement of the development works for the proposal **wherever such planting is practically achievable, such that it will not be affected by other required works.**

1.1.2 Effects of Proposed Car Park on Remaining STIF Vegetation

Council has expressed concerns regarding likely detrimental effects on the STIF vegetation to be retained from a proposed car park, shown on a plan of the development as being located within the open space area in the south west portion of the site. The development has subsequently undergone a number of design amendments and the commuter car park has now been removed from the scheme.

1.2 Threatened Fauna

Council expressed concerns regarding the provision of a permanent water source for the Grey-headed Flying-fox (*Pteropus poliocephalus)* in relation to the following matters:

- Uncertainty regarding the appropriateness of the design of the waterbody to conform to the specified requirements as subject to previous agreements by experts;
- Whether a proposed constructed boardwalk would impede the effective use of the waterbody by the Grey-headed Flying-fox;
- Whether there sufficient water quantity to maintain the required water body surface area (800 sq m);
- Uncertainty regrading the appropriateness of the proposed water quality standard and lack of appropriate data to justify the proposed standard of water to be maintained; and
- Potential proposed under representation of area of macrophytes associated with the proposed water body.

As indicated previously all above matters regarding the appropriate design and specifications for the water body at a concept level have been resolved and agreed with Council. The specifications form part of the VPA documents agreed with Council.

1.2.1 Design of Water Body

The size of the permanent water body has been designed conceptually to be a minimum of 800sq m, with one axis over 40m long, as documented in the earlier BMP (Cumberland Ecology 2008) and in the revised BMP (Cumberland Ecology 2011). The Council agreed landscape plan within the VPA documents and the alternate lower ground floor plan of the development indicates this design and the final detailed design will also ensure the required specifications are met. The Joint Witness Report for the court (Drinnan and Robertson 2009) specifically refers back to the BMP viz: "It is agreed that there will be no significant impact upon Flying Fox and that no Species Impact Statement or Referral is required provided the specifications outlined in the current BMP are implemented." The BMP current at that time (Cumberland Ecology March 2009) provided the following relevant specifications:

"To provide adequate quantities of clean freshwater for the GHFF and EBWB, the pond must:

- Be of a total area of approximately 800m2;
- Be of an elongated shape, in order to accommodate the 'skimming' drinking behaviour of the GHFF;
- Be located adjacent to suitable roosting habitat for the GHFF;

- Have methods in place to maintain water quality and clarity (if deemed necessary), in the form of an on-site water treatment plant. Some additional area of macrophytes may provide auxiliary water treatment (refer to **Sections 1.2.2** and **1.2.3** below);
- *Contain a floating 'Pontoon'; and*
- Be fenced to ensure public safety."

The specifications in the updated BMP are generally the same as those above, viz:

- Be of a total area of approximately 800m2;
- Be of an elongated shape, in order to accommodate the 'skimming' drinking behaviour of the GHFF;
- Be located adjacent to suitable roosting habitat for the GHFF;
- Have methods in place to maintain water level, quality and clarity to meet the site specific water quality guidelines as outlined in the VPA Documents specifically by Equatica (September 2011) and Northrop (2011) and agreed with Council.
- Be constructed generally in accordance with the VPA documents agreed with Council.

The final design of the permanent water body will conform to the above specifications as per the revised BMP, with the boardwalk placement also designed to avoid obstruction of potential flyway paths for the Grey-headed Flying Fox.

1.2.2 Water Quantity

It is understood that the compensatory habitat water body will be serviced/supplemented with rainfall runoff from the subject site, based on:

- Principles to minimise the generation of stormwater runoff from the development
- Rainwater being the predominant source of water for the existing Brick Pit pond;

The refined water supply concept for the compensatory water body has been outlined in the Proposed Development – Former Kirrawee Brick Pit Compensatory Habitat Water Body (Northrop, 14 September 2011) report. Northrop have previously undertaken, as part of the Director General's Requirements (DGRs_) for the Concept Plan, detailed water balance modelling of the water quantities available to the system, based on rainwater harvesting from the developed site and collection in a central rainwater storage tank that is designed to supply water to the water body within the park and the private space.

These concepts and models have now been further refined and Council have agreed that the concept design outlined by Northrop that is intended to supply water to the pond is appropriate and this forms part of the agreed VPA documentation.

1.2.3 Water Quality

Given that Flying–foxes and microbats naturally drink from a range of water sources, including the existing brick pit, Engadine wetland, other quarry pits (A. Martin, pers. comm.), rivers (Jones, 2000) and stock water tanks (Jackrel, 2010), the water quality of the various water sources accessed by Grey-headed Flying-Foxes would also differ. In response to Council's ongoing concerns regarding the issue of suitability of water quality, substantial further investigation of water quality at six known Grey-headed Flying Fox drinking sites in the Sydney area was undertaken by Equatica to determine site specific water quality guidelines, as opposed to the Applicant's and Council's previous approach of simply applying default ANZECC guidelines. The studies incorporated analysis of existing water quality data from sites for which the existing datasets were sufficiently robust to provide reliable information on both water quality attributes and variations in the data over time. One of the sites included the existing Kirrawee Brickpit pond. This approach of using local data to determine guideline trigger values is in accordance with the ANZECC Water Quality Guidelines (WQG) process for deriving trigger values, where values derived from local data are preferable to simply applying the generic default ANZECC guidelines (Chapter 3, ANZECC WQG 2000), as was applied previously for the project. The results of these studies established recommended water quality standards appropriate for drinking water for he Grey-headed Flying Fox and this quality would also be expected to be suitable for microbat species, including the Eastern Bentwing Bat (*Miniopterus screibersii oceanensis)* (Equatica 2011). The recommended standards are reproduced in **Table 1.**

Table 1 Recommended Water Quality Standards Suitable for Greg=-headed Flying Fox Drinking Water

Parameter	10th Percentile	Average	90th Percentile
Dissolved Oxygen	3	6	9
Total Suspended Solids	5	25	50
Total Phosphorus	0.05	0.15	0.25
Total Nitrogen	0.9	2.0	3.5

Note that no value has currently been set for Chlorophyll a at present as there is insufficient data, particularly to set percentiles.

In addition, to ensure maintenance of the water quality within the proposed permanent water body, minimising the risk of algal blooms, it is proposed to incorporate the following management procedures as recommended by Equatica (2011):

- Treatment of all inflows into the water body as currently outlined in the stormwater strategy provided with the initial Concept Plan Environmental Assessment and in the Water body Concept Description (Northrop, September 2011) developed for the site to reduce the amount of nutrients entering the water body;

- Development of a recirculating wetland (800 m2) to manage the in-pond water quality and improve the residence time by ensuring that oxygen levels are maintained and water quality is improved during extended periods of little or no rainfall.

Both the method of water supply, quality standards and treatment methods proposed by Northrop and Equatica have been agreed as suitable and are included in the VPA documents endorsed by Council. Further information on the water quality studies undertaken is provided in the detailed report by Equatica (2011).

1.2.4 Area of macrophytes and recirculating wetland

Plantings of macrophytes around the fringes of the compensatory habitat water body and also in the recirculating wetland of around 800 m2 in total are proposed to be incorporated sufficiently into the water body design both to facilitate water quality maintenance and enhance fauna habitat values for the site. This concept has been agreed with Council and it is noted that the recirculating wetland is expected to provide water of significantly better quality for all parameters than is required by the site specific guidelines derived from local data. Further information on the water treatment proposed is provided in the detailed report by Equatica (2011) and forms part of the VPA documents..

2. RESPONSE TO DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER COMMENTS ON PUBLIC EXHIBITION OF ENVIRONMENTAL ASSESSMENT FOR KIRRAWEE BRICK PIT SITE MP01_0076

2.1 Retention of Waterbody and Threatened Bat Species

Comments from DECCW regarding the provision of a permanent water source for the Grey-headed Flying-fox (*Pteropus poliocephalus)* referred to the following matters:

- The size and 'landing area' be stipulated to be not less than 800 sq m, including a 40m 'landing area'; and

- The proposed water quality standard be stipulated according to ANZECC Water Quality Guidelines for Freshwater Lakes and Reservoirs.

2.1.1 Size and 'Landing Area' of Permanent and Temporary Water Body

The size of the permanent water body has been designed conceptually to be a minimum of 800sq m as documented in the earlier BMP (Cumberland Ecology 2008) and in the updated BMP (Cumberland Ecology 2010). As indicated in these documents, the compensatory water body will be designed to "[b]e of an elongated shape, in order to accommodate the 'skimming' drinking behaviour of the GHFF. This design will encompass an allowance for a minimum 40m flight length to accommodate the drinking behaviour requirements of the Greg-headed Flying-fox". The Council agreed landscape plan within the VPA documents and the alternate lower ground floor plan of the development indicate such a water body and the final detailed design will reflect the measures provided in the revised BMP for the Project, viz:

- Be of a total area of approximately 800m2;
- Be of an elongated shape, in order to accommodate the 'skimming' drinking behaviour of the GHFF;
- Be located adjacent to suitable roosting habitat for the GHFF;
- Have methods in place to maintain water level, quality and clarity to meet the site specific water quality guidelines as outlined in the VPA Documents specifically by Equatica (September 2011) and Northrop (2011) and agreed with Council.
- Be constructed generally in accordance with the VPA documents agreed with Council.

The temporary water body will also be designed to the same specifications and is clearly indicated on the staging plans for the concept plan application. Refer to the revised Biodiversity Management Plan by Cumberland Ecology (October 2011) for further detail.

2.1.2 Water Quality of Water Body

Based on the expert evidence in the previous LEC case, DECCW recommends that the water quality of the compensatory water body conform to ANZECC Water Quality Guidelines for Freshwater Lakes and Reservoirs. There is now however, agreement by the same experts for the Council and the proponent that gave the evidence in the LEC case to adopt the water quality guidelines based on new local data as recommended by Equatica (2011). This approach of using local data to determine guideline trigger values is in accordance with the ANZECC Water Quality Guidelines (WQG) and is preferable to applying the default generic guidelines. It is therefore considered that the ANZECC Water Quality Guidelines for Freshwater Lakes and Reservoirs is no longer appropriate. Refer to Section 1.2.3 above for further detail.

2.2 Provision of 2:1 Offset Area

Comments from DECCW regarding the provision of an appropriate offset for the STIF vegetation to be removed relate to the following concerns:

- Insufficient information on offsets and uncertainty as to agreement on offsets with Council;
- Insufficient development of offset; and timing of securing offset; and
- Lack of details on future management and ownership.

2.2.1 Proposed Offsets

Refer to **Section 1.1.1** for current offset proposals. The amount, locations and legal instruments required for the implementation of the compensatory STIF planting have been agreed with Council and outlined in the VPA documents.

Planting procedures, incorporating landscaping specifications from Council, would be followed and have been provided in **Section 1.1.1** of this document.

Council have now resolved to take ownership of the park subject to the VPA being finalised and executed after the concept plan approval .The VPA will outline details on timing and securing of the offset as well as transfer of ownership of the park to Council and management of STIF. It is noted that Council have agreed to enter any "*legal covenants to maintain STIF located on-site and off-site",* as has the Applicant.

DECCW recommends further development of the offset proposal to indicate how it addresses the *Principles for the Use of Biodiversity Offsets in NSW.* These principles, and the manner in which the offset proposal encompasses them, are outlined as follows:

1. **Impacts must be avoided first by using prevention and mitigation measures -** The concept design for the project has taken into account the value of the STIF community on-site and avoids direct impacts on the majority (66 per cent) of the higher quality representation of STIF on original soil. Much of the STIF on original soil to be removed comprises a narrow strip on the southern boundary of the site and is highly impacted by edge effects. Mitigation measures are also in place to protect the retained vegetation as detailed in the revised BMP, viz: Prior to construction, revegetation zones should be surveyed and pegged and [a]ll native vegetation to be retained will be protected by installing a temporary fence around the areas, at a distance of five meters from the nearest trunk;

2. **All regulatory requirements must be met –** the project has been assessed under Part 3A of the *Environmental Planning and Assessment Act (1979*) and all regulatory requirements have been met. Under Part 3A, offsets can be secured under planning agreements as per the VPA outlined in the revised BMP and in the introduction and Section 1.1 of this response document. ;

3. **Offsets must never reward ongoing poor performance –** on-site offsets have not been subject to any form of deliberate mismanagement and STIF vegetation has been retained and allowed to continue regenerating on the site. Likely off-site offset areas have been selected by Council and have not been subject to any management actions by Henroth;

4. **Offsets will complement other government programs –** the proposed offsets will enhance biodiversity in the long term, both on-site and through off-site offsets, which complements the goals of the Sutherland Shire Biodiverstiy Sttategy, viz: *to preserve and maintain biodiversity, both within and outside the Sutherland Shire, consistent with the principles of ecologically sustainable development.*

5. **Offsets must be underpinned by sound ecological principles –** the key ecological principles underpinning the proposed offset for the project comprise:

   - Ecological Sustainability – the BMP provides detailed measures to facilitate both the development of new areas of STIF (on-site and off-site) and to enhance the existing STIF to be retained on-site. The measures are designed to encourage the long term development and sustainability of the STIF community in all off-set areas and in the process enhancing fauna habitat in the long term;

   - Prevention of Environmental Harm – although the project entails removal of some STIF vegetation, it is mostly low quality or highly impacted by edge effects, and the STIF to be retained will be protected from further physical impacts, both during clearing operations, construction works and operation of the development. Offsets will be similarly protected within appropriate timeframes of their development. -

   Utilisation of Natural Processes – offsets will be developed utilising locally endemic species that area also resourced locally and are therefore best suited to the local conditions. Species will also be representative of the STIF community and be spaced and planted in appropriate mixes to reflect the natural processes and structure of the naturally occurring community;

   - Connectivity – the onsite offset will retain connectivity with the existing STIF to be retained. The concept of connectivity will also be considered as a priority within the development of any offsite offsets wherever the potential exists for connectivity with any existing vegetation.

6. **Offsets should aim to result in a net improvement in biodiversity over time –** The BMP for the project aims to promote positive management practices to ensure the continued use of the site by threatened bat fauna and for management of the STIF community to maintain and enhance the STIF in the long term. The enhancement measures and additional on-site replanting of STIF, as well as the proposed off-site replanting of STIF, are expected to enhance biodiversity of the site and of the off-site offset areas over time**;**

7. **Offsets must be enduring -** The offsets form part of a VPA to be entered into with Council. As stated in the revised BMP, *any offset areas will be retained and/or recreated and maintained in perpetuity, both on and off the subject site and these obligations will be formalised via legal covenant on title or other such appropriate legal instrument as agreed in the VPA documents*.

8. **Offsets should be agreed prior to the impact occurring -** . It has been agreed that the VPA will be finalised and executed only after Concept Plan approval and before the first Project Application**;**

9. **Offsets must be quantifiable - the impacts and benefits must be reliably estimated –** the extent of STIF occurring on the site has been mapped (as shown in **Figure 1.4** in the BMP and appended to this response document) and the areas of varying conditions of the STIF quantified. Considering the small size of the STIF community occurring on the site (4,766 sq m), the varying quality of the STIF (only 3,010 sq m on original soil) and the narrow width of the remnant and regenerating patches of STIF, sampling of the vegetation communities effectively using Biobanking methodology is impractical. If the total area of STIF is considered as an entity, theoretically four Biobanking plots (20 x 50m) could be sampled. However, for the purposes of establishing appropriate offsets, sample plot selection should reflect the better quality vegetation characteristics. If the STIF on original soil is therefore considered in isolation, based solely on the total area covered by the community, a total of three biobanking plots (20 x 50 m) could be sampled. However, examination of **Figure 1.4** in the BMP (appended) also shows that the width of this STIF community (as well as the other STIF representations on the site) would not allow for the placement of standard 20 x 50m biobanking plots. A practical approach of allowing a minimum replacement ratio of 2: 1 and precise STIF area measurement has therefore been adopted. ;

10. **Offsets must be targeted –** the offsets are designed to compensate for the impacts on the STIF community and thus target appropriate actions and **;**

11. **Offsets must be located appropriately** – on-site offsets will be located appropriately, adjoining existing STIF vegetation to be retained. The off-site offset options have been selected by Council as appropriate areas and are located within the Sutherland Shire**;**

12. **Offsets must be supplementary –**the on-site and off-site offsets are all supplementary to the STIF to be retained in situ**; and**

13. **Offsets and their actions must be enforceable through development consent conditions, licence conditions, conservation agreements or a contract –** refer to point 7 above.

Further specific comments from DECCW relate to the need for a legal mechanism to secure offsets, how the proposed offsets compare with offsets that would be required using biobanking technology and a schedule of works for the implementation of the offsets for the first five years.

The first of these concerns is addressed in Points 7 above. An outline of the approach to determining the extent of offsets and methodology is also provided in Point 9 above. Further to this, it should be noted that as indicated in Point 2, above, the project has been assessed under Part 3A of the EP&A Act, which encompasses planning agreements as appropriate mechanisms for establishing offsets. The project has not been developed under the Biobanking scheme and in practical terms, the development of the proposed offset package is appropriate for the site. The offset: retained vegetation ratio of 2:1, is also considered appropriate given the small area of vegetation involved, the level of past disturbance to the

site and vegetation and the recent discussions between OEH and Cumberland Ecology indicating that offsets for urban developments are not always required.

With regard to a schedule of works, the BMP provides details on the various schedules of works for planting, weeding, maintenance and monitoring for all offset areas. These schedules are in turn also dependent to a large extent on the pre-construction and construction schedule (e.g , [p]*lanting will take place once the development works on the site likely to interfere with these actions, i.e. works within the Western Zone, are complete* …….and *Following any earthworks that may be required, if deemed appropriate*

*the area should be capped with clean bushland topsoil (*re-planting would then follow) (BMP p 5.5). The development of the off-site offset areas is also highly dependent or Council decisions on the offset areas. As stated in Pont 8 above, the VPA will be finalised and executed only after Concept Plan approval and before the first Project Application. More definitive schedules for the off-site offset areas can be developed once this stage is reached.

2.3 Biodiversity Management Plan

Comments from DECCW regarding the Biodiversity Management Plan relate to the following concerns:

- Lack of details on the temporary and permanent water body design and water quality;
- Lack of information on other fauna species utilising the existing water body and potentially subject to impacts;
- Inconsistencies/errors in some details of the BMP and Flora and Fauna Assessment.

2.3.1 Temporary and Permanent Water Body Design

Details on the revised designs on the permanent water body have been discussed in **Sections 1.2** and **2.1**.of this response document. The final design of the temporary water body will encompass the appropriate specifications and be subject to any appropriate treatment to ensure that water quality standards are maintained as per the water quality standards recommended by Equatica. The temporary water body would be constructed prior to the dewatering of the existing water in the pit as per the staging plans for the concept plan application.

2.3.2 Other Fauna Species Utilising Existing Water Body

Given that the timing of the development and potential translocations required has been very uncertain, it is considered appropriate that the investigations relevant to the proposed detailed translocation subplan be undertaken immediately prior to the preparation of the subplan to ensure that information on which translocation management procedures are based reflects the usage of the site at that time and is therefore is of most relevance. The translocation subplan itself will be subject to a further approval process.

2.3.3 Report Inconsistencies

The report inconsistencies referred to are being addressed in updated versions of the relevant reports currently being prepared.

3. RESPONSE TO PUBLIC SUBMISSIONS

Public submission comments relevant to ecological issues were primarily related to general concerns regarding the existing wildlife and vegetation on the site. The main concerns raised are addressed below, with points made under each subheading typically encompassing collective issues from a number of submissions.

3.1.1 Risks to Wildlife, the Environment and Endangered Species

Although the proposed development entails clearing of vegetation, with associated removal of some fauna habitat, the overall impacts on native fauna and habitats on the site are mitigated to a large extent by the following factors:

- The majority of higher quality vegetation and habitat is to be retained on the site;
- Hollow-bearing trees are poorly represented on the site and the majority occurring will be protected within the vegetation to be retained;
- No prime roosting habitat for the Eastern Bentwing Bat, in the form of caves or tunnels, occurs on the site and the higher quality foraging habitat for the species will be retained and protected;
- Proposed weed control, enhancement plantings and additional community restoration measures are expected to improve the habitat value of forest/woodland habitat over time; and
- Further surveys are proposed prior to development to ensure that appropriate translocation procedures are in place for wildlife utilising the areas to be disturbed, including the water body.

Additionally, substantial consideration has been given to the use of the site by threatened bat species to ensure that such species continue to be provided for in terms of both a temporary and permanent water body of sufficient size and water quality to cater for their needs.

3.1.2 STIF Vegetation Removal

A small number of submissions, including that provided by the Sutherland Shire Environment Centre Inc. raised concerns regarding the clearing of STIF vegetation on the site, the Environment Centre indicating that the community should be protected. It was also suggested in one submission that ecosystem balance would be disrupted by such clearing. Although it is acknowledged that off-site replanting, whilst increasing the extent of STIF

occurring in the Sutherland Shire, cannot represent in situ replacement of the STIF removed from the site itself, the following factors should be considered:

- The majority of higher quality STIF vegetation is to be retained and protected on the site;'
- Proposed weed control, enhancement plantings and additional community restoration measures are expected to improve the value of the STIF community on the site over time, both as a community and as wildlife habitat; and
- On-site replanting of the STIF community is also proposed, linking with the retained area of STIF in the western sector.

All of the above would also be expected to facilitate the maintenance and enhancement of ecosystem balance on the site.

3.1.3 Conflict Between Public Use of Site and Presence of Bats Creating a Health Risk

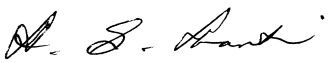
It should be noted that the site does not support a roosting colony of the Grey-headed Flying Fox and use of the site by the Flying Fox would be limited to nocturnal foraging and drinking from the water body. The situation on the subject site is therefore not comparable with the Maclean school flying fox issue.

3.1.4 Impacts on Waterbirds

As referred to in **Section 3.1.1**, further surveys are proposed prior to development to ensure that appropriate translocation procedures are in place for wildlife utilising the water body. Both the temporary water body and permanent water body, with associated planting of macrophytic plant species will both encourage water bird activity and enhance the exisiting water bird habitat.

If you have any queries about this assessment or require more information, please contact Alison Martin on 0412049393.

Yours sincerely



Alison Martin - Project Manager
On behalf of **Dr David Robertson - Director**