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Dear Bruno,

RE: Clyde Grey-headed Flying-fox colony - Assessment of impact and significance at 2 Factory Street, Clyde in Lieu of Granville

Introduction

This Assessment of Significance evaluates the risks associated with the proposed development of 2 Factory Street, Granville (the 'subject site'), significantly impacting upon the NSW *Threatened Species Conservation Act 1995* (TSC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) listed Grey-headed Flying-Fox (*Pteropus poliocephalus*).

ELA understands that a Rezoning Application (RZA) is required to be submitted for the demolition of the existing infrastructure at the previously mentioned address to make way for four multiple storey residential buildings (up to six storeys in height). GHFF are listed as 'vulnerable' under both the NSW TSC Act and EPBC Act. Therefore, in accordance with Section 5A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), an Assessment of Significance detailing the likelihood of proposed development impacting upon the GHFF colony is required to accompany the RZA.

Grey-headed Flying-foxes occupy a number of urban camps throughout Sydney, including the Clyde GHFF camp occupies the trees that grow along the Duck River next to the Clyde Railway Station, approximately 20 km west of Sydney CBD (**Figure 1**). The camp is situated on Duck River, approximately 100-150m away from the 2 Factory Street where the demolition and construction activities are proposed (**Figure 1**).

The Clyde camp is recognised as a maternal camp, is ~ 0.26 – 0.8 ha in size and has been occupied since 2000 – 2001 (van der Ree *et al.* 2009). Although, small in size, at its peak this camp has accommodated approximately 8,000 – 10,000 GHFF individuals (van der Reed *et al.* 2009). Typical of other GHFF camps, the size of the Clyde camp fluctuates with time and has previously been empty when the entire colony left in 2007, possibly. The camp was repopulated by ~2000 – 4000 individuals in the 2008/2009 summer period (van der Ree *et al.* 2009). Recent counts undertaken between April 2010 and March 2012 show that the camp is

regularly occupied by ~600 – 2000 individuals (GHD 2010; John Martin pers comm.[1]). A recent survey undertaken in April 2012 found that the camp had been vacated (John Martin pers comm.).

Methods

The Clyde GHFF camp was visited by Dr Rodney Armistead on two separate occasions (24th and 30th of April 2012) to assess:

- The location and extent of the camp in relation to the 2 Factory Street site
- Conduct a count to determine approximate GHFF densities
- Monitor fly-out patterns undertaken by individual GHFF in relation to the 2 Factory Street site

The site visits included a walk through the subject site and along Duck River from the railway station to Seventh Street, to locate and conduct GHFF counts (**Figure 2**). Further site assessments were undertaken from the railway bike path, Duck River Bridge (where the core roost area can be easily viewed) (**Figure 3**) the Clyde Railway Station overpass and from the car parked on Factory Street. These assessments were undertaken between 1800hrs to 1930hrs.

Limitations of survey

Please note this survey and Assessment of Significance does not represent a full Flora and Fauna Assessment. The works conducted for this report focused solely on Clyde GHFF Camp.

Results

During the site visit no GHFF were observed in the Clyde camp. Therefore, no habitat use, abundance or distribution estimates were made for the species. Further, it was impossible to determine the fly out patterns taken by dispersing GHFF as they undertake their nocturnal foraging activates and whether they will be affected by the proposed six storey building.

The site assessment did reveal the location of the camp in relation to 2 Factory Street, Duck River, surrounding vegetation, man-made structures and the rail corridor. Previous surveys have shown that the camp occupies the large willows shown in **Figure 3**. From these observations we suggest the GHFF could potentially avoid using a fly-out pattern that would not conflict with the proposed construction of six storey buildings at the site. We suspect that in preference, GHFF would use a "pathway of least resistance" and fly in either in a southerly or easterly direction over Duck River and/or the existing business precinct immediately to the east of the site.

Duck River flows in north-south direction, while the northerly direction is potentially blocked by a busy rail line, the southerly extent is open and generally free of structures. Grey-headed Flying-foxes tend to leave their camp and fly in the generally direction of their main and/or available food resources (van der Ree *et al.* 2009). Studies have shown that the largest fly-out streams from the Royal Botanical Gardens (RBG), Sydney, occur in southerly and easterly directions (van der Ree *et al.* 2009). It is possible, that due to the close proximity of the two camps, that they would share similar food resources and consequently fly-out in the same direction. If this is the case, then it would be unlikely that the building of a six storey building at 2 Factory Street will impact upon the fly-out patterns of the GHFF that occupy the Clyde camp.

Mitigation

Although, the camp is presently empty it may become populated at any stage and we encourage all precaution prior to beginning and throughout all construction activities to avoid any potential impacts upon this threatened species and the Clyde camp. In order to assist with this we make the following recommendations:

Noise

Grey-headed Flying-foxes are easily stressed and disturbed by loud, sudden and continuous noises and vibration (Eby 2006). Demolition and construction work generates very loud, sharp, random noises and

[1] John Martin is the Wildlife Management officer at the Royal Botanic Gardens (RBG), Sydney NSW. The RBG is currently managing the translocation of a large GHFF colony within the grounds of the RBG and Domains Trust.

vibrations from explosion, hydraulic hammers, rock breakers, large trench diggers and other machine activities. Such noises have been shown to disrupt GHFF and this colony has vacated the camp previously possibly in response to other construction activities. Stress among GHFF is a considerable concern and can result in:

- An indirect loss of roosting habitat if GHFF permanently vacate the Clyde camp.
- Death
- Decreased health and reproductive potential
- Increased vulnerability to predation

Because of these reasons we encourage that the demolition works should preferably conducted while the camp is empty or during cooler winter months of the year. This is at a time when most Sydney GHFF camps are generally at their least populated and therefore will not interfere with critical life cycle stage such as birthing, lactating or mating. GHFF females have been known to abort or abandon dependant young when stressed.

Potential residential conflicts

Conflicts between Flying-foxes, their camps and urban residents are becoming an increasingly common throughout south-eastern Australia. Conflicts arise between GHFF camps and local residents from the noise created by the GHFF, odour and from damage from excrement to property and the subsequent repair costs (Roberts 2006). If required, and noise impacts and damage to property occurs, then the construction of sound barriers or the planting of additional trees (not including in the current landscaping plans) should be considered in the design of the building and surrounding grounds. We also encourage under cover parking and laundry facilities.

Undertake pre-construction site inspections or surveys

Recent advice suggests that GHFF individuals are presently migrated south towards Sydney from areas along the north-coast of NSW (Pittwater Council staff pers comm. June 2012). Therefore, there is some likelihood of the Clyde camp becoming occupied.

Therefore, we recommend that before any construction activities are undertaken, a thorough site inspection of the Clyde Camp, surrounding areas and flight patterns (if GHFF are present) is be undertaken by a suitable qualified ecologist. This site inspection should assess the status of the camp (occupied/unoccupied), flight patterns and reproductive status of the GHFF (if present) in the camp. The object of this site inspection is to protect and avoid any potential negative impacts that may occur from the proposed works.

Assessment of Significance

(a). in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at the risk of extinction.

At the present time the camp is empty. If the proposed activities and the development were completed while the while the camp is empty, there will be no significant impact to the fly-out patterns and life cycle of the GHFF and a viable local population will not be placed at an increased risk of extinction.

However, if the colony returns before the proposed works and the development of the building is completed, it still remains unlikely that the proposed works will disrupt the lifecycle of this species and increase the risk of this population becoming extinct.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction

This species does not represent an endangered population

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i. **is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
ii. **is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**

This species does not represent an endangered population

(d) in relation to the habitat of a threatened species, population or ecological community:

i. **the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
ii. **whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
iii. **the importance of the habitat to be removed, modified, fragmented or isolated to the long term survival of the species, population or ecological community in the locality,**

The proposed works will be limited to 2 Factory Street and therefore no roosting or foraging habitat will be removed or modified. Further, the works are unlikely to isolate or fragment the Clyde camp from other known GHFF camps.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat for GHFF has been identified on the Register of Critical Habitat.

(f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A draft National recovery plan for the GHFF has been prepared by DECCW (2009). The specific objectives of this recovery plan are:

- To identify and protect foraging habitat critical to the survival of GHFFs throughout their range.
- To protect and increase the extent of key winter and spring foraging habitat of GHFFs.
- To identify roosting habitat critical to the survival of GHFFs.

- To protect and enhance roosting habitat critical to the survival of GHFFs.
- To substantially reduce deliberate destruction of GHFFs in fruit crops.
- To reduce negative public attitudes toward GHFFs and reduce conflict with humans.
- To increase public awareness and understanding of GHFFs and the recovery program, and to involve the community in recovery actions, where appropriate, to reduce the threat of negative public attitudes and conflict with humans.
- To monitor population trends in GHFFs so as to monitor the species' national distribution and status.
- To assess and reduce the impact on GHFFs of electrocution on powerlines and entanglement in netting and on barbed-wire.
- To improve knowledge of the demographics and population structure of GHFFs in order to increase understanding of the ecological requirements of the species.
- To increase the effectiveness and efficiency of recovery initiatives for GHFFs by working cooperatively with conservation and management programs with overlapping objectives to remove or reduce the impact of threatening processes on the species.
- To maintain an effective GHFF National Recovery Team to oversee the implementation of the GHFF National Recovery Plan to remove or reduce the impact of threatening processes on the species.
- To provide long-term economic benefits associated with the protection of ecosystem services, promotion of sustainable forest management, improved crop protection regimes, promotion of sustainable agricultural practices and increased viability of some commercial fruit industries.

The current proposal is unlikely not to conflict with any of the priority actions listed in the Draft Recovery Plan.

(g) The action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The proposed action does not constitute and is not part of a key threatening process (KTP), and will not result in the operation or increase in the impact of a KTP.

Conclusions

Presently the camp is empty and the proposed works are unlikely to impact or result in the loss of any foraging or roosting habitat to the species. **However, if the colony returns to the camp it still remains unlikely that the proposed development will impose a significant effect on the Clyde GHFF camp given that:**

- **The species is highly mobile and has the ability to:**
  - **avoid tall buildings during flying activities**
  - **avoid flying into windows or buildings**
  - **use alternative fly-out pathways, which occur at the site in the form of Duck River and adjacent business precinct**
  - **use similar flights patterns as those identified at the RBG and fly in the opposite direction of the proposed development**
  - **use alternative camps, such as the Parramatta Park Camp which is located ~10km away**
- **This is species is a highly mobile migratory species and can travel up to 50 km during nightly feeding forays and migrate up to 750 km during winter migrations (Churchill 2008).**
- **The transitory nature of the Clyde camp, with the camp moving to alternate roosts, presumably following food resources if required.**
- **The works do not remove any foraging or roosting habitat from the area**
- **The colony has been shown to be dynamic, with camp occupancy and densities fluctuating over time in response to both natural and human induced factors. Previous history shows that the camp will be re-populated over time if completely emptied.**

- **The species is gregarious and any displaced individuals are likely to take up residency among any of the numerous camps located within Sydney and along the NSW coast if necessary.**
- **Will not result in the isolation of an area of known habitat from other areas of potential habitat**
- **A number of recommendations and subsequent amelioration measures have been provided in this report to avoid potential impacts associated with the proposed demolition and construction activities. If these are implemented via and environmental management then the plan the works are unlikely to significantly impact on the colony.**

Concluding remarks

No GHFF were recorded during the present assessment. However, evidence suggests that the camp was recently vacated sometime between late March/early April 2012. Prior to this, surveys undertaken by RBG staff show counts of ~2000 individuals being recorded in February 2012 and ~ 1200 individuals in March 2012. An April survey found the camp to be empty (John Martin pers comm.). Although there is some uncertainty as to why the entire camp vacated, the most likely explanations include.

- A large *Corymbia maculata* (Spotted Gum) blossom along the NSW south coast near Batemans Bay and in the Hunter Region (John Martin pers comm.).
- A response to the cooler summer and autumn weather conditions recorded in Sydney 2012 (Parramatta Council pers comm. 2012).

As stated, if the colony returns before the proposed development is completed, it still remains unlikely that the proposed works will disrupt the flight patterns and lifecycle of this species to such a level to place this population at the risk of extinction.

On the basis of the above considerations, it is unlikely that the proposed development of four multiple storey residential buildings up to six storeys in height will result in a significant effect on the life cycle, foraging activities and survival of the Grey-headed Flying Fox.

Consequently, a Species Impact Statement is not required for the proposal with respect to this species.

If you have any further queries regarding any of the above, I can be contacted on the below numbers.

Sincerely,

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References

Roberts, B. J. (2006). Management of Urban Flying–fox Camps. Issues of relevance to camps in the Lower Clarence Valley, NSW. A report prepared for Valley Water Inc and The Department of Environment and Conservation.

Department of Environment and Climate Change NSW (2007). Flying-fox camp management policy.

Eby, P. (2006). Site Management Plan for the Gre-headed Flying-fox Camp at the Sydney Desalination Plant Site. A report to Sydney Water Corporation.

van der Ree, R., North, J. M., and Hsu. T. (2009). Public Environmental Report: Proposed relocation of a camp of Grey-headed Flying-foxes (Pteropus poliocephalus) from the Royal Botanical Gardens Sydney.

Figure 1. Location of the 2 Factory Street (subject site) and the Clyde Grey-headed Flying-fox camp. Observations points mark the locations from which the day time and nocturnal site assessments were undertaken.

Figure 2. Location of Clyde Grey-headed Flying-fox camp in relation to other camps in the Sydney region.

Figure 3. Willows, Camphor Laurels and other trees along Duck River utilised by the Clyde Grey-headed Flying-fox camp. It can be seen that no GHFF are roosting at the time of the site visit (photo taken by Rod Armistead on the 24th of April 2012).