

E - Section 5A Assessments



Lot 66 in DP 551005
Pacific Highway, Moonee Beach

Supplementary Response Document
Detailed Response to Department of Planning
Post Exhibition

Appendix C
Section 5A Assessments

December 2008



Whelans InSites Pty Ltd
Level 12/80 Clarence Street Sydney NSW 2000
ph: 02 – 8234 8300 fax: 02 – 9262 6511
email: dfanning@insites.com.au

LOT 66 in DP 551005 PACIFIC HIGHWAY, MOONEE BEACH

PROPOSED RESIDENTIAL DEVELOPMENT

FLORA & FAUNA ASSESSMENT

December 2008

1 INTRODUCTION

1.1 Statutory Considerations

The *NSW Threatened Species Conservation Act 1995* (TSC Act) has modified the *NSW Environmental Planning & Assessment Act 1979* (EP&A Act) by, *inter alia*, including a requirement to determine “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*”. Section 5A identifies seven factors which “*must be taken into account*” by a consent or determining authority in administering Sections 78, 79C and 112 of the EP&A Act.

The factors contained within Section 5A of the EP&A Act which “*must be taken into account*” in determining “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” were amended in 2005, after proclamation of the *NSW Threatened Species Amendment Act 2002* (TSAA Act). This *Report* addresses the amended version of Section 5A and the relevant factors contained therein.

1.2 Relevant Biota

The subject site supports five “*endangered ecological communities*” - the SSFCF, SOFF, FWCF, LRF and CSM communities (addressed in the previous *Section 5A Assessments of Significance*). These ecological communities are located in the low-lying and flood-prone portions of the site or (in the case of the Littoral Rainforest) in a confined area.

No listed “*endangered populations*” have been recorded on the subject site or in the immediate vicinity.

Sixteen threatened fauna species have been (or may have been) recorded on the subject site (the Little and Common Bent-wing Bats, East Coast Freetail Bat, Yellow-bellied Sheath-tail Bat, Golden-tipped Bat, Large-footed Myotis, Grey-headed Flying Fox, Common Blossom Bat, Koala, Yellow-bellied Glider, Common Planigale, Regent Honeyeater, Osprey, Square-tailed Kite, Glossy Black Cockatoo and Green-thighed Frog).

Two threatened plant species have been recorded on the site (the Rusty Plum and the Moonee Quassia).

Detailed Section 5A *Assessments of Significance* have been prepared for all of these threatened biota in previous documentation for the ‘Moonee Waters’ 2007 *Concept Plan*. That concept design involved somewhat larger Northern and Southern Precincts than are now proposed (in the *Preferred Project Plan* for ‘Moonee Waters’). As a consequence, the Section 5A Assessments for these biota (listed above) remain valid. Indeed, any potential for a “*significant effect*” to have been imposed upon any of those species is less than will be imposed by the *Preferred Project Plan*.

The DoP subsequently has requested an additional 18 *Assessments of Significance* for species “*which have a moderate to high potential to occur on site*”:

- | | |
|-----------------------------|--------------------------------|
| • Stephens Banded Snake | • Wompoo Fruit-dove |
| • Powerful Owl | • Barred Cuckoo-shrike |
| • Sooty Owl | • Squirrel Glider |
| • Red-tailed Black Cockatoo | • Tiger (Spotted-tailed) Quoll |

- Wallum Froglet
- Giant Barred Frog
- Masked Owl
- Eastern Grass Owl
- Double-eyed Fig Parrot
- Rose-crowned Fruit-dove
- Brown Tree-creeper
- Brush-tailed Plascogale
- Eastern Pygmy Possum
- Swift Parrot

Detailed *Section 5A Assessment of Significance* for each additional “*threatened species*” are contained herein.

1.3 Definitions Used in This Assessment

- Subject Site Lot 66 in DP 551005
- APZ Asset Protection Zones
- EP&A Act *Environmental Planning and Assessment Act 1979*
- TSC Act *Threatened Species Conservation Act 1995*

With respect to the relevant terms contained in Section 5A of the EP&A Act, the DECC *Guidelines* (August 2005) provide some definitions. However, some of those definitions are either inappropriate or ecological meaningless, unless interpreted in a scientific and ecologically relevant manner.

In that regard, an explanation of the interpretation and meaning of relevant terms used in this Section 5A *Assessment of Significance* is provided.

Study Area

For the purposes of this *Report*, the “*study area*” is not confined to the “*subject land and any additional areas which are likely to be affected by the proposal, either directly or indirectly*”, as defined in the DECC *Guidelines*. Because both the “*local population*” of a threatened species and the “*local occurrence*” of an “*endangered ecological community*”, are defined in the *Guidelines* as “*those that occur in the study area*”, the extent of the “*study area*” must, in some instances at least, be much greater than merely “*the subject land and additional areas which are likely to be affected by the proposal, either directly or indirectly*”.

For example, the “*subject land*”, even in its entirety, could not conceivably support even an individual of the Powerful Owl or Masked Owl. The definition, therefore, of a “*local population*” of either of those species as being confined to “*the population that occurs in the study area*” is essentially nonsensical. The individuals of those species which have or may have been recorded on the subject land, or the subject site, are merely one small part of a “*local population*” of such species. Similar considerations apply to most of the other threatened fauna species which have been recorded on or adjacent to the subject land.

Local Population

Given the considerations outlined above, the “*local population*” of the various threatened species which have been recorded on the subject land or adjacent to it is not confined to “*the population that occurs in the study area*”, unless the “*study area*” is defined as the extent of the “*local population*”.

Thus, the “*local population*” of the Powerful Owl and Masked Owl is defined as “*that population of those species of which the individuals recorded on the subject land are an integral part*”. Similar considerations apply to most of the other threatened fauna considered in this document.

On that basis, the “*local population*” of those species is distributed over a substantial ‘home range’, of which the subject land is generally but a small part.

Risk of Extinction

It is to be noted that Factors a, b and c of Section 5A of the EP&A Act address the issue of whether the relevant biota “*is likely to be placed at risk of extinction*” (emphasis added).

In considering the likelihood of a “*significant effect*” to be imposed as a result of any proposed development, therefore, it is necessary to consider whether that activity renders the relevant biota “*likely*” to be completely obliterated or rendered totally unviable on a “*local*” scale.

In this regard, it is not sufficient that a proposal be likely to adversely affect such biota in an adverse way, or even that there be some notable reduction in population or the distraction or abundance of relevant resources. Rather, it must be “*likely*” that the “*local population*” of a threatened species or an “*endangered population*” or the “*local occurrence*” of an “*endangered ecological community*” be rendered incapable of surviving in the locality.

2 SECTION 5A - FACTORS for CONSIDERATION

The factors which “*must be taken into account*” pursuant to Section 5A of the EP&A Act (as amended in 2005) are:

- (a) in the case of 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 risk of extinction.
- (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.
- (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.
- (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.
- (e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).
- (f) whether the action proposed is consistent with the objectives or actions of a *Recovery Plan* or *Threat Abatement Plan*.
- (g) whether 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.

4.1 Squirrel Glider <i>Petaurus norfolcensis</i>

Factor (a) Threatened Species and the Risk of Extinction

The Squirrel Glider is distributed along the east coast of Australia from north Queensland to Victoria, from the coast to the western ranges of the Great Dividing Range. It nests in hollow-bearing trees in mature eucalypt forest, but also occurs in regrowth forest close to urban centres, and (like the Yellow-bellied Glider) feeds on tree sap, pollen, nectar and insects.

Notwithstanding the presence of suitable habitat within the subject site, Squirrel Gliders have not been recorded despite targeted surveys, indicating that the species does not utilise the subject site. In any case, large areas of suitable habitat will be retained and managed for conservation purposes.

Consequently, it is not “*likely*” that the proposed development would render a “*viable local population*” of the Squirrel Glider (even if present) likely to be “*placed at risk of extinction*” (emphasis added).

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Squirrel Glider.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Squirrel Glider is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

The proposed development concept for the subject site involves the retention of approximately 75% of the site for conservation purposes. The *Conservation Area* contains extensive area of suitable habitat for Squirrel Glider, if it were to occur on the site.

Furthermore, the development design has specifically incorporated the retention of broad bands of vegetation through the site providing potential connection to other forested land to the west of the Pacific Highway.

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Squirrel Glider:

- the majority of suitable habitat for this species on the subject site at Moonee Beach is to be retained, and will not “*be removed or modified as a result of the action proposed*”. Most of the vegetation likely to be used by the Squirrel Glider is to be retained within the *Conservation Area*;
- given the retention of the majority of suitable habitat for this species on the subject site, and the provision of broad bands of forest through the site, there is no likelihood of habitat for this species becoming “*fragmented or isolated from other areas of habitat as a result of the proposed action*”; and
- given the extent of potential habitat to be retained and protected in the long-term for the Squirrel Glider on the subject site at Moonee Beach, the area of drier forest habitat which is to be “*removed, modified, fragmented or isolated*” for this species on the subject site is not regarded as of “*importance to the long-term survival of the species in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Squirrel Glider had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Squirrel Glider.

None of the current *Threat Abatement Plans* are of particular relevance for the Squirrel Glider or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee Beach does involve the clearing of “*native vegetation*”, a “*key threatening process*” defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Squirrel Glider. In addition, the species is not known to occur on the subject site and a significant amount of potential habitat will be retained and managed for conservation purposes in perpetuity.

The proposed development includes the temporary “*loss of hollow bearing trees*” as defined in the TSC Act. However, the Squirrel Glider has not been recorded on the subject site despite intensive surveys. In any case, the proposal will not result in a nett “*loss of hollow-bearing trees*”.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Squirrel Glider to any relevant or significant extent.

CONCLUSIONS

The proposed ‘Moonee Waters’ *Preferred Project Plan* development on the subject land at Moonee is not “*likely*” to impose a “*significant effect*” on the Squirrel Glider, because:

- no evidence for the Squirrel Glider has been obtained from subject site; and
- an extensive amount of potential habitat is to be retained and managed for conservation purposes within the *Conservation Area* on the site.

4.2	Brush-tailed Phascogale <i>Phascogale tapoatafa</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Brush-tailed Phascogale was formerly distributed throughout the dry sclerophyll forests and woodlands of temperate and tropical Australia, with a preference for open forest with sparse ground cover on high nutrient soils (Soderquist 1995; van der Ree *et al* 2001). Preferred habitats have traditionally been subject to high pressures from clearing for agriculture (van der Ree *et al* 2001) and as a result are now highly fragmented.

The Brush-tailed Phascogale is typically solitary and exhibits very low population densities with females occupying exclusive home ranges averaging 41ha and male average home ranges exceeding 100 ha (van der Ree *et al* 2001). The Brush-tailed Phascogale typically selects large trees (DBH ~ 70cm) for nesting, and these trees are generally under-represented in its preferred habitat (van der Ree *et al* 2006).

Given the habitat preferences of this species, the subject site is considered to be sub-optimal. Further, given the low number of records in the immediate vicinity and the failure to ever record this species on the subject site despite intensive survey, it is considered unlikely to occur. Further, a large proportion of the subject site is to be retained within the *Conservation Area*, which contains habitats of comparable quality for the Brush-tailed Phascogale.

The majority of habitat of relevance for a “*viable local population*” of the Brush-tailed Phascogale is to be retained within the *Conservation Area* on the subject site. It is not “*likely*” that the proposed development of the site at Moonee would render a “*viable local population*” of the Brush-tailed Phascogale likely to be “*placed at risk of extinction*” (emphasis added).

Factor (b) Endangered Populations and the Risk of Extinction

There is no “*endangered population*” of the Brush-tailed Phascogale.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Brush-tailed Phascogale is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

The proposed development concept for the subject site involves the retention of approximately 75% of the site for conservation purposes. Habitat within the *Conservation Area* is comparable to the habitat within the development area for the Brush-tailed Phascogale.

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Brush-tailed Phascogale:

- the habitat within the subject site at Moonee Beach is considered to be sub-optimal for the Brush-tailed Phascogale. Nevertheless, the majority of the subject site at Moonee is to be retained, and will not “*be removed or modified as a result of the action proposed*”;
- given the retention of the majority of the vegetation on the subject site, and the provision of broad bands of forest through the site, there is no likelihood of habitat for this species becoming “*fragmented or isolated from other areas of habitat as a result of the proposed action*” even if the species is present; and
- given the low relevance of the habitat present and the fact that the majority of this habitat would be retained and protected in the long-term on the subject site at Moonee, the small area of sub-optimal habitat which is to be “*removed, modified, fragmented or isolated*” for this species on the subject site is not regarded as of “*importance .. to the long-term survival of the species .. in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Brush-tailed Phascogale had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Brush-tailed Phascogale.

None of the current *Threat Abatement Plans* are of particular relevance for the Brush-tailed Phascogale or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Brush-tailed Phascogale.

Similarly, the proposal involves a range of measures to avoid or prevent relevant or significant alterations to water regimes or freshwater flows. There is not likely to be any significant impacts on the retained vegetation on the site which may be of relevance to the Brush-tailed Phascogale.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Brush-tailed Phascogale to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed in detail above with regard to the Brush-tailed Phascogale.

On the basis of the above considerations, the proposed development on the subject site at Moonee Beach is not considered “*likely*” to impose “*a significant effect*” on the Brush-tailed Phascogale.

4.3	Tiger (Spotted-tailed) Quoll <i>Dasyurus maculatus</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Tiger Quoll is recorded from a wide range of habitats, including rainforest, open forest, woodland, coastal heathland and inland riparian forest (Edgar & Belcher 1995). It has been recorded denning in caves, rock crevices and hollow logs (Edgar & Belcher 1995).

The entire subject site would provide potential habitat for this species, although it has not been recorded despite intensive surveys over a number of years. This species typically has a very large home range and the subject site itself is only likely to provide a proportion of the home range of an individual. Further, the majority of records of this species in the Coffs Harbour LGA occur to the west of the Pacific Highway in the heavily vegetated hinterland areas (DECC 2008). On that basis, the subject site is only likely to be utilised on a transient basis if at all.

The majority of habitat of relevance for a “*viable local population*” of the Tiger Quoll is to be retained within the *Conservation Area* on the subject site. It is not “*likely*” that the proposed development of the site at Moonee Beach would render a “*viable local population*” of the Tiger Quoll likely to be “*placed at risk of extinction*” (emphasis added).

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Tiger Quoll.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Tiger Quoll is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

The proposed development concept for the subject site involves the retention of approximately 75% of the site for conservation purposes. This habitat is suitable for the Tiger Quoll.

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Tiger Quoll:

- the subject site would provide only a portion of the habitat required by an individual of this species. Given the likely preference of the species for mesic forests to the west of the Pacific Highway in the Coffs Harbour area, it is considered that the subject site would be utilised on a transient basis at most. The majority of the subject site at Moonee is to be retained, and will not “*be removed or modified as a result of the action proposed*”;
- given the retention of the majority of the vegetation on the subject site, and the provision of broad bands of forest through the site, there is no likelihood of habitat for this species becoming “*fragmented or isolated from other areas of habitat as a result of the proposed action*”; and
- given the extent of potential habitat to be retained and protected in the long-term for the Tiger Quoll on the subject site at Moonee, the area of drier forest habitat which is to be “*removed, modified, fragmented or isolated*” for this species on the subject site is not regarded as of “*importance to the long-term survival of the species in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Tiger Quoll had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Tiger Quoll.[YUN1]

None of the current *Threat Abatement Plans* are of particular relevance for the Tiger Quoll or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Tiger Quoll.

Similarly, the proposal involves a range of measures to avoid or prevent relevant or significant alterations to water regimes or freshwater flows. There is not likely to be any significant impacts on the retained vegetation on the site which may be of relevance to the Tiger Quoll.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Tiger Quoll to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed in detail above with regard to the Tiger Quoll.

On the basis of the above considerations, the proposed development on the subject site at Moonee Beach is not considered “*likely*” to impose “*a significant effect*” on the Tiger Quoll.

4.4 Eastern Pygmy Possum <i>Cercartetus nanus</i>

Factor (a) Threatened Species and the Risk of Extinction

The Eastern Pygmy Possum is found in habitats from rainforest through sclerophyll forest to tree heath (Turner & Ward 1995). An important determinant of habitat quality appears to be the amount of pollen and nectar available as a consequence of high species diversity and floral abundance providing high pollen and nectar availability throughout the year (Tulloch & Dickman 2006).

Further, there is a strong association between the presence of the Eastern Pygmy Possum and microhabitats containing certain plant species, in particular Old Man Banksia, Heath-leaved Banksia and *Xanthorrhoea* spp., and to a lesser extent The Mountain Devil and Gynea Lily (Tulloch & Dickman 2006; Brad Law *pers comm* 2008).

The subject site is considered to provide only sub-optimal habitat for this species given the low abundance of suitable foraging resources. The most suitable habitat within the subject site would likely be the foredune complex along the eastern edge of the site which contains an abundance of Coast Banksia which is potentially a good nectar source for the Eastern Pygmy Possum. All of this habitat would be retained in the *Conservation Area* on the subject site.

Therefore, the habitat of most relevance for a “*viable local population*” of the Eastern Pygmy Possum (if present) is to be retained within the *Conservation Area* on the subject site. It is not “*likely*” that the proposed development of the site at Moonee Beach would render a “*viable local population*” of the Eastern Pygmy Possum (even if present) likely to be “*placed at risk of extinction*” (emphasis added).

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Eastern Pygmy Possum.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Eastern Pygmy Possum is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

The proposed development concept for the subject site involves the retention of approximately 75% of the site for conservation purposes, including all of the Foredune Complex which is likely to provide the most relevant habitat for the Eastern Pygmy Possum.

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Eastern Pygmy Possum (assuming the species is present):

- the vast majority of the subject site is considered to be sub-optimal habitat for the species given the low abundance of potential foraging resources. The most relevant habitat on the subject site is likely to be the Foredune Complex which contains an abundance of Coast Banksia, and all of this habitat would be retained within the *Conservation Area*. Therefore, relevant habitat for this species on the subject site at Moonee Beach will not “*be removed or modified as a result of the action proposed*”;
- given the retention of the majority of the vegetation on the subject site, including all the most relevant habitat for the Eastern Pygmy Possum, and the provision of broad bands of forest through the site, there is no likelihood of habitat for this species becoming “*fragmented or isolated from other areas of habitat as a result of the proposed action*”; and
- given the extent of potential habitat to be retained and protected in the long-term for the Eastern Pygmy Possum on the subject site at Moonee Beach, the area of drier forest habitat which is to be “*removed, modified, fragmented or isolated*” for this species on the

subject site is not regarded as of “*importance to the long-term survival of the species in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Eastern Pygmy Possum had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Eastern Pygmy Possum

The only *Threat Abatement Plan* which could potentially be of relevance for the Eastern Pygmy Possum or its habitat is that relating to the European Red Fox. However, even if the Eastern Pygmy Possum is present on the subject site, the proposal will have no adverse effect with respect to the European Red Fox.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee Beach does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Eastern Pygmy Possum.

Further, the proposal will not exacerbate the effects of “*Predation by the Red Fox*” or “*Predation by the Feral Cat*”.

In addition, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Eastern Pygmy Possum to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed in detail above with regard to the Eastern Pygmy Possum.

On the basis of the above considerations, the proposed development on the subject site at Moonee Beach is not considered “*likely*” to impose “*a significant effect*” on the Eastern Pygmy Possum.

4.5 Red-tailed Black Cockatoo *Calyptorhynchus banksii*

Factor (a) Threatened Species and the Risk of Extinction

The Red-tailed Black-Cockatoo is the most widespread of the Black-Cockatoos, ranging broadly across much of northern and western Australia as well as western Victoria. In NSW, one population occurs on the northwestern slopes and plains, but another small isolated population is found in the coastal northeast, around the Tweed Shire (DEC 2005; Birds Australia 2008).

There are no records of the Red-tailed Black Cockatoo in the Coffs Harbour area, despite extensive surveys having been conducted during the Bird Atlassing period (Birds Australia 2008).

There is no evidence that even occasional individuals of a “*viable local population*” of the Red-tailed Black Cockatoo would utilise the subject site, let alone that any such population would be reliant on it for survival.

There is NO likelihood that a “*viable local population*” of this species would be “*placed at risk of extinction*” (emphasis added) by the proposed development, or that the “*life cycle*” of the Red-tailed Black Cockatoo would be “*disrupted*” by the proposed development site at Moonee Beach to any relevant (if indeed ANY) extent.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Red-tailed Black Cockatoo, as defined under the TSC Act, on the subject site or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Red-tailed Black Cockatoo is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

There is no records of the Red-tailed Black Cockatoo in the Coffs Harbour area, and the likelihood of the species utilising the subject site is consequently extremely low. In any case, the proposed *Preferred Project Plan* for the subject site involves the retention of approximately 75% of the site for conservation purposes. This *Conservation Area* will contain foraging resources that could theoretically be utilised by the Red-tailed Black Cockatoo if it occurred in the area.

Furthermore, the development design has specifically incorporated the retention of broad bands of vegetation through the site providing potential connection to other forested lands to the west of the Pacific Highway and to the south.

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Red-tailed Black Cockatoo:

- substantial areas of suitable habitat for this species is to be retained on the subject site at Moonee Beach, and only a small proportion of the resources for a “*viable local population*” will “*be removed or modified as a result of the action proposed*”;
- given the retention of suitable habitat for this species on the subject site, and the provision of broad bands of forest through the site, there is no likelihood of habitat for this species becoming “*fragmented or isolated from other areas of habitat as a result of the proposed action*”; and
- given the extent of habitat to be retained and protected in the long-term for the Red-tailed Black Cockatoo on the subject site at Moonee Beach, and the extent of resources for this species in the locality, the area of habitat which is to be “*removed, modified, fragmented or isolated*” for this species as a result of “*the action proposed*” on the subject site is not regarded as of “*importance .. to the long-term survival of the species .. in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Red-tailed Black Cockatoo had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Red-tailed Black Cockatoo.

None of the current *Threat Abatement Plans* are of particular relevance for the Red-tailed Black Cockatoo or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposal does involve the “*clearing of native vegetation*”, that removal will not involve the loss of significant areas of foraging habitat for the Red-tailed Black Cockatoo from the subject site. Substantial areas of suitable foraging habitat will be retained in the extensive *Conservation Area* on the site.

Vegetation within the subject site is theoretically suitable for the Red-tailed Black Cockatoo both in terms of foraging and nesting habitat. However, as discussed above there are no records in the Coffs Harbour area, and consequently the species is highly unlikely to utilise the site. Given those considerations, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not involve “*the operation of, or increase the impact of, a key threatening process*” of relevance to the Red-tailed Black Cockatoo to any significant extent.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Red-tailed Black Cockatoo to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed in detail above with regard to the Red-tailed Black Cockatoo.

On the basis of the above considerations, the proposed ‘Moonee Waters’ *Preferred Project Plan* is not “*likely*” to impose “*a significant effect*” on the Red-tailed Black Cockatoo.

4.6 Powerful Owl *Ninox strenua*

Factor (a) Threatened Species and the Risk of Extinction

The Powerful Owl inhabits moist eucalypts forests and both wet and dry sclerophyll forests along the ranges and east coast of NSW. Optimal habitat for the Powerful Owl consists of tall moist forest communities with abundant tree-hollows (especially very large hollows for nesting) and populations of arboreal marsupials for food. The Powerful Owl is a highly mobile and wide-ranging species, which occupies home ranges of 300 to 1500ha. The area to be cleared on the subject site represents only a small proportion of the home range of even an individual of this species, and the site therefore cannot be regarded as of particular significance for a population or even an individual of this species. Further, approximately 75% of the site will be retained and managed for conservation in perpetuity.

The Powerful Owl has been recorded within the subject site by the presence of pellet, and there is potential foraging and nesting habitat present. Notwithstanding the presence of suitable nest trees, however, Powerful Owl has not been recorded nesting on the subject site despite extensive surveys.

Given the size of the home range of the Powerful Owl, the relatively small area to be cleared and the context of the subject site in relation to vegetation in the local area, it cannot be maintained that the site is of significance for the maintenance even of an individual of the Powerful Owl. There is no possibility of the subject land being of significance for a “*viable local population*” of this species.

Given those considerations, there is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Powerful Owl such that a “*viable local population*” of this species is “*likely*” to be “*placed at risk of extinction*” (emphasis added) by the proposed development. It is not likely that the “*life cycle*” of the Powerful Owl would be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan to any relevant extent.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Powerful Owl, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Powerful Owl is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Powerful Owl:

- the “*action proposed*” on the subject land at Moonee will involve the removal of approximately 21% of the native vegetation from the site. However, the Powerful Owl has not been recorded foraging or nesting in this vegetation;
- the proposed development will not result in the fragmentation of any nesting/roosting sites or foraging habitat from the subject land given the location of the proposed development and of the land itself. The subject land will not become isolated or fragmented from adjoining habitat for the Powerful Owl; and
- the area of the vegetation to be removed is only a small proportion of the total home range of the Powerful Owl, and therefore the “*action proposed*” would not have a “*significant effect*” on any populations or individuals if in fact they do utilise the subject site at all considering the context of the locality.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve a relevant or significant area of “*habitat*” for the Powerful Owl being “*removed or modified*”;

- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the context of the site, the extent of surrounding urban development and the high mobility of the Powerful Owl and its ability to utilise urbanised environments; and
- is of no “*importance .. to the long-term survival*” of the Powerful Owl “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Powerful Owl had been declared by the Director-General of DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

The Powerful Owl is a subject species of the *Recovery Plan for Large Forest Owls* (DECC 2006), which sets out objectives for their recovery. Consideration of the relevant “*specific recovery objectives, actions and performance criteria*” identified within the *Recovery Plan* includes:

- assessment of the potential “*impacts on large forest owls and their habitats*”, which has been undertaken in this Assessment as part of the “*planning and environmental assessment process*” (Objective 4); and
- the proposal at Moonee achieves the minimisation of “*further loss and fragmentation of habitat by protection and more informed management of significant owl habitat (including protection of individual nest sites)*” (emphasis added). The subject site is not regarded as “*significant Powerful Owl habitat*”, as no individuals have been recorded in the studies undertaken on the subject site. The development as currently proposed does not involve any significant “*loss and fragmentation of habitat*” for this species (Objective 5).

The proposed development at Moonee does not contravene the relevant objectives identified in the *Approved Recovery Plan for Large Forest Owls* (DECC 2006).

None of the current *Threat Abatement Plans* are of relevance for the Powerful Owl or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject land at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable foraging or nesting habitat for the Powerful Owl. As a consequence, the proposal is unlikely to “*increase the impact*” of the “*key threatening process*” on the Powerful Owl.

The proposed development includes the temporary “*loss of hollow bearing trees*” as defined in the TSC Act. However, the Powerful Owl has not been recorded nesting on the subject site despite intensive surveys. In any case, the proposal will not result in a nett “*loss of hollow-bearing trees*”.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Powerful Owl to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Powerful Owl.

On the basis of the assessment provided above, the proposed development on the subject land at Moonee is NOT “*likely*” to involve the imposition of “*a significant effect*” on the Powerful Owl.

4.7	Masked Owl <i>Tyto novaehollandiae</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Masked Owl inhabits eucalypts forests from the east coast of NSW to the western plains. Masked Owls generally roost in old tree-hollows in gullies or upper slopes, and roost and nest sites are normally within 100 metres of a stream (DECC 2006).

The Masked Owl is a highly mobile and wide-ranging species with a home range of 400–1000 hectares. The proposed development will remove only a small proportion of the home range for even a individual Masked Owl, and therefore cannot be regarded as of particular significance to any population or even an individual of this species. Further, the Masked Owl has not been recorded utilising the subject site despite intensive surveys.

Given the size of the home range of the Masked Owl, the relatively small area to be cleared and the context of the subject site in relation to vegetation in the local area, it cannot be maintained that the site is of significance for the maintenance of even an individual of the Masked Owl. There is no possibility of the subject land being of significance for a “*viable local population*” of this species.

Given those considerations, there is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Masked Owl such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added). It is not “*likely*” that the “*life cycle*” of the Masked Owl would be “*disrupted*” by the proposed development at Moonee to any relevant extent.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Masked Owl, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Masked Owl is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Masked Owl:

- the “*action proposed*” on the subject land at Moonee will involve the removal of approximately 21% of the native vegetation from the site. However, the Masked Owl has not been recorded foraging or nesting in this vegetation;
- the proposed development will not result in the fragmentation of any nesting/roosting sites or foraging habitat from the subject land given the location of the proposed development and of the land itself. The subject land will not become isolated or fragmented from adjoining habitat for the Masked Owl; and
- the area of the vegetation to be removed is only a small proportion of the total home range of the Masked Owl. The “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals if in fact they do utilise the subject site at all considering the context of the locality.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve a relevant or significant area of “*habitat*” for the Masked Owl being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the context of the site, the extent of surrounding urban development and the high mobility of the Masked Owl and its ability to utilise urbanised environments; and

- is of no “importance...to the long-term survival” of the Masked Owl “in the locality”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “critical habitat” for the Masked Owl had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

The Masked Owl is a subject species of the *Recovery Plan for Large Forest Owls* (DECC 2006) which sets out the objectives for their recovery. Consideration of the relevant “specific recovery objectives, actions and performance criteria” identified within the *Recovery Plan* includes:

- assessment of the potential “impacts on large forest owls and their habitats”, which has been undertaken in this *Report* as part of the “planning and environmental assessment process” (Objective 4); and
- the proposal at Moonee achieves the minimisation of “further loss and fragmentation of habitat by protection and more informed management of significant owl habitat (including protection of individual nest sites)” (emphasis added). The subject site is not regarded as “significant owl habitat”, and does not involve and significant “loss and fragmentation of habitat” for this species (Objective 5).

The proposed development at Moonee does not contravene the relevant objectives identified in the *Approved Recovery Plan for Large Forest Owls*.

None of the current *Threat Abatement Plans* are of particular relevance for the Masked Owl or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “clearing of native vegetation” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Masked Owl. The removal or modification of vegetation from the subject land is unlikely to “increase the impact” of the “key threatening process” known as the “clearing of native vegetation” given the extent of habitat for this species in the locality and the lack of evidence indicating the use of the site by this species.

The proposed development may include the “loss of hollow bearing trees” as defined in the TSC Act. However, the Masked Owl has not been recorded utilising potential nesting habitat within the subject site and as such the proposal is unlikely to contribute to this process with regards to this species.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “key threatening processes” for the Masked Owl to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats” are discussed above with regard to the Masked Owl.

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* at Moonee is not considered “likely” to involve the imposition of “a significant effect” on the Masked Owl. the Masked Owl is a highly mobile and wide-ranging species which would not be reliant on the subject site.

4.8	Sooty Owl <i>Tyto tenebricosa</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Sooty Owl is an inhabitant of rainforests and moist eucalypt forests and is often associated with deep gullies. Foraging is usually restricted to dense forest, especially rainforest gullies, although individuals sometimes forage in areas of drier forest surrounding wet gullies or in open habitats besides wet forests such as along roadsides or in grassy clearings.

The Sooty Owl nests in large tree-hollows usually in dense moist forest and rainforest. Given the extensive distribution of preferred habitat in the Coffs Harbour area, it is considered unlikely that this species would utilise the sub-optimal habitat present on the subject site on any more than a transient basis. Further, this species has not been recorded utilising the subject site despite intensive surveys.

Given those considerations, there is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Sooty Owl such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added). It is not “*likely*” that the “*life cycle*” of the Masked Owl would be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan to any relevant extent (if at all).

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Sooty Owl, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Sooty Owl is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Sooty Owl:

- the “*action proposed*” on the subject land at Moonee will involve the removal of approximately 21% of the native vegetation on the site. However, this vegetation is considered to be sub-optimal habitat for the Sooty Owl, and the species has not been recorded foraging or nesting in this vegetation;
- the proposed development will not result in the fragmentation of any nesting/roosting sites or foraging habitat from the subject land given the location of the proposed development and of the land itself. The subject land will not become isolated or fragmented from adjoining habitat for the Sooty Owl; and,
- the area of the vegetation to be removed is only of a sub-optimal quality for the Sooty Owl and (given the extensive distribution of preferred habitat in the locality) it could only be expected to utilise the site on a transient basis at best. Therefore, the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals if in fact they do utilise the subject site at all considering the context of the locality.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve a relevant or significant area of “*habitat*” for the Sooty Owl being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the context of the site, the extent of surrounding urban development, the sub-optimal quality of the habitat and the high mobility of the Sooty Owl; and

- is of no “importance ... to the long-term survival” of the Sooty Owl “in the locality”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “critical habitat” for the Sooty Owl had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

The Sooty Owl is a subject species of the *Recovery Plan for Large Forest Owls* (DECC 2006) which sets out the objectives for their recovery. Consideration of the relevant “specific recovery objectives, actions and performance criteria” identified within the *Recovery Plan* includes:

- assessment of the potential “impacts on large forest owls and their habitats” has been undertaken in this *Report* as part of the “planning and environmental assessment process” (Objective 4); and
- the proposal at Moonee achieves the minimisation of “further loss and fragmentation of habitat by protection and more informed management of significant owl habitat (including protection of individual nest sites)” (emphasis added). The subject site is not regarded as “significant owl habitat”, and does not involve and significant “loss and fragmentation of habitat” for this species (Objective 5).

The proposed development at Moonee does not contravene the relevant objectives identified in the *Approved Recovery Plan for Large Forest Owls*.

None of the current *Threat Abatement Plans* are of particular relevance for the Sooty Owl or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “clearing of native vegetation” as defined in the TSC Act, the removal will not involve the loss of significant areas of suitable habitat for the Sooty Owl. The removal or modification of vegetation on the subject land is unlikely to “increase the impact” of the “key threatening process” known as the “clearing of native vegetation” given the extent of habitat for this species in the locality and the lack of evidence indicating use of the site by this species.

The proposed development may include the “loss of hollow bearing trees” as defined in the TSC Act. However, the Sooty Owl has not been recorded utilising potential nesting habitat within the subject site, and the proposal is therefore unlikely to contribute to this process with regard to this species.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “key threatening processes” for the Sooty Owl to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats” are discussed above with regard to the Sooty Owl.

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* on the subject land at Moonee is not considered “likely” to involve the imposition of “a significant effect” on the Sooty Owl.

4.9 Eastern Grass Owl <i>Tyto capensis</i>

Factor (a) Threatened Species and the Risk of Extinction

The Eastern Grass Owl is an inhabitant of open tussock grasslands, usually in treeless areas, but also inhabits old sugar can farms. It often occurs in marshy areas vegetated with tall dense tussocks of grass, especially Bladey Grass *Imperata cylindrica*. The Eastern Grass Owl breeds on the ground among dense clumps of tall grasses or sedges, often in swampy areas or heathland.

The Eastern Grass Owl has not been recorded on the subject site. Furthermore, the only potential habitat for this species is located in the open pelts of the SEPP 14 Wetland on the eastern side of the site, well away from any proposed development activities.

The subject site, in particular the area to be cleared, does not provide suitable habitat for this species. Therefore, there is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Eastern Grass Owl such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added). The “*life cycle*” of the Eastern Grass Owl would not be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan, even if the species is present on the site to any relevant extent.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Eastern Grass Owl, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Eastern Grass Owl is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Eastern Grass Owl:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of habitat for this species; and
- the proposed development will not result in the fragmentation of any nesting/roosting sites or foraging habitat from the subject land given that there is no potential habitat present in the vicinity of the development Precincts. Therefore the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals if in fact they do utilise the subject site at all considering the context of the locality.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Grass Owl being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the context of the site, the extent of surrounding urban development, the lack of suitable habitat near the proposal, and the mobility of the Grass Owl; and
- is of no “*importance...to the long-term survival*” of the Grass Owl “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Grass Owl had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

A *Recovery Plan* has not been prepared for the Grass Owl.

None of the current *Threat Abatement Plans* are of particular relevance for the Eastern Grass Owl or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of any potential or suitable habitat for the Eastern Grass Owl. The removal or modification of vegetation on the subject land will not “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” on the given the absence of habitat for this species.

Similarly, the ‘Moonee Waters’ *Preferred Project Plan* will not exacerbate the impacts of “*predation by the Red Fox*” or “*predation by the Feral Cat*” (as discussed in detail in Chapter B.1 of the *Preferred Project Plan Report*). The proposal is of no relevance in this regard, even if the Eastern Grass Owl is present.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Eastern Grass Owl to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Eastern Grass Owl.

On the basis of the assessment provided above, the proposed development on the subject land at Moonee is not considered “*likely*” to involve the imposition of “*a significant effect*” on the Eastern Grass Owl, because there is no suitable habitat on the subject site in the vicinity of *Preferred Project Plan*.

4.10	Double-eyed Fig Parrot <i>Cyclopsitta diophthalma</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Double-eyed Fig Parrot is limited to approximately five populations from Bundaberg in Queensland to the Hastings River in NSW (DEC 2005). It is usually associated with dry rainforest and wet sclerophyll forest, foraging predominantly on fig trees and other fruiting rainforest trees (DEC 2005).

Within the subject site at Moonee, habitat for this species is limited to the creekline on the northern boundary and a section of Littoral Rainforest in the east. This habitat occurs well outside of the proposed development area. Further, this Double-eyed Fig Parrot has not been recorded on the subject site. Given the lack of records of this species in the area on both the Atlas of NSW Wildlife (DECC 2008) and the Bird Atlas (Birds Australia 2008), this species could only be considered a rare vagrant in this part of NSW. The subject site is unlikely to form a significant area of habitat for a “*local population*” of the Double-eyed Fig Parrot.

There is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Double-eyed Fig Parrot such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added). Given the absence of relevant potential habitat in proximity to the ‘Moonee Waters’ Preferred Project Plan, the “*life cycle*” of the Double-eyed Fig-parrot would not be “*disrupted*” by the proposed development at Moonee to any relevant extent.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Double-eyed Fig Parrot, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Double-eyed Fig Parrot is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Double-eyed Fig-parrot:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of any habitat for this species; and
- the proposed development will not result in the fragmentation of any nesting/roosting sites or foraging habitat from the subject site. Therefore the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals, if in fact they do utilise the subject site at all.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Double-eyed Fig Parrot being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*”; and
- is of no “*importance ... to the long-term survival*” of the Double-eyed Fig Parrot “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Double-eyed Fig Parrot had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

The Double-eyed Fig Parrot is the subject species of an approved *Recovery Plan* (NPWS 2002) which sets out the objectives for its recovery.

Considering that all the potential habitat for this species within the subject site would be retained, and the lack of records within the locality (which indicate that the species is unlikely to utilise the site), the proposed development at Moonee would not contravene the relevant objectives identified in the *Recovery Plan*.

None of the current *Threat Abatement Plans* are of particular relevance for the Double-eyed Fig Parrot or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Double-eyed Fig Parrot. The removal or modification of vegetation on the subject land is unlikely to “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” given that the habitat for this species would be retained.

No other “*key threatening process*” of possible relevance to the Double-eyed Fig Parrot will be imposed or exacerbated by the ‘Moonee Waters’ *Preferred Project Plan*.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Double-eyed Fig Parrot.

On the basis of the assessment provided above, the proposed development on the subject land at Moonee is not considered “*likely*” to involve the imposition of “*a significant effect*” on the Double-eyed Fig Parrot.

4.11	Swift Parrot <i>Lathamus discolor</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to southeastern Australia from Victoria and the eastern parts of South Australia to southeast Queensland. In NSW there are historical records from all regions except the Upper Western, ranging north to Murwillumbah and Moree and west to Ivanhoe and near Wentworth (HANZAB). It is mainly recorded east of the Great Dividing Range in Central and Southern Tablelands regions and coastal regions south of the Hunter regions, and is considered rare further north (HANZAB).

In NSW the Swift Parrot occurs in areas where eucalypts are flowering profusely in winter or where there are abundant lerps. On the subject site, areas dominated by the Swamp Mahogany are considered to provide potential habitat. However, given the vagrancy of the species in the north coast region, this resource is unlikely to be utilised frequently. In any case, most areas of potential habitat on the subject site will be retained in perpetuity and managed for conservation.

There is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Swift Parrot such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added) by the proposed ‘Moonee Waters’ Preferred Project Plan. It is not likely that the “*life cycle*” of the Swift Parrot would be “*disrupted*” by the proposed development at Moonee to any relevant extent.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Swift Parrot, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Swift Parrot is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Swift Parrot:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of significant (if any) habitat for this species; and
- the proposed development will not result in the fragmentation of any habitat on the subject site. Therefore the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals if in fact they do utilise the subject site at all.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Swift Parrot being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*”; and
- is of no “*importance ... to the long-term survival*” of the Swift Parrot “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Swift Parrot had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

The Swift Parrot is the subject of an approved *Recovery Plan* (Swift Parrot Recovery Team 2001) which sets out the objectives for its recovery. Considering that all the potential habitat for this species within the subject site will be retained, and given the infrequent records in the locality (which indicate that the species is unlikely to frequently utilise the site), the proposed development at Moonee would not contravene the relevant objectives identified in the *Recovery Plan*.

None of the current *Threat Abatement Plans* are of particular relevance for the Swift Parrot or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Swift Parrot. The removal or modification of some vegetation on the subject land is unlikely to “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” given that the habitat for this species will be retained in the substantial *Conservation Area* on the site.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Swift Parrot to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Swift Parrot.

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* is not considered “*likely*” to involve the imposition of “*a significant effect*” on the Swift Parrot, because essentially all potential habitat for the Swift Parrot within the subject site would be retained in perpetuity and managed for conservation purposes.

4.12 Wompoo Fruit-dove <i>Ptilinopus magnificus</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Wompoo Fruit-dove occurs along the coast and coastal ranges from the Hunter River in NSW to the Cape York Peninsula. It is rare south of Coffs Harbour (DEC 2005).

This species generally occurs in or near rainforests, low elevation moist eucalypt forests and Brush Box forests, feeding on a diverse range of tree and vine fruits (DEC 2005). A small amount of habitat for this species is present along the northern boundary of the subject site and within the Littoral Rainforest in the east. These areas of habitat will be retained and managed as part of the proposal.

There is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Wompoo Fruit-dove such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added). It is not likely that the “*life cycle*” of the Wompoo Fruit-dove would be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Wompoo Fruit-dove, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Wompoo-fruit Dove is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Wompoo Fruit-dove:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of habitat for this species; and
- the proposed development will not result in the fragmentation of any habitat on the subject site. Therefore the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals of the Wompoo Fruit-dove.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Wompoo Fruit-dove being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*”; and
- is of no “*importance ... to the long-term survival*” of the Wompoo Fruit-dove “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Wompoo Fruit-dove had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

A *Recovery Plan* has not been prepared for the Wompoo Fruit-dove.

None of the current *Threat Abatement Plans* are of particular relevance for the Wompoo Fruit-dove or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of suitable habitat for the Wompoo Fruit-dove. The removal or modification of vegetation on the subject land is unlikely to “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” given that all of the habitat for this species would be retained.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Wompoo Fruit-dove to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Wompoo Fruit-dove

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* on the subject land at Moonee is not essentially all of the “*likely*” to involve the imposition of “*a significant effect*” on the Wompoo Fruit-dove, because potential habitat on the subject site for the Wompoo Fruit-dove will be retained.

4.13 Rose-crowned Fruit-dove <i>Ptilinopus regina</i>

Factor (a) Threatened Species and the Risk of Extinction

The Rose-crowned Fruit-dove occurs on the coast and ranges of eastern NSW and Queensland, from Newcastle to Cape York and in the Northern Territory (DEC 2005; Birds Australia 2008). Vagrants are occasionally found further south to Victoria.

Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest, and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. The vast majority of the potential habitat for this species within the subject site would be retained within the *Conservation Area*.

There is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Rose-crowned Fruit-dove such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added). It is not likely that the “*life cycle*” of the Rose-crowned Fruit-dove would be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Rose-crowned Fruit-dove, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Rose-crowned Fruit-dove is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Rose-crowned Fruit-dove:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of habitat for this species; and
- the proposed development will not result in the fragmentation of any habitat for the Rose-crowned fruit-dove. Therefore the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals, if in fact they do utilise the subject site.

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Rose-crowned Fruit-dove being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the context of the site, the extent of surrounding urban development and the lack of habitat within the development area; and
- will not effect any habitat of “*importance ... to the long-term survival*” of the Rose-crowned Fruit-dove “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Rose-crowned Fruit-dove had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

A *Recovery Plan* has not been prepared for the Rose-crowned Fruit-dove.

None of the current *Threat Abatement Plans* are of particular relevance for the Rose-crowned Fruit-dove or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of significant areas of suitable habitat for the Rose-crowned Fruit-dove. The removal or modification of vegetation from the subject land is unlikely to “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” given that the habitat for this species will be retained in the substantial *Conservation Area* on the site.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Rose-crowned Fruit-dove to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Rose-crowned Fruit-dove.

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* on the subject land at Moonee is not considered “*likely*” to involve the imposition of “*a significant effect*” on the Rose-crowned Fruit-dove.

4.14 Barred Cuckoo-shrike <i>Coracina lineata</i>
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Factor (a) Threatened Species and the Risk of Extinction

The Barred Cuckoo-shrike is distributed along coastal eastern Australia from Cape York to the Manning River in NSW, and is generally uncommon in NSW. This species inhabit rainforests and adjacent sclerophyll forests, predominantly foraging on fruit although it also eats seeds and insects (DEC 2005; HANZAB).

There is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Barred Cuckoo-shrike such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added) because essentially all suitable habitat for the species is to be retained on the site. It is not likely that the “*life cycle*” of the Barred Cuckoo-shrike would be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan to any relevant extent, if at all.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Barred Cuckoo-shrike, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Barred Cuckoo-shrike is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Barred Cuckoo-shrike:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of any habitat for this species; and
- the proposed development will not result in the fragmentation of any habitat for this species. Therefore, the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals (if in fact they do utilise the subject site at all).

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Barred Cuckoo-shrike being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the the lack of habitat within the development area; and
- is of no “*importance ... to the long-term survival*” of the Barred Cuckoo-shrike “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Barred Cuckoo-shrike had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

A *Recovery Plan* has not been prepared for the Barred Cuckoo-shrike.

None of the current *Threat Abatement Plans* are of particular relevance for the Barred Cuckoo-shrike or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of any suitable habitat for the Barred Cuckoo-shrike. The removal or modification of vegetation on the subject land is not likely to “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” given that the habitat for this species would be retained.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Barred Cuckoo-shrike to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Barred Cuckoo-shrike.

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* is not “*likely*” to involve the imposition of “*a significant effect*” on the Barred Cuckoo-shrike, because potential habitat on the subject site for the Barred Cuckoo-shrike will be retained.

4.15 Brown Tree-creeper <i>Climacteris picumnus</i>
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Factor (a) Threatened Species and the Risk of Extinction

The distribution of the Brown Tree-creeper in NSW is described as “*widespread but sparsely scattered*” east of the Great Dividing Range and “*widespread*” on and to the west of the Great Dividing Range (Higgins *et al* 2001). The Atlas of NSW Wildlife (DECC 2008) indicates that there are 2 records of this species in the Coffs Harbour LGA, dating from 1987-1994. Despite intensive levels of surveying within the region for the Bird Atlas, this species has not been recorded since.

The Brown Tree-creeper mostly occurs in eucalypt woodlands with an open grassy understorey, and sometimes in woodlands with one or more shrub layers. It does not generally occur in areas with a dense woody shrub layer (Higgins *et al* 2001), such as that over much of the subject site and the adjoining lands. Consequently, the subject site is not considered to provide habitat of importance for this species.

There is no possibility of the “*action proposed*” having an adverse effect on the “*life cycle*” of the Brown Tree-creeper such that a “*viable local population*” of this species is likely to be “*placed at risk of extinction*” (emphasis added) because essentially there is no habitat of importance for this species on the site. It is not likely that the “*life cycle*” of the Brown Tree-creeper would be “*disrupted*” by the proposed ‘Moonee Waters’ Preferred Project Plan to any relevant extent, if at all.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Brown Tree-creeper, as defined under the TSC Act, on the subject land or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Brown Tree-creeper is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

With respect to the relevant matters raised in Factor (d) of Section 5A of the EP&A Act “*in relation to the habitat*” of the Brown Tree-creeper:

- the “*action proposed*” on the subject land at Moonee will not involve the removal of any relevant habitat for this species; and
- the proposed development will not result in the fragmentation of any habitat for this species. Therefore, the “*action proposed*” cannot possibly have a “*significant effect*” on any populations or individuals (if in fact they utilise the subject site at all).

Given these circumstances, the “*action proposed*” on the subject land at Moonee:

- does not involve any “*habitat*” for the Brown Tree-creeper being “*removed or modified*”;
- does not involve “*an area of habitat*” for the species becoming “*fragmented or isolated from other areas of habitat*” given the lack of habitat within the development area; and
- is of no “*importance ... to the long-term survival*” of the Brown Tree-creeper “*in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Brown Tree-creeper had been declared by the Director-General of the DECC.

Factor (f) Recovery Plans and Threat Abatement Plans

A *Recovery Plan* has not been prepared for the Brown Tree-creeper.

None of the current *Threat Abatement Plans* are of particular relevance for the Brown Tree-creeper or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposed development of the subject site at Moonee does involve the “*clearing of native vegetation*” as defined in the TSC Act, that removal will not involve the loss of any relevant habitat for the Brown Tree-creeper. The removal or modification of vegetation on the subject site is not likely to “*increase the impact*” of the “*key threatening process*” known as the “*clearing of native vegetation*” given that potential habitat for this species would be retained, and little of the site is of relevance in any case.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Brown Tree-creeper to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed above with regard to the Brown Tree-creeper.

On the basis of the assessment provided above, the proposed ‘Moonee Waters’ *Preferred Project Plan* is not “*likely*” to involve the imposition of “*a significant effect*” (if indeed any effect) on the Brown Tree-creeper, because there is no relevant habitat on the subject site for the Brown Tree-creeper.

4.16 Giant Barred Frog *Mixophyes iteratus*

Factor (a) Threatened Species and the Risk of Extinction

The Giant Barred Frog is distributed along the east coast of Australia and in the adjoining ranges from the NSW central coast to southeastern Queensland. The Coffs Harbour/Dorrigo area is considered to be a stronghold for the species (DEC 2005).

This species is associated with permanent streams in rainforest and moist eucalypt forests below 1000m AHD (DEC 2005). Outside of the breeding season, the Giant Barred Frog forages amongst deep, damp leaf litter in rainforests, moist eucalypt forests and adjacent dry eucalypt forests (DEC 2005). Habitats within the subject site are marginal at best, and there is no breeding habitat present.

It is considered highly unlikely that this species would occur within the subject site, and it cannot be regarded as “*likely*” that a “*viable local population*” of the Giant Barred Frog is either present, or would be “*placed at risk of extinction*” (emphasis added) by the ‘Moonee Waters’ Preferred Project Plan.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant “*endangered population*” of the Giant Barred Frog, as defined under the TSC Act, on the subject site or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Giant Barred Frog is not an “*endangered ecological community*”.

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

The Giant Barred Frog occupies a range of forests and habitats including rainforests, moist sclerophyll forests and dry eucalypt forests. Whilst theoretically some of the forest within the subject site would provide suitable non-breeding habitat for this species, a lack of appropriate breeding habitat suggests that the species is unlikely to utilise the site. In this regard, any potential foraging habitat within the subject site is considered to be marginal.

With respect to the relevant matters addressed in Factor (d) of Section 5A, with respect to the Giant Barred Frog:

- potential foraging habitat within the subject site is unlikely to be utilised because there is no breeding habitat. There are no records of the species from the site, and the Giant Barred Frog is unlikely to occur at the site. Given these considerations habitat for this species is unlikely to be “*removed or modified as a result of the action proposed*”;
- given the retention of substantial areas of potential habitat on the site, it is not likely that suitable habitat for this species would become “*fragmented or isolated from other areas of habitat as a result of the proposed action*”; and
- given that this species is unlikely to utilise the subject site, that area of potential non-breeding habitat which is to be “*removed, modified, fragmented, or isolated*” as a result of the proposed activities is not regarded as of particular “*importance*” when considering “*the long-term survival of the species in the locality*”.

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this Report, no “*critical habitat*” for the Giant Barred Frog had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Giant Barred Frog.

None of the current *Threat Abatement Plans* are of particular relevance for the Giant Barred Frog or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposal does involve the “*clearing of native vegetation*” (which is listed as a “*key threatening process*” on the TSC Act), that removal will not involve the loss of significant areas of habitat (if indeed any areas of habitat) for the Giant Barred Frog.

Given those considerations, the proposed development of the subject site at Moonee Beach will not involve “*the operation of, or increase the impact of, a key threatening process*” of relevance to the Giant Barred Frog to any significant extent. As noted above, the proposal is not considered “*likely*” to place a “*viable local population*” of the Giant Barred Frog “*at risk of extinction*” (emphasis added), notwithstanding the removal of some native vegetation from the site.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Giant Barred Frog to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed in detail above with regard to the Giant Barred Frog.

On the basis of the above considerations, the proposed ‘Moonee Waters’ *Preferred Project Plan* is not considered “*likely*” to impose “*a significant effect*” on the Giant Barred Frog.

4.17 Wallum Froglet *Crinia tinnula*

Factor (a) Threatened Species and the Risk of Extinction

Wallum Froglets are confined to acid swamps of the 'Wallum' (sand plain swamp) country (Cogger 1996), inhabiting swamps with a pH reading between 4.3 and 5.2 (Barker *et al* 1995). Characteristic vegetation of these areas includes paperbark forests and woodlands, swamp heaths and sedgeland. These areas generally derive their acidity from humic acids leached by groundwater passing through organic layers on and below the sand. The acidic groundwater 'breaks out' in swales and other depressions.

Only a few frog species, including the Wallum Froglet, are able to tolerate the acidic conditions, whereas other more common species are excluded from these areas because of their intolerance of acids. Conversely, these Wallum species do not appear to readily compete with other frog species in neutral water conditions.

The Wallum Froglet was not recorded on the subject site despite intensive surveys. In any case, all potentially suitable habitat for this species will be retained and protected within the *Conservation Area*.

It cannot be regarded as "*likely*" that a "*viable local population*" of the Wallum Froglet would be "*placed at risk of extinction*" (emphasis added) by the 'Moonee Waters' *Preferred Project Plan*, even if such a population is present.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant "*endangered population*" of the Wallum Froglet, as defined under the TSC Act, on the subject site or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

The Wallum Froglet is not an "*endangered ecological community*".

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

The Wallum Froglet is confined to acid swamps of the 'Wallum' country with specific pH levels (Baker *et al* 1995; Cogger 1996). This species was not recorded on the subject site at Moonee Beach, and even if present would be confined to habitats within the *Conservation Area*.

In terms of the relevant matters addressed in Factor (d) of Section 5A, with respect to the Wallum Froglet:

- the proposed development areas on the subject site do not provide an area of known or potential habitat for this species. Habitat for this species will not be "*removed or modified as a result of the action proposed*";
- given the lack of suitable habitat on or adjoining the relevant parts of the subject site, the proposed development would not result in habitat for Wallum Froglet becoming "*fragmented or isolated from other areas of habitat as a result of the proposed action*"; and
- the vegetation which is to be "*removed, modified, fragmented, or isolated*" as a result of the proposed activities is not of any "*importance*" when considering "*the long-term survival of the species in the locality*".

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no “*critical habitat*” for the Wallum Froglet had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for the Wallum Froglet.

None of the current *Threat Abatement Plans* are of particular relevance for the Wallum Froglet or its habitat.

Factor (g) Key Threatening Processes

The proposed development of the subject site at Moonee Beach will not involve “*the operation of, or increase the impact of, a key threatening process*” of relevance to the Wallum Froglet.

Further, the proposed ‘Moonee Waters’ *Preferred Project Plan* will not impose or exacerbate any other potentially relevant “*key threatening processes*” for the Wallum Froglet to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of “*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*” are discussed in detail above with regard to the Wallum Froglet.

On the basis of the above considerations, the proposed ‘Moonee Waters’ *Preferred Project Plan* is not considered “*likely*” to impose “*a significant effect*” on the Wallum Froglet.

4.18 Stephens Banded Snake *Hoplocephalus stephensii*

Factor (a) Threatened Species and the Risk of Extinction

Stephen's Banded Snake is a highly specialised arboreal species which is reliant on large areas of continuous forests and tree-hollows for survival (Fitzgerald *et al* 2005). Not surprisingly, the majority of records in the Coffs Harbour LGA occur within the hinterland areas where there are large areas of contiguous forest.

Nevertheless, the subject site provides an area of potential habitat for this species, given the presence of tree-hollows and potential prey species such as the Bush Rat (Fitzgerald *et al* 2003). Conversely, remnant populations of the species are restricted to large forest blocks ranging from 9191ha to 74300ha, suggesting that the species is unable to maintain viable populations in smaller areas (Fitzgerald *et al* 2005).

The subject site provides some potential habitat for this species, the majority of which would be retained in the *Conservation Area*. The subject site *per se* is unlikely to support a viable population of this species, although the proposed development would ensure that connectivity is maintained with forested areas to the west of the Pacific Highway. Thus, even if Stephen's Banded Snake does utilise the site, its ability to do so will not be compromised by the proposed 'Moonee Waters' *Preferred Project Plan*.

It cannot be regarded as "*likely*" that a "*viable local population*" of Stephen's Banded Snake would be "*placed at risk of extinction*" (emphasis added) by the 'Moonee Waters' *Preferred Project Plan*.

Factor (b) Endangered Populations and the Risk of Extinction

There is no relevant "*endangered population*" of Stephen's Banded Snake, as defined under the TSC Act, on the subject site or in the locality.

Factor (c) Endangered Ecological Communities and the Risk of Extinction

Stephen's Banded Snake is not an "*endangered ecological community*".

Factor (d) Habitat Removal, Modification, Fragmentation, Isolation and Importance

Stephen's Banded Snake is reliant on large areas of contiguous forests with a high abundance of tree-hollows. The subject site in itself would not be large enough to support a local population, although it is possible (theoretically) that it could form part of a home range given its connectivity, tenuous though it be, to larger areas of forested land to the west.

With respect to the relevant matters addressed in Factor (d) of Section 5A, in relation to Stephen's Banded Snake:

- the proposed development at Moonee Beach will facilitate the retention and management of 76.29ha (75% of the site), which in part provides habitat for Stephen's Banded Snake. This species has not been recorded on the subject site or in the locality. Given that the site is located in a highly fragmented area and does not form part of a large continuous forest, it is unlikely to form a significant area of habitat for Stephen's Banded Snake. Therefore, a significant area of habitat is not likely to be "*removed or modified as a result of the action proposed*";
- the proposed development has provisions to ensure the current level of connectivity between the subject site and forested areas to the west is maintained. Therefore potential habitat for this species is unlikely to become "*fragmented or isolated from other areas of habitat as a result of the proposed action*"; and

- given the apparent reliance of this species on large contiguous areas of forest, and the relatively small and isolated nature of the subject site, the potential habitat present is not considered to be significant for Stephen's Banded Snake. Therefore, that vegetation which is to be "*removed, modified, fragmented, or isolated*" as a result of the proposed activities is not regarded as of particular "*importance*" when considering "*the long-term survival of the species in the locality*".

Factor (e) Critical Habitat – Direct and Indirect Effects

At the time of this *Report*, no "*critical habitat*" for Stephen's Banded Snake had been declared by the Director-General of NPWS.

Factor (f) Recovery Plans and Threat Abatement Plans

There is currently no *Recovery Plan* for Stephen's Banded Snake.

None of the current *Threat Abatement Plans* are of particular relevance for Stephen's Banded Snake or its habitat.

Factor (g) Key Threatening Processes

Whilst the proposal does involve the "*clearing of native vegetation*" (which is listed as a "*key threatening process*" on the TSC Act), that removal will not involve the loss of a significant area of habitat (if indeed any habitat) for Stephen's Banded Snake.

Considering this, the proposed development of the subject site at Moonee Beach will not involve "*the operation of, or increase the impact of, a key threatening process*" of relevance to Stephen's Banded Snake. As noted above, the proposal is not considered "*likely*" to place a "*viable local population*" of Stephen's Banded Snake "*at risk of extinction*" (emphasis added), notwithstanding the removal of some potential habitat from the site.

Further, the proposed 'Moonee Waters' *Preferred Project Plan* will not impose or exacerbate any other potentially relevant "*key threatening processes*" for Stephen's Banded Snake to any relevant or significant extent.

CONCLUSIONS

The seven factors which are required to be considered pursuant to Section 5A of the EP&A Act in the determination of "*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*" are discussed in detail above with regard to Stephen's Banded Snake.

On the basis of the above considerations, the proposed 'Moonee Waters' *Preferred Project Plan* is not considered "*likely*" to impose "*a significant effect*" on Stephen's Banded Snake..