

General Manager
Northern Beaches Council
PO Box 82
MANLY, NSW, 1655

Attention: Louise Kerr

4th August 2020

RE: DA2018/1332

This Ecological Statement is provided at the request of Lendlease in regards to a proposed modification to DA2018/1332. In the preparation of this assessment, I have relied upon civil plans provided by Lendlease (prepared by Cardno, dated 21st February 2020) that show the proposed footprint, previous plans (numbers A0001 to A0006, dated 1st August 2019) that show the existing conditions and approved footprint, and the arboricultural assessment of the proposed modification (prepared by Footprint Green, dated 7th July 2020). This modification has been facilitated by a redesign of the stormwater management system from that originally proposed, as well as the relocation within the building line of the western retaining wall and half of the northern retaining wall.

In order to judge the merit of the proposal to reinstate Building D, the ecological impact of the proposal has been measured against that of the consent:

- **The approved footprint.** The existing consent (DA2018/1332) includes the deletion of Building D and maintenance of that part of the site as native vegetation (Condition 3), the construction of new stormwater ponds (Condition 14), and implementation of the APZ (condition 23). In order to achieve Condition 3, the upper sediment basins will need to be decommissioned:
 - the implementation of the APZ
 - the removal of unstable trees
 - the removal of the lower existing sedimentation pond
 - the decommissioning of the upper two sedimentation ponds and maintenance as native vegetation
 - the construction of the new stormwater ponds
- **The proposed modification.** The relevant works for consideration include:
 - the implementation of the APZ
 - the removal of unstable trees
 - the decommissioning of the two uppermost existing sedimentation ponds
 - the removal of trees and other vegetation for the construction of Building D in the location of the upper ponds
 - regeneration and rehabilitation of the bushland below Building D to the boundary line, in keeping with the APZ

A detailed breakdown of the direct impacts on the 97 live subject trees identified within the bushland and works areas for the current consent and the proposed modification are provided in the table overleaf.

Tree number	Species	Provenance	Hollows	Consent	Proposed modification
8	<i>Ceratopetalum gummiferum</i>	Native		Keep	Keep
9	<i>Angophora costata</i>	Native		Keep	Keep
10	<i>Eucalyptus haemastoma</i>	Native		Keep	Keep
11	<i>Eucalyptus piperita</i>	Native		Keep	Keep
12	<i>Corymbia gummifera</i>	Native		Keep	Keep
13	<i>Corymbia gummifera</i>	Native		Keep	Keep
14	<i>Eucalyptus</i> sp dead	Native		Remove - unstable	Remove - unstable
15	<i>Eucalyptus piperita</i>	Native		Keep	Keep
16	<i>Eucalyptus piperita</i>	Native		Keep	Keep
17	<i>Eucalyptus piperita</i>	Native		Keep	Keep
18	<i>Angophora costata</i>	Native		Keep	Keep
19	<i>Eucalyptus piperita</i>	Native	Present	Keep	Keep
20	<i>Banksia serrata</i>	Native		Keep	Keep
21	<i>Angophora costata</i>	Native		Remove - APZ	Remove - APZ
22	<i>Angophora costata</i>	Native	Present	Remove - APZ	Remove - APZ
23	<i>Angophora costata</i>	Native		Keep	Keep
24	<i>Eucalyptus piperita</i>	Native		Keep	Keep
25	<i>Angophora costata</i>	Native		Keep	Keep
26	<i>Angophora costata</i>	Native	Present	Keep	Keep
27	<i>Angophora costata</i>	Native		Keep	Remove - Building D
28	<i>Eucalyptus piperita</i>	Native	Present	Remove - unstable	Remove - unstable
29	<i>Callicoma serratifolia</i>	Native		Keep	Keep
30	<i>Ligustrum lucidum</i>	Exotic		Remove – weed	Remove – weed
31	<i>Eucalyptus piperita</i>	Native		Remove - unstable	Remove - unstable
32	<i>Ceratopetalum gummiferum</i>	Native		Remove - old pond	Remove - Building D
33	<i>Angophora costata</i>	Native		Remove - old pond	Remove - Building D
34	<i>Eucalyptus</i> sp.	Native		Keep	Keep
35	<i>Angophora costata</i>	Native		Keep	Keep
36	<i>Angophora costata</i>	Native		Keep	Keep
37	<i>Corymbia gummifera</i>	Native		Keep	Keep
38	<i>Eucalyptus piperita</i>	Native		Keep	Keep
39	<i>Eucalyptus piperita</i>	Native		Keep	Keep
40	<i>Angophora costata</i>	Native		Keep	Keep
41	<i>Angophora costata</i>	Native		Keep	Keep
42	<i>Angophora costata</i>	Native		Remove – APZ	Remove - APZ
43	<i>Corymbia gummifera</i>	Native		Keep	Keep
44	<i>Angophora costata</i>	Native		Remove – APZ	Remove - APZ
45	<i>Callitris rhomboidea</i>	Native		Keep	Keep
46	<i>Eucalyptus piperita</i>	Native		Remove – unstable	Remove - unstable
47	<i>Banksia serrata</i>	Native	Present	Remove - old pond	Remove - Building D
48	<i>Callitris rhomboidea</i>	Native		Keep	Keep
49	<i>Callitris rhomboidea</i>	Native		Keep	Keep
50	<i>Angophora costata</i>	Native		Keep	Keep

Tree number	Species	Provenance	Hollows	Consent	Proposed modification
51	<i>Banksia serrata</i>	Native		Keep	Keep
52	<i>Angophora costata</i>	Native		Keep	Keep
53	<i>Corymbia gummifera</i>	Native		Keep	Keep
54	<i>Banksia serrata</i>	Native		Keep	Keep
55	<i>Eucalyptus piperita</i>	Native	Present	Remove - new ponds	Keep
56	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
57	<i>Angophora costata</i>	Native		Remove - new ponds	Remove - Building D
58	<i>Angophora costata</i>	Native		Remove - new ponds	Remove - Building D
59	<i>Allocasuarina littoralis</i>	Native		Remove - new ponds	Remove - Building D
60	<i>Corymbia gummifera</i>	Native	Present	Keep	Keep
61	<i>Angophora costata</i>	Native		Remove - new ponds	Remove - APZ
62	<i>Corymbia gummifera</i>	Native		Remove - new ponds	Keep
63	<i>Angophora costata</i>	Native		Remove - new ponds	Keep
64	<i>Corymbia gummifera</i>	Native		Remove - new ponds	Remove - APZ
65	<i>Corymbia gummifera</i>	Native		Remove - new ponds	Keep
66	<i>Banksia serrata</i>	Native		Remove - new ponds	Keep
67	<i>Corymbia gummifera</i>	Native		Remove - new ponds	Remove - APZ
68	<i>Angophora costata</i>	Native		Keep	Keep
69	<i>Eucalyptus</i> sp.	Native		Keep	Keep
70	<i>Acacia decurrens</i>	Native		Keep	Keep
71	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
72	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
73	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
74	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
75	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
76	<i>Acer negundo</i>	Exotic		Remove – weed	Remove – weed
77	<i>Angophora costata</i>	Native		Keep	Keep
78	<i>Callicoma serratifolia</i>	Native		Keep	Keep
79	<i>Callicoma serratifolia</i>	Native		Keep	Keep
80	<i>Callicoma serratifolia</i>	Native		Keep	Keep
81	<i>Eucalyptus piperita</i>	Native	Present	Keep	Keep
82	<i>Allocasuarina littoralis</i>	Native		Remove – APZ	Remove - APZ
83	<i>Pinus pinaster</i>	Exotic		Remove – weed	Remove – weed
84	<i>Schefflera actinophylla</i>	Not Locally Native		Remove – weed	Remove – weed
85	<i>Schefflera actinophylla</i>	Not Locally Native		Remove – weed	Remove – weed
86	<i>Schefflera actinophylla</i>	Not Locally Native		Remove – weed	Remove – weed
87	<i>Eucalyptus piperita</i>	Native	Present	Remove - unstable	Remove - unstable
88	<i>Angophora costata</i>	Native		Keep	Keep
89	<i>Callistemon viminalis</i>	Native		Keep	Keep
90	<i>Eucalyptus</i> sp.	Native		Keep	Failed- now gone
91	<i>Angophora costata</i>	Native		Keep	Keep
92	<i>Ceratopetalum gummiferum</i>	Native		Keep	Keep

Tree number	Species	Provenance	Hollows	Consent	Proposed modification
93	<i>Corymbia gummifera</i>	Native		Keep	Keep
94	<i>Angophora costata</i>	Native		Keep	Keep
95	<i>Eucalyptus sp.</i>	Native		Keep	Keep
96	<i>Angophora costata</i>	Native		Keep	Keep
105	<i>Corymbia gummifera</i>	Native		Keep	Keep
169	<i>Angophora costata</i>	Native		Remove – APZ	Remove - APZ
170	<i>Eucalyptus capitellata</i>	Native		Keep	Keep
171	<i>Eucalyptus piperita</i>	Native		Remove – APZ	Remove - APZ
172	<i>Eucalyptus piperita</i>	Native		Remove – APZ	Remove - APZ
173	<i>Eucalyptus piperita</i>	Native		Keep	Keep
174	<i>Corymbia gummifera</i>	Native	Present	Keep	Keep
175	<i>Eucalyptus sp.</i>	Native		Keep	Keep
No number Southern boundary	<i>Angophora costata</i>	Native		Keep	Keep
No number Southern boundary	<i>Eucalyptus piperita</i>	Native	Present	Keep	Keep

The comparison table below is a summary of the direct tree impacts on the live native trees of each scenario, according to the **primary** reason for a tree's removal. It is noted that the removal of unstable trees also contributes to the implementation of the APZ.

Scenario	Hollow-bearing trees		Native trees to be removed					Native trees to be retained
	Keep	Remove	Unstable	APZ	Existing sediment ponds	New stormwater ponds	Building D	
Approved footprint	6	5	4	8	3	11	0	60
Proposed modification	7	4	4	11	0	0	7	63

- **Hollow-bearing trees** – Of the 11 hollow-bearing trees identified across the bushland area and around the existing ponds, the proposed modification would retain 7 and remove 4, which is an improved outcome.
- **Unstable trees** – Each scenario has the same outcome – the removal of 4 unstable trees (all *Eucalyptus piperita* Sydney Peppermint). Note that at the time of consent, there were 5 unstable trees, but tree number 90 has recently failed and is now providing terrestrial habitat. This is a neutral outcome.
- **Decommissioning existing sediment ponds** – In order to maintain the area as native vegetation that was originally mooted for Building D, the gabion walls need to be removed, which will necessitate the removal of 3 trees. The construction of Building D will also result in the loss of these trees, and so this is a neutral outcome.
- **New stormwater ponds** – The approved footprint will result in the loss of 11 native trees for the new ponds. The new ponds are not required for the proposed modification, and only 4 of these trees are in conflict with Building D, and one required for the APZ. Thus, this is an improved outcome.

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- **APZ** – the APZ in the approved footprint relied upon the removal of all exotic trees, the 5 (now 4) unstable native trees, 11 native trees for the new ponds, and an additional 8 native trees specifically for the APZ. As the proposed modification includes the retention of bushland where the approved stormwater ponds are otherwise located, this part of the site has been reconsidered for bushfire hazard. After close inspection of the plan and further consultation on site with the bushfire expert Mr Stuart McMonnies, the APZ for the proposed modification is satisfactory with the following:
 - removal of tree 61 (*Angophora costata*) as per the approval, but for the APZ rather than for the new approved ponds; and
 - removal of 2 additional trees (numbers 64 and 67, both *Corymbia gummifera*).
 This is a small negative outcome.
 - **Aquatic habitat** – In the proposed modification, the bottom sedimentation pond will be retained, the weeds removed, and the surrounding lands managed through bush regeneration. The resultant opening of the canopy will improve the aquatic habitat and allow for planting of fringing native vegetation suitable for native fauna. This is an improved outcome.
 - **Native tree retention** – Overall, the proposed modification results in the loss of 3 fewer live native trees. This is an improved outcome.

Council has expressed concern re the “operational impacts” of Building D on fauna, and a response to each of these specific concerns is provided below.

- **Increased footprints.** The area proposed for Building D is already alienated by built form comprising a series of high gabion walls and permanent deep dark cold ponds overgrown by weed species. These existing ponds are of little ecological value. The existing disturbance footprint is 420 square metres, and the approved footprint is 740 square metres; whereas the proposed modification is confined to Building D and its associated disturbance curtilage, being only 540 square metres.
- **Increased human presence.** The Glenaeon retirement village is already occupied by several hundred residents and staff, and the addition of residents in Building D represent only a small increase. Being a retirement village, the residents are quiet and do not use that part of the site occupied by bushland. The area to be occupied by Building D is less than 20 metres from existing buildings in the village, and within 30 metres of the neighbouring lot. The proposed development area is adjacent to gardens and the sewer pump house, both of which are regularly maintained. Fauna on site are therefore already accustomed to the presence of humans and their vehicles, and the movements and noise this resident population makes. The addition of a small number of units overlooking the bushland does not significantly alter the type of use or intensity of use. This is unlikely to have an impact on the fauna of the site.
- **Edge effects.** Such effects are typically those indirect impacts associated with the opening up of an otherwise closed forest edge, increase in light and wind altering the vegetation structure and composition, and pollutants and nutrients in stormwater runoff. However, light and wind penetration are not relevant as the vegetation is already a woodland / open forest, and has been regularly opened up by the use of control burns. Best practice stormwater controls are to be employed to prevent downslope erosion, sedimentation and pollution, but any resultant impacts (such as weedy edges) will be controlled by the implementation of the approved Biodiversity Management Plan.
- **Increased noise.** As a retirement village, Glenaeon is a quiet and peaceful place, with little noise generated by the residents.
- **Increased light spill.** The area of bushland is already impacted by light spill from the existing surrounding buildings, but it still used by a number of fauna species. The increased light spill from the small number of additional units facing the bushland is considered insignificant, and it is recommended that external lighting is restricted for reasons of safety and amenity, and of a

design that minimises spill and glare. Further, external lighting can be controlled as a condition of consent.

- **Increased impact to fauna habitats and wildlife corridors.** The existing area mooted for Building D is already made up of major engineered walls and detention basins. Fauna habitats are already compromised by the nature of these ponds and the overwhelming dominance of weeds. The consent allows for further major engineering works in bushland outside of this area, whereas the proposed modification is smaller than the approved footprint, and removes the need for the additional detention basins. The smaller proposed footprint will remove fewer trees and retain an additional hollow-bearing tree compared with the approved footprint. The proposed modification also provides an opportunity to rehabilitate the south eastern corner of the site, which will provide improved connectivity with off-site downslope bushland. This neighbouring vegetation in turn eventually links with the riparian habitats associated with Snake Creek. Thus, the smaller less impactful footprint will not impose an increased adverse impact to fauna habitats, and instead will allow for the enhancement of the local wildlife corridor.
- **Ongoing loss of native species richness and cover from APZ maintenance.** The APZ is already part of the existing consent, independent of the modification. The management of the APZ need not change from that already approved, other than the removal of two additional trees specifically for hazard management.

Council also contends that the proposed modification is not in keeping with the objectives of Clauses 56, 58, and 60 of the *Warringah LEP 2000*. An exploration of these objectives (see table overleaf) shows this concern to be unwarranted. The proposed Building D is located in a constructed landscape, engineered as part of the stormwater management system for the original retirement village development above. While the system has exploited a natural slope from west to east, it is entirely fabricated, with water movement resulting from collected stormwater and channelised flow between sediment basins.

The natural features of the site – the bushland and rocky outcrops – will be retained in accordance with the consent and, in places, enhanced by restoration activities. Building D does not directly impact rocky habitat that has the potential to be used by microbats and is sufficiently distant from such habitat to avoid and minimise indirect disturbances. The modification will not impose additional ecological impacts that have not already been addressed and / or offset as part of the approved documentation.

In addition to the above, Council states that the Biodiversity Offsets would not change significantly, however the offsets would not change at all. Vegetation that falls within an APZ is treated for the purposes of offsetting in an identical manner to vegetation that falls within a development footprint. Therefore, the proposed modification requires no additional biodiversity credits to be retired.

Overall, the proposed modification will result in a better outcome both quantitatively and qualitatively in that, in comparison with the approved footprint, an additional 3 live native trees can be retained, including a hollow tree. The proposed deletion of the new ponds provides an additional opportunity to retain and restore the habitat in the site's south eastern corner. This comparison shows how the proposed modification will deliver a better ecological outcome to the one that has been approved. In my opinion, this modification is consistent with all relevant legislative requirements to avoid and minimise ecological impacts, and protects important habitats and landscape features.



Elizabeth Ashby

**Principal Consultant
Keystone Ecological**

Provision	Comments
<p>Clause 56 – Retaining distinctive environmental features on the site</p> <p><i>Development is to be designed to retain and complement any distinctive environmental features of its site and on adjoining and nearby land.</i></p> <p><i>In particular, development is to be designed to incorporate or be sympathetic to environmental features such as rock outcrops, remnant bushland and watercourses.</i></p>	<p>The site supports a complex array of distinctive environmental features, all of which will be retained:</p> <ul style="list-style-type: none"> • Exposed rocky plateau. This part of the site is almost entirely developed and will retain its current character. • Rocky escarpment with overhangs. The natural part of the escarpment with rocky niches will remain untouched and is distant from the proposed Building D. • Rock outcrops. Below the scarp are several areas of outcropping sandstone. These will remain intact, being outside of and generally distant from the location of Building D. • Remnant bushland. Although the area occupied by naturally occurring vegetation will be managed for bushfire hazard as part of the current consent, it will remain as natural vegetation and therefore essentially maintain its current character, albeit with a less dangerous fuel load. • Watercourses. The existing sediment ponds are fed by collected stormwater and, while piped flow out of the upper gabions has partially gouged an overland flow path in places, site inspections by hydrological engineers “<i>did not identify a defined channel with bed and banks or riparian vegetation or land that would meet criteria of a riparian corridor</i>” (Waterways Impact Statement prepared by Cardno, 26th June 2020). Investigations by Cardno and Keystone Ecological (including historical aerial photography, historical maps, site inspections) have established that the headwaters of Snake Creek occur to the east of the subject site but not within it; this part of the site does not support a natural watercourse, contrary to Council’s unverified mapping. <p>Nevertheless, the proposed modification provides an opportunity to mimic riparian vegetation and habitats in the south eastern corner of the site, in association with the retained sediment pond.</p>
<p>Clause 58 – Protection of existing flora</p> <p><i>Development is to be sited and designed to minimise the impact on remnant indigenous flora, including canopy trees and understorey vegetation, and on remnant native ground cover species.</i></p>	<p>The proposed Building D is located within the already alienated part of the site, and will result in the retention of an additional 4 native trees. Any impacts to the understorey as a result of the APZ are part of the original consent and independent of the proposed modification. Nevertheless, restoration activities in the area mooted for the new detention basins will deliver restored bushland where weed infestations currently occur.</p>
<p>Clause 60 – Watercourses and Aquatic Habitats</p> <p><i>Development is to be sited and designed to maintain and enhance natural watercourses and aquatic habitat.</i></p>	<p>The site does not support a natural watercourse or aquatic habitat. The engineered stormwater system has resulted in permanent sediment ponds, that are dark and cold, and infested with weedy vegetation. The proposed modification will improve and enhance these features, in line with the off-site downslope riparian habitats.</p>