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29 October 2019
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Attention: Jeff Bretag

Delivered by email: jeff@perceptionplanning.com.au

Subject: 339 Tarean Rd Karuah Preliminary Ecological Constrains Assessment - Addendum Letter

This letter has been prepared to address a request for additional information from Port Stephens Council with regard to the Planning Proposal for 399 Tarean Road Karuah. Council have requested additional information on the following matter, regarding the Ecological Constraints Assessment:

Requirements of the Port Stephens Comprehensive Koala Plan of Management (CKPoM):

- A koala habitat assessment is required to define where koala feed trees occur on site as well as the density in which they occur. Please note that Koala habitat as defined by Lunney et al. (1998) is classified as follows:
    - Preferred/primary Koala habitat consists of dominant or co-dominant preferred koala feed trees.
    - Supplementary/secondary koala habitat consists of between 10 % - 35 % preferred koala feed trees.
    - Marginal koala habitat consists of <10% preferred koala feed trees.
- A koala habitat assessment includes assessing the accuracy of the koala habitat planning maps and defining koala habitat on site in accordance with Section 5.5 of the CKPoM Resource Document, which provides a guidelines for Koala Habitat Assessments. The koala habitat assessment is required in order to address the Performance Criteria for Rezoning Requests in accordance with Appendix 2 of the Port Stephens Comprehensive Koala Plan of Management (CKPoM).

Threatened Ecological Community Assessment:

- Areas of Spotted Gum Ironbark Forest need to be assessed for their potential to be commensurate with the threatened ecological community listing of Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions with reference to the NSW Scientific Committee's Final Determination. These areas occur in the south of the subject site, where residential rezoning is proposed and need to be assessed in order to ensure appropriate zone boundaries.

These matters are addressed in the following pages.

If you require anything further on this matter, please contact me on the details provided.

Sincerely,

Kleinfelder Australia Pty Ltd

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1. REQUIREMENTS OF THE PORT STEPHENS COMPREHENSIVE KOALA PLAN OF MANAGEMENT (CKPOM)

Kleinfelder conducted field surveys on the 30 April and 2 May 2019. During these field surveys the presence of Koala feed trees were recorded. **Figure 2** from the Ecological Constraints Report shows the survey tracks, showing the site was reasonable well covered, enough to make an estimate of the density of Koala feed trees. During the field surveys, two Koala feed trees were identified; *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus punctata* (Grey Gum). It is estimated that the density of Koala feed trees across the majority of the site was less than 10%. In the south western corner, the density of these two feed trees is likely to be between the 10% and 35% mark, making the south western corner of the site possible supplementary koala habitat.

Hence on the 4 November 2019, two Kleinfelder ecologists conducted a detail koala habitat assessment, by completing 7, 50m x 20m plots, whereby all overstorey tree species were counted and identified. From this data, the % of koala feed trees could be accurately determined, and the koala habitat mapped finalised.

The below table outlines the results of the habitat assessment floristic plots.

Table 1: Floristic plot result data

Koala Plot	Common Species Names	Numbers	% of tree species
1	Stringybark	18	29
	Bloodwood	18	29
	Smooth-barked Apple	6	9.6
	Swamp Oak	3	4.8
	Ironbark	13	21
	Red Gum (Koala Feed Tree)	2	3.2
	Grey Gum (Koala Feed Tree)	2	3.2
2	Spotted Gum	20	39.2
	Stringybark	6	11.7
	Swamp Oak	2	3.9
	Ironbark	9	17.6
	Grey Gum (Koala Feed Tree)	13	25.5
	Red Gum (Koala Feed Tree)	1	2
3	Spotted Gum	15	28.3
	Swamp Oak	1	1.9
	Ironbark	30	56.6
	Grey Gum (Koala Feed Tree)	3	5.7
	Red Gum (Koala Feed Tree)	4	7.5
4	Spotted Gum	43	71.6
	Stringybark	8	13.3
	Bloodwood	1	1.7

	Ironbark	3	5
	Grey Gum (Koala Feed Tree)	5	8.3
5	Spotted Gum	12	42.8
	Stringybark	4	14.3
	Ironbark	10	35.7
	Red Gum (Koala Feed Tree)	2	7.1
6	Spotted Gum	13	38.2
	Stringybark	11	32.3
	Ironbark	5	14.7
	Grey Gum (Koala Feed Tree)	5	14.7
7	Bloodwood	32	72.7
	Stringybark	12	27.3

Figure 6 attached, shows the location of the Koala plots and the revised koala habitat mapping for the subject site. This map has been amended from the original Ecological Constraints report, based on a more detailed review of the floristic data collected. The remainder of the site was walked, and it was noted that only scattered koala feed trees existed, in very low numbers well under the 10% mark, hence the remainder of the site remains as marginal habitat. Scattered koala feed trees identified during the meander have been mapped.

Kleinfelder completed a revised Koala habitat mapping. **Figure 6** from the Ecological Constraints Assessment (amended figure attached) is the revised Koala habitat map and **Figure 7** is the original Koala habitat mapping from PSC.

It is therefore the recommendation by Kleinfelder that the detailed koala habitat map attached, provides council with the required information to conclude that the CKPoM can be adequately addressed after the gateway determination, with the expectation that there is low risk to Preferred Koala habitat and a viable Koala population.

2. THREATENED ECOLOGICAL COMMUNITY ASSESSMENT

The final determination for the *Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions* (NSW TSSC 2019) describes the community as:

- Known to occur in the Lower Hunter Valley centred on the Cessnock-Beresfield area and approximately bounded by the towns of Paxton, Branxton, Clarence Town, Beresfield, Mt. Vincent and the Northern boundary of the Watagans National Park.
- Occurring principally on Permian and Carboniferous geology. The Permian substrates most commonly supporting the community below to the Dalwood Group, the Maitland Group, and the Greta and Tomago Coal Measures. In the area of Paterson, Seaham and Clarence Town, the community occurs on Carboniferous sediments including the Wallaringa, Mt. Johnstone and Seaham formations.

- The community is usually dominated by *Corymbia maculata* (Spotted Gum) and *Eucalyptus fibrosa* (Broad-leaved Ironbark), with *E. punctata* (Grey Gum) occurring less frequently. Other trees species have been recorded, however, none of these species are characteristic of the Lower Hunter Spotted Gum Ironbark Forest. Frequently encountered understory species include *Acacia parvipinnula, Bursaria spinosa, Daviesia ulicifolia, Lissanthe strigosa, Melaleuca nodosa, Persoonia linearis, Aristida vagans Cheilanthes sieberi, Dianella revoluta, Entolasia stricta, Glycine clandestina, Hardenbergia violacea, Lepidosperma laterale, Lomandra filiformis, Lomandra multiflora, Macrozamia flexuosa, Microlaena stipoides, Panicum simile, Phyllanthus hirtellus, Pomax umbellata* and *Themeda triandra.*

The vegetation within the Study Area:

- Occurs at Karuah, which is outside of this core distribution of the Lower Hunter Spotted Gum Ironbark Forest. This site is approximately 18 km south east of Clarence Town, the most north-eastern extent of the described distribution.
- The area of Spotted Gum – Broad leaved Mahogany – Red Ironbark Shrubby Forest occur on the Ten Mile Road Erosional Landscape, as mapped by Matthei (1995). This landscape is described as containing Carboniferous Sediments of the Italia Road Formation and Balickera Conglomerate. While the TEC is described as occurring different Carboniferous sediments recorded further north-west around Clarence Town, Seaham and Paterson.
- The Spotted Gum – Ironbark Forest Vegetation within the Study Area is dominated by *Corymbia maculata* and *Eucalyptus fibrosa* with *Melaleuca nodosa, Bursaria spinosa, Acacia ulicifolia, Pulteneae paleacea, Ptilothrix deusta, Entolasia stricta, Microlaena stipoides* var*. stipoides, Imperata cylindrica, Dianella caerulea* and *Themeda triandra.* The canopy species and a number of the understorey species align with the dominant species of the Lower Hunter Spotted Gum – Ironbark Forest EEC.

While the species composition is somewhat consistent with the Lower Hunter Spotted Gum – Ironbark Forest EEC, the site location and geology are not consistent with the Final Determination. As such the vegetation within the Study Area does not form part of the Lower Hunter Spotted Gum – Ironbark Forest EEC.

References:

Matthei, L.E. (1995). *Soil Landscapes of the Newcastle 1:100 000 Sheet Map,* Department of Land and Water Conservation, Sydney.

NSW Threatened Species Scientific Committee (2019). *Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions - endangered ecological community listing*. Department of Industry, Planning and Environment Website, Accessed: https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2019/lower-hunter-spotted-gum-ironbark-forest-final-determination-EEC.pdf?la=en&hash=45284937A71F0175AF94955070E93778C784AA0F

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DRAWN BY: GJoyce
DATA SOURCE:
NSW DFSI - 2019
Nearmap - 2019

Revised Koala Habitat Mapping

AO Farm Holdings Pty Ltd
Preliminary Ecological Investigation
339 Tarean Road, Karuah NSW

FIGURE:
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