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Bill McGarry
Billbergia Pty Ltd
c/o File Planning and Development Services
sent via email: *michael@fileplanning.com*

Ref/Job No: 15WOL-2539

9 June 2017

Dear Bill,

Flora and Fauna Constraints Assessment - Caledonia

Eco Logical Australia Pty Ltd (ELA) prepared a constraints assessment for the Caledonia planning proposal at Ingleburn. Urban Futures working on behalf of Billbergia Pty Ltd engaged ELA to provide the constraints assessment to guide the master planning of the proposed development in 2015. Since that time, there have been several updates and refinement of the master plan for the site. The previous report dated 31 March 2017 updated the report submitted as part of the Gateway Approval process (ELA 2016). That update (31 March 2017) responded to concerns raised by Campbelltown City Council regarding the presence of Koala habitat on the site. This current update responds to concerns raised by the NSW Office of Environment and Heritage regarding survey effort.

This constraints assessment has been iterative process that has involved identifying the constraints on the site and working with the designers to develop a planning proposal that minimises impacts to these constraints. This assessment therefore includes;

1. identification of constraints
2. provision of recommendations on how to address constraints
3. an assessment of potential impacts to constraints of the proposed masterplan.

Identification of Constraints

ELA confirmed the presence of one endangered ecological community, Cumberland Plain Woodland, which is present in two condition states. Cumberland Plain Woodland is listed as a Critically Endangered Ecological Community (CEEC) under both the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Three visits to the site were carried out to identify potential constraints due to the presence of threatened entities. Field work was conducted on 10, 18 and 23 September 2015. Several patches of Cumberland Plain Woodland were present along Bensley Road. All patches meet the definition as CPW under the TSC Act but only the patch of Cumberland Plain Woodland on the corner of Bensley and Oxford Roads meets the criteria for listing under the EPBC Act. Preparation of a Referral to the Commonwealth may be required if impacts to this area are planned. It is recommended that impacts to this area are avoided.

The majority of the grassland areas throughout the study area were exotic pasture. The grassland areas were dominated by exotic pasture species and may have been ploughed and or fertilised for routine agricultural purposes in the past. This has likely removed the soil stored seed bank and therefore the ability of the land to recover unassisted.

A series of biometric quadrats was undertaken to identify the condition classes of the vegetation on 23 September 2015. This enabled the vegetation to be classified into one of three constraints categories based on the quality of the habitat:

- high
- medium
- low.

The study area was traversed in search of threatened flora. None were recorded and it is unlikely that any would be present given the historical site disturbance and level of weed invasion over the majority of the site. However, the relatively intact patch on the corner of Bensley and Oxford Roads may contain habitat for threatened flora that are cryptic such as *Pterostylis saxicola*, which is known from the Ingleburn area. While there are two records of *Pimelea spicata* in the vicinity, the likelihood of this species being present was considered low. This is because the site has been slashed and grazed. Areas that could not be accessed (due to no permission given) were not considered to be likely habitat for *Pimelea spicata* or *Pterostylis saxicola*. This is because those areas were being grazed, consisted of managed (mown) lawn and horticultural gardens. It is noted that at the development application stage, targeted surveys would be required for potential threatened species habitats.

The literature and data review indicated that no threatened species had previously been recorded in the study area. During the field surveys, one migratory species was recorded. *Ardea ibis* (Cattle Egret) is listed as a marine species under the EPBC Act and was observed in the grassland areas in the south west of the area. Habitat for this species was present in the exotic grassland.

Vegetation within the study area consisted of a primarily grassy understorey with little leaf litter and extremely limited habitat for *Meridolum corneovirens* (Cumberland Plain Land Snail). Brief searches were conducted under the few trees where leaf litter was present but it is considered unlikely that this species would be present within the study area. This species has been recorded outside the study area and is associated with thick leaf litter primarily from *Eucalyptus tereticornis*.

There was only one hollow bearing tree found in the areas that were accessed. The hollow was in a *Eucalyptus tereticornis*. The hollow was occupied by a Rainbow Lorikeet. Given this, it is unlikely that this hollow would provide habitat for threatened bats. However the woodland areas provide foraging habitat for threatened microbat species. There are database records for the following threatened microbats in the locality: *Falsistrellus tasmaniensis* (Eastern False Pipistrelle), *Miniopterus schreibersii oceanensis* (Eastern Bentwing Bat), *Mormopterus norfolkensis* (Eastern Freetail Bat) and *Scoteanax rueppellii* (Greater Broad-nosed Bat).

SEPP 44 – Koala habitat

The Cumberland Plain Woodland present in both condition states contained individuals of *Eucalyptus tereticornis* and *Eucalyptus moluccana*. The presence of *Eucalyptus tereticornis* in the better quality Cumberland Plain Woodland was limited to regenerating trees which were about 1-2 m high. Cover of this species elsewhere was limited, however, greater than 15% of the number of trees present are *Eucalyptus tereticornis*. This species is listed on Schedule 2 of SEPP44 as a koala feed tree species. Therefore the areas containing Cumberland Plain Woodland could be considered as potential koala habitat. The Draft Campbelltown Comprehensive Koala Plan of Management (CKPoM) identifies an additional number of preferred koala feed trees. These species (*Eucalyptus agglomerata*, *E. longifolia*, *E. punctata*, and *E. viminalis*) were not present within the accessible study area. These species may be present where access was not available.

In terms of core koala habitat, the definition in SEPP44 is as follows:

> ***core koala habitat*** means an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.

The majority of recent sightings have been made from areas of dense vegetation on the eastern side of Bensley Road and none in or near the study area. However, the mapping undertaken as part of the Draft CKPoM identifies subject site as core koala habitat. Advice from Council suggests that the generational persistence modelling identifies the site as core Koala habitat, despite no evidence of use at the time of the diurnal and nocturnal surveys.

Targeted Koala survey

As per request of Campbelltown City Council in response to the consideration of vegetation within the study area to be potential Koala habitat, targeted Koala surveys were performed to ascertain the presence of any individuals.

Survey took place on 14 and 15 June 2016 by two ELA ecologists Dr Meredith Henderson and Alex Gorey and involved two components: diurnal and nocturnal surveys. The methodology is consistent with the *Draft Threatened Species Survey Guidelines* (DEC 2004) and Planning Circular B35 (Department of Planning 1995), which provides guidance on methods to adequately survey for Koala. This standard (which only applies to development applications), at Section 2.1(iv), suggests that standard reportable techniques should be used using standard techniques. On that basis, the survey outlined in DEC (2004) was employed.

Due to access restrictions in the study area, survey effort was limited to the good quality Cumberland Plain Woodland on the corner of Bensley Road and Oxford Road and any trees accessible from along Bensley Road.

Weather conditions were ideal for fauna call playback and spotlighting. Conditions were clear with no rain or severe winds on both survey days (**Table 1**).

Table 1: Weather conditions during targeted Koala surveys on 14 and 15 June 2016

Survey Date	Minimum Temperature (°C)	Maximum Temperature (°C)
14 June 2016	4	20.2
15 June 2016	5.5	19

Diurnal survey was performed on 14 June 2016 for a total of 4 person hours to search potential feed trees for signs of use, including scratches and scats. No signs of use were found on any potential feed trees within the survey area.

Nocturnal surveys were performed after dusk on 14 and 15 June 2016 for 6 person hours in total. Limited access to the study area allowed for only one call play back site in the good quality Cumberland Plain Woodland on the corner of Bensley Road and Oxford Road. An initial 10 minute listening period followed by a 10 minute spotlight search was performed prior to call play back to ascertain the presence of any individuals. The Koala call was then broadcast intermittently over a five minute period, followed by 10 minutes of listening. This process was repeated three times. Following the call playback session all trees within the survey area were spotlighted for any Koala individuals. Potential feed trees that were accessible from Bensley Road were also spotlighted. No return calls or individuals were found within the survey area on 14 or 15 June 2016.

Potential Impacts

Ecological constraints have been prepared to guide the development footprint. Results of the constraints, and recommendations on how to address the constraints are tabulated in **Table 2** and illustrated in **Figure 1** below.

The areas of highest ecological value are associated with the Cumberland Plain Woodland located on the corner of Bensley and Oxford Roads. The remaining vegetation on the site is of lesser value. The draft masterplan for the site incorporates the retention of areas of vegetation with a local park.

This approach would realise the retention of 92% of high constraint vegetation and 8% of moderate constraint vegetation (**Figure 3** and **Figure 4**).

The area of vegetation proposed for retention is likely to be considered to be too small to be a viable biobanking site. Long term retention would therefore need to be achieved via a suitable zoning for the site. In the event that Biodiversity Certification was sought for the site, an E2 zoning would provide some 'credit', albeit at a discounted rate, for retention of this vegetation. The land could be in public or private ownership.

If, however Biodiversity Certification is not sought, and it is proposed for this land to be dedicated to council, an RE zone would enable some passive recreation to be undertaken while retaining the biodiversity values.

Koala habitat on the site would largely be retained under the draft masterplan. The proposal has the option to develop an Individual Koala Plan of Management for the site under SEPP44 at the development application phase. Alternatively, adherence to the draft CKPoM could be undertaken if plan is endorsed by DP&E. The draft CKPoM would require at the development application phase:

- a report on the size of all trees proposed for removal, to calculate the number of trees for compensatory planting
- consideration and inclusion of development standards designed to minimise threats to Koala (e.g. Koala friendly fences, use of preferred Koala feed trees in landscaping).

These considerations are not required at the planning proposal phase, but DP&E have suggested that consideration and consistency with SEPP44 and its related documents would be beneficial. On the basis that the area of core Koala habitat is retained and that compensatory measures and design standards are incorporated, the proposal would be unlikely to have a significant impact on Koala or its habitats in the study area.

This assessment has identified that if the draft masterplan was developed, that only minor impacts would occur to matters protected under the TSC or EPBC Acts. It is likely that due to the minor nature of these impacts that the proposal would not be considered to cause a 'significant impact'.

Waterfront Land Constraints Assessment

Under the *Water Management Act 2000* (WM Act) all land within 40 m of a defined watercourse is classed as 'waterfront land'. Waterways include all drainage lines mapped on the 1:25,000 scale topographic map for this region (Campbelltown 9029-1N). Proposed works on waterfront land may trigger Controlled Activity Approvals (CAA) with DPI Water (formally NSW Office of Water) and require vegetated riparian corridors specified for the waterway category (i.e. per Strahler stream order, e.g. 1st 2nd 3rd etc). There was one 1st order waterway within the site that is shown on the topographic map (**Figure 2**). In accordance with DPI Water's *Riparian Guidelines*, a 1st order stream usually requires a 10 m vegetated riparian zone on each side measured from the top of bank. This is unless the waterway does not meet the definition of a 'river' under the WM Act and support is granted by DPI Water.

Our field inspection of the 1st order stream within the site found that it does not meet the definition of a 'river' under the WM Act because it has no defined channel, bed, bank or have evidence of geomorphic processes. An application to DPI Water to remove the 'waterfront land' requirements for this waterway was made on 5 September 2016. DPI Water has agreed that the 'waterway' is not a river under the WM Act:

> *DPI Water agrees with the finding by Ecological Australia identified in their letter dated 5 September 2016, that the blue line shown on the topographic map Western of Bensley Road on site identified as Lot 2 & 3, DP597774 is not a 'river' under the purpose and under the provision of the Water Management Act (WMA). The proposed subdivision and works within 40metre of the subject blue line will not need to be considered*

as Integrated Development under Integrated Development Assessment System (DAS) for the purpose of the S91(2) of the WMA.

However, any proposed works that will result in a stormwater outlet structure to the river Eastern of Bensley Road, will need to be referred to DPI Water under the IDAS.

If you need further clarification on the above, please don't hesitate to contact me.

Regards

Mohammed Ismail | Water Regulation Officer

Therefore, for the purposes of the planning proposal, the 'waterway' does not present any constraint to development. Any proposed stormwater outlet to the unnamed waterway to the east of Bensley Road would require a referral to DPI Water at the development application stage. This unnamed waterway is a tributary of the Georges River.

Yours sincerely

Meredith Henderson
Principal Ecologist

Table 2: Ecological constraints justification

Constraint	Value	Justification	Recommendation
High	CPW (EPBC Act – Condition D)	• A 1.15 ha stand of woodland abuts the north-eastern corner of the study area and meets the criteria for listing as a Condition D patch of CPW under the EPBC Act. The patch is larger than 0.5 ha, has ≥ 50% native perennials in the understorey and at least one tree with a hollow. • this stand as meets the definition as CPW under the TSC Act • this patch has been previously grazed and mown however this has ceased in the last two to four years. Many of the plants in the mid- and over-storey are present. • the canopy of this vegetation community is structured in two layers but has been combined to estimate Project Foliage Cover (PFC) as both strata contribute the upper layers of the vegetation and will do so in the future • potential foraging habitat for Little Eagle and core habitat for threatened microbats and Koala	• impacts to this vegetation are likely to require a Referral to the Commonwealth • this area represents a critically endangered ecological community and impacts should be avoided • consider using design standards in the draft CKPoM at the development application stage • targeted survey for threatened species likely at the development application stage
Moderate	CPW	• vegetation community classified as an endangered or critically endangered ecological community under the TSC Act • while not pristine, this vegetation supports species characteristic of these communities especially in the overstorey • in a patch that is grazed, there are characteristic plant species in all structural layers • potential foraging habitat for threatened bird species (Little Eagle) and potential habitat for threatened microbats and potential Koala habitat • not all areas of this vegetation condition could be accessed and searches for hollows would need to be done in inaccessible areas	• retain connectivity between stands of vegetation wherever possible • avoid removal of hollow-bearing trees • if any hollow-bearing trees removed, suitable nest boxes should be provided • minimise impacts during development design and construction phase including establishing a buffer area adjacent to the vegetation

Constraint	Value	Justification	Recommendation
Low	Hollow-bearing trees	• hollow-bearing trees are a limiting habitat attribute for hollow-dependant fauna in the area • confined to woodland area • provide potential roosting and nesting habitat for birds and bats	• avoid clearing hollow-bearing trees • if clearing is unavoidable, consider supplementing area with nest boxes and conduct pre-clearance surveys
Low	Exotic vegetation	• mixture of native and exotic grasses with tracks throughout or areas dominated by exotic species in all strata • suitable foraging habitat for Little Eagle, microbats and migratory birds such as the Cattle Egret	• development should be confined to these areas wherever possible • suitable for development and passive recreational activities • implement management techniques to prevent the dispersal of weed species into adjacent woodland areas particularly during construction

Figure 1: Ecological constraints and development opportunities

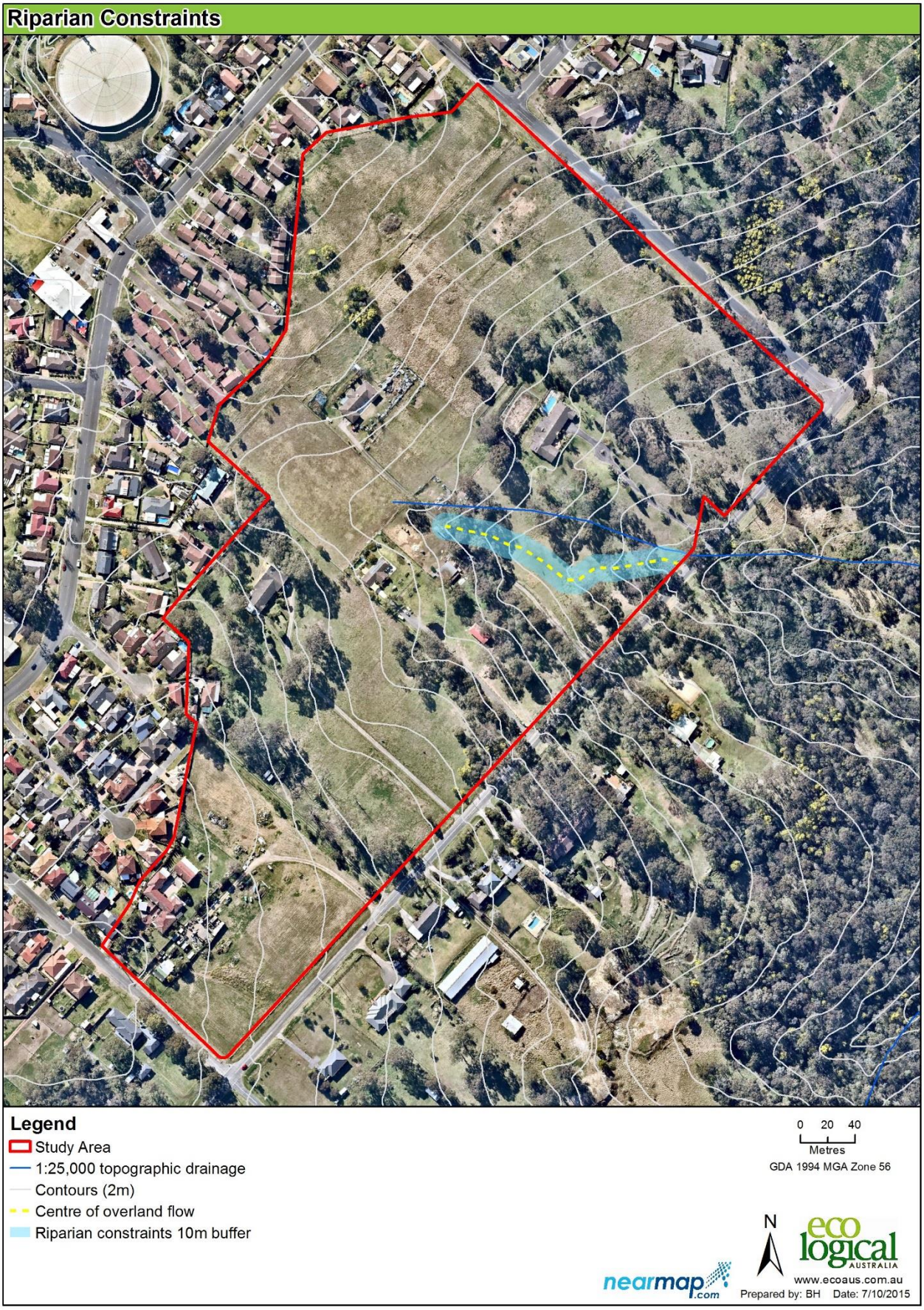

Figure 2: Waterfront land to be extinguished under the WM Act

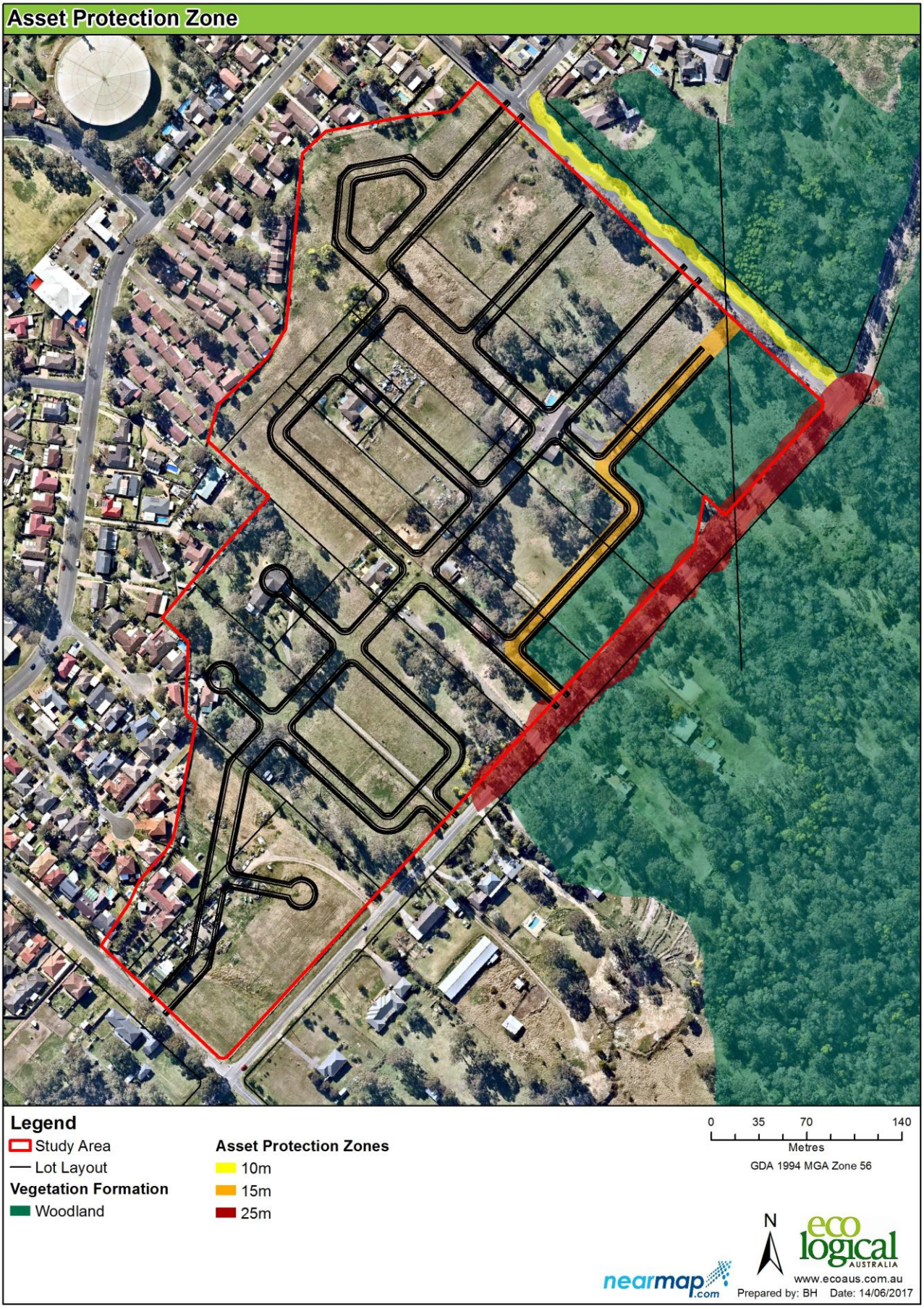

Figure 3 : Areas for retention and clearance under draft Masterplan

Figure 4: Draft Masterplan