

GHT Holdings P/L
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Our ref: 6278

3 April 2017

Dear Mark

RE: Biodiversity impacts and mitigation measures for proposed Seniors Living Development site at Part Lot 141, DP1225076, Mount Vincent Road, East Maitland.

Eco Logical Australia (ELA) was engaged to provide a report to accompany the Development Application (DA) for the proposed Seniors Living Development site within Part Lot 141, DP1225076, Mount Vincent Road, East Maitland. This report outlines the quantum of biodiversity impacts and outlines the proposed strategies to mitigate these impacts. These mitigation measures will aim to satisfy Schedule 1 of the Department of Planning's Site Compatibility Certificate for the site which states that:

"Biodiversity impacts resulting from the proposed development are to be offset to the satisfaction of Maitland City Council such that an 'improve or maintain' biodiversity outcome would be achieved"

Details of the biodiversity impacts, avoidance and mitigation measures and compensatory habitat measures are discussed in detail below.

If you require clarification of the above, please don't hesitate to call on (02) 4910 3401.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Lily Gorrell'.

Lily Gorrell

Ecologist/Accredited Biobanking Assessor

Executive Summary

This report outlines the quantum of biodiversity impacts proposed as part of the Development Application for the Seniors Living Development site within Part Lot 141, DP1225076, Mount Vincent Road, East Maitland (herein referred to as the site) (**Figure 1**).

As part of the Planning Approval process GHT Holdings P/L received the Site Compatibility Certificate from the Department of Planning which states that:

“Biodiversity impacts resulting from the proposed development are to be offset to the satisfaction of Maitland City Council such that an ‘improve or maintain’ biodiversity outcome would be achieved”

The eastern portion of the site comprises the vegetation community *Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion* (LHSGIF). This vegetation community is listed as an Endangered Ecological Community (EEC) under the NSW *Threatened Species Act 1995* (TSC Act). There is approximately 0.71 ha of this community within the development site boundary. Of this 0.71 ha, approximately 0.15 ha (21%) will be removed for the construction of the access road and a small portion of the carpark. The access road has recently been redesigned to avoid and minimise clearing of the EEC.

Compensatory plantings are proposed throughout the site. The retained and revegetated areas have a total combined area of approximately 1.54 ha and will comprise of plantings of appropriate canopy species such as *Corymbia maculata*, *Eucalyptus fibrosa* and *Eucalyptus tereticornis*. Within suitable locations aquatic vegetation, including sedges, grasses and low shrubs such as *Lomandra* spp., *Carex* spp., *Juncus* spp. *Phragmites australis* etc. will be planted to revegetate the drainage lines in accordance with the NSW Office of Water requirements for riparian zones.

Scattered paddock trees (some containing hollows) are present across the cleared paddocks of the site. Where possible these trees have been avoided, however, for those that require removal it is proposed that nest boxes be installed at a minimum 2:1 ratio to compensate for this loss.

Based on information gathered by ELA including previous ecological studies undertaken by Wildthing (2016), it is considered that impacts to biodiversity are not of a scale to warrant further assessment in terms of offsetting under the Biobanking Assessment Methodology (BAM). The mitigation and avoidance measures undertaken by GHT Holdings P/L, as well as the compensatory measures proposed are considered appropriate to manage the biodiversity impacts.

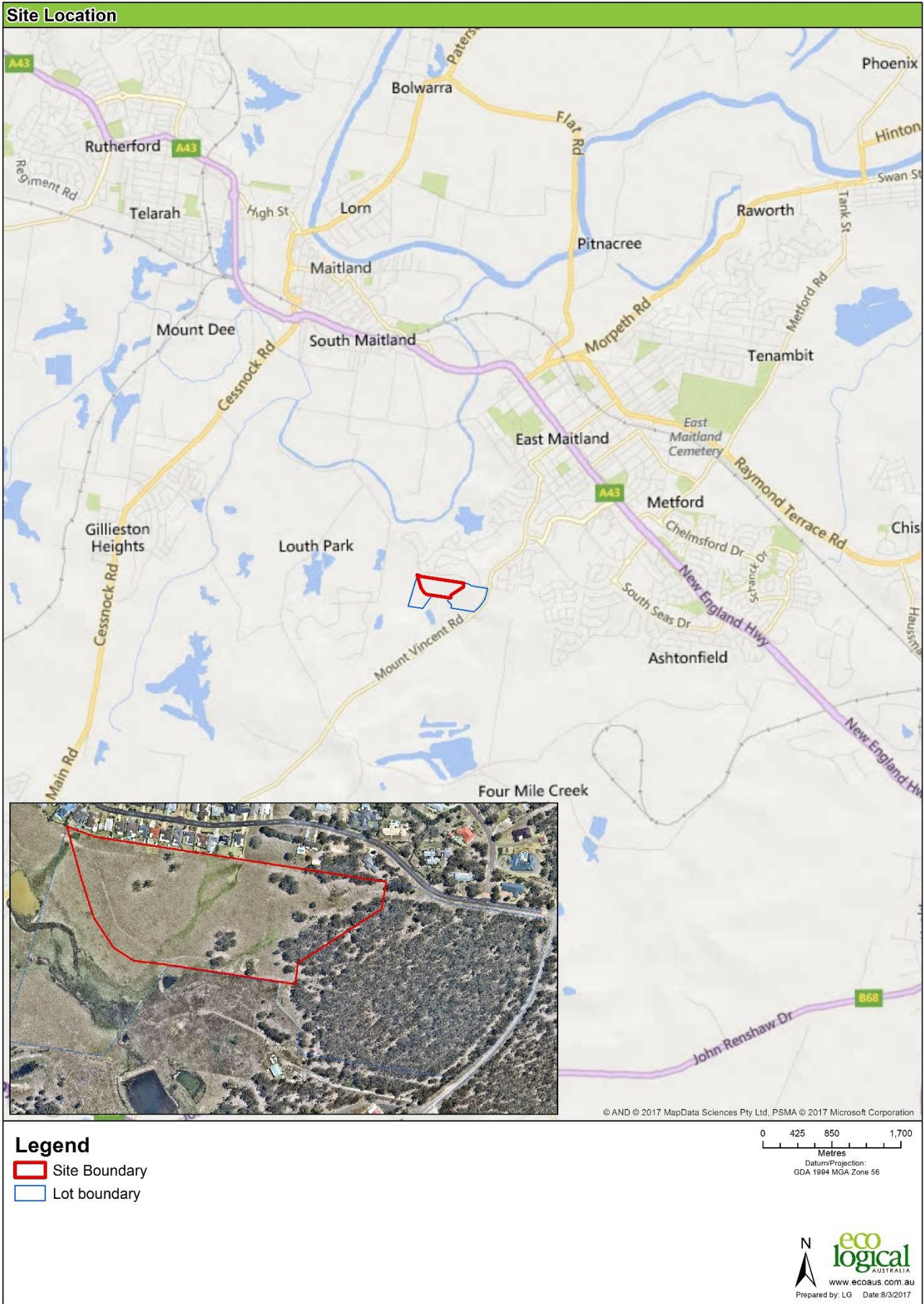


Figure 1: Site location

Biodiversity impacts - Key points

Endangered Ecological Communities

ELA undertook vegetation surveys in February 2017 to confirm the findings of Wildthing (2016). A small area (eastern portion) of the development site comprises the vegetation community *Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion* (LHSGIF). This vegetation community is listed as an Endangered Ecological Community (EEC) under the NSW *Threatened Species Act 1995* (TSC Act). There is approximately 0.71 ha of this community within the site boundary. Of this 0.71 ha, approximately 0.15 ha will be removed for the construction of the access road and a small portion of the carpark. This represents the removal of approximately 21% of this community within the site (**Figure 2**). Indirect impacts to this EEC are estimated to potentially extend 5 m either side of the access road edge and comprise limited disturbance to a maximum 0.13 ha of EEC vegetation. Indirect impacts, consisting of edge effects will be managed as far as practicable; there is potential for increased weeds, however mitigation measures, including weed hygiene practices are outlined below to minimise these impacts. Any mature trees located within this buffer area will be retained.

This EEC was found to be in relatively good condition within the larger lot boundary, especially the approximately 12 ha located to the east of the site. The site has been subjected to past disturbances such as tree removal and ongoing cattle grazing and the EEC, located along the eastern edge of the site boundary is quite disturbed and subject to greater edge effects particularly from introduced grasses. *Lantana camara* (Lantana) was also a common invasive species. Ongoing cattle grazing has also had an impact on the composition and abundance of the ground and shrub layers of this community (**Plate 1**).



Plate 1: Disturbed EEC vegetation

Scattered paddock trees

A large portion of the development will be positioned within the area of cleared pasture/grassland comprising of an exotic understorey in the western portion of the site (**Figure 2**). A number of scattered and clumped remnant trees were present within this area. The largest clump is dominated by *Eucalyptus tereticornis* (Forest Red Gum) (approximately 0.18ha) which has some affinities to the EEC Hunter Lowlands Redgum Forest. However the understorey comprises introduced grasses and lacked any associated native flora species and therefore is not consistent with this EEC (Wildthing 2016). The other scattered paddock trees comprise of *Corymbia maculata* and are likely to have once formed part of the LHSGIF EEC present within the site. As

discussed above, there is a lack of associated understorey and groundlayer species and as such these scattered paddock trees are considered a highly modified and disturbed form of this community.

Hollow bearing trees

Within the site, there are 10 hollow bearing trees. Some of these comprise scattered paddock trees and some are located within the LHSGIF EEC. **Figure 3** shows the location of these trees and **Table 1** outlines the amount and class type for those hollow bearing trees being removed on site. A total of 21 hollows are to be removed.

Table 1: Hollow bearing tree classification

HBT	Hollow type*
1	1xClass 3, 1xClass 4
2	1xClass 1, 1xClass 2
3	2xClass 1, 2xClass 2
4	2xClass 1, 1xClass 2
5	1xClass 1, 2xClass 3
6	1xClass 1, 1xClass 2, 2xClass 3, 1xClass 4
7	2xClass 3

The classification system employed involved four classes:

- Class 1 – very large sized hollow openings (>20cm) suitable for species such as Owls
- Class 2 – large sized hollow openings (15-20cm) suitable for species such as Owls and Possums
- Class 3 – medium sized hollow-openings (5-15cm) suitable for species such as Gliders and Possums
- Class 4 – small sized hollow openings (<5cm) suitable for species such as microchiropteran bats.

*Source: Wildthing (2016)



Figure 2: Biodiversity impacts



Figure 3: Hollow bearing trees to be removed and proposed location for nest box installation (approximate only)

Mitigation and compensatory measures proposed

As part of planning process GHT Holdings P/L has strategically designed the development layout to occur within the cleared open paddock portion of the site in order to avoid impacts to biodiversity features as much as possible. **Table 2** provides an outline of the biodiversity values, the avoidance and mitigation measures utilised and the compensatory measures proposed to manage these impacts.

Table 2: Biodiversity impacts, avoidance and compensatory measures proposed

Biodiversity values	Avoidance/mitigation measures	Proposed compensatory measures
LHSGIF EEC	<p>Access road has recently been re-designed to avoid and minimise clearing of the EEC as far as possible by utilising an existing undefined vehicle track currently running through site.</p> <p>Undertake weed hygiene practises during all stages of construction to limit weed seed spread onto and off site.</p>	Compensatory plantings are proposed throughout the site. The retained and revegetated areas have a total combined area of approximately 1.54 ha and will comprise of plantings of canopy species such as <i>Corymbia maculata</i> , <i>Eucalyptus fibrosa</i> and <i>Eucalyptus tereticornis</i> between the parallel access roads, along the southern side boundary and following the access road loop to the north-west (0.99 ha) (Appendix A).
Scattered paddock trees (hollow bearing)	<p>As the development layout has been sited within the most cleared portion of the site, there is limited ability to retain these trees. Where possible hollow bearing trees have been avoided, particularly near the access road mentioned above.</p> <p>Tree felling will be undertaken in accordance with a tree felling procedure and in presence of a qualified fauna spotter-catcher or ecologist. This includes inspection of tree hollows prior to tree removal.</p>	<p>Nest boxes will be installed at a minimum 2:1 ratio. The type of nest box and number will be as follows:</p> <ul style="list-style-type: none"> • 14 Class 1 nest boxes (i.e. large owls) • 14 Class 2 nest boxes (i.e. large possum/glidors) • 10 Class 3 nest boxes (i.e. small possum/glidors) • 4 Class 4 nest boxes (i.e. microbats) <p>It is proposed that nest boxes will be installed within the retained and rehabilitated EEC on site, however there may also be potential to install in the larger lot boundary within the EEC to the east of the subject site (Figure 3). Additionally, where possible, limbs containing hollows will be utilised and placed in this location to provide ongoing habitat for ground dwelling species.</p>
Drainage line / aquatic vegetation	Layout has been designed to avoid the 1 st order drainage line present in the south-eastern portion of the site.	The area comprising the 1 st order drainage line, that sits between the parallel access road, will include replanting appropriate shrub and watercourse species such as sedges, grasses and low shrubs including <i>Breynia Oblongifolia</i> , <i>Lomandra</i> spp., <i>Carex</i> spp., <i>Juncus</i> spp. <i>Phragmites australis</i> etc.

References

- Office of Environment and Heritage, 2016' *Lower Hunter Spotted Gum-Ironbark Forest in the Sydney Basin Bioregion*'. Viewed at:
<http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10942>
- Wildthing Environmental Consultants 2016, 'Statement of Effect on Threatened Flora and Fauna for a proposed Seniors Living Development at Lot 42 DP 846326 & Lot 8 DP 855275 Wilton Drive and Mt Vincent Road, East Maitland, NSW'.

Appendix A – Landscape concept for Riparian zone

Riparian corridors
Riparian corridors form a transition zone between terrestrial and aquatic environments and perform a range of important environmental functions. Riparian corridors:

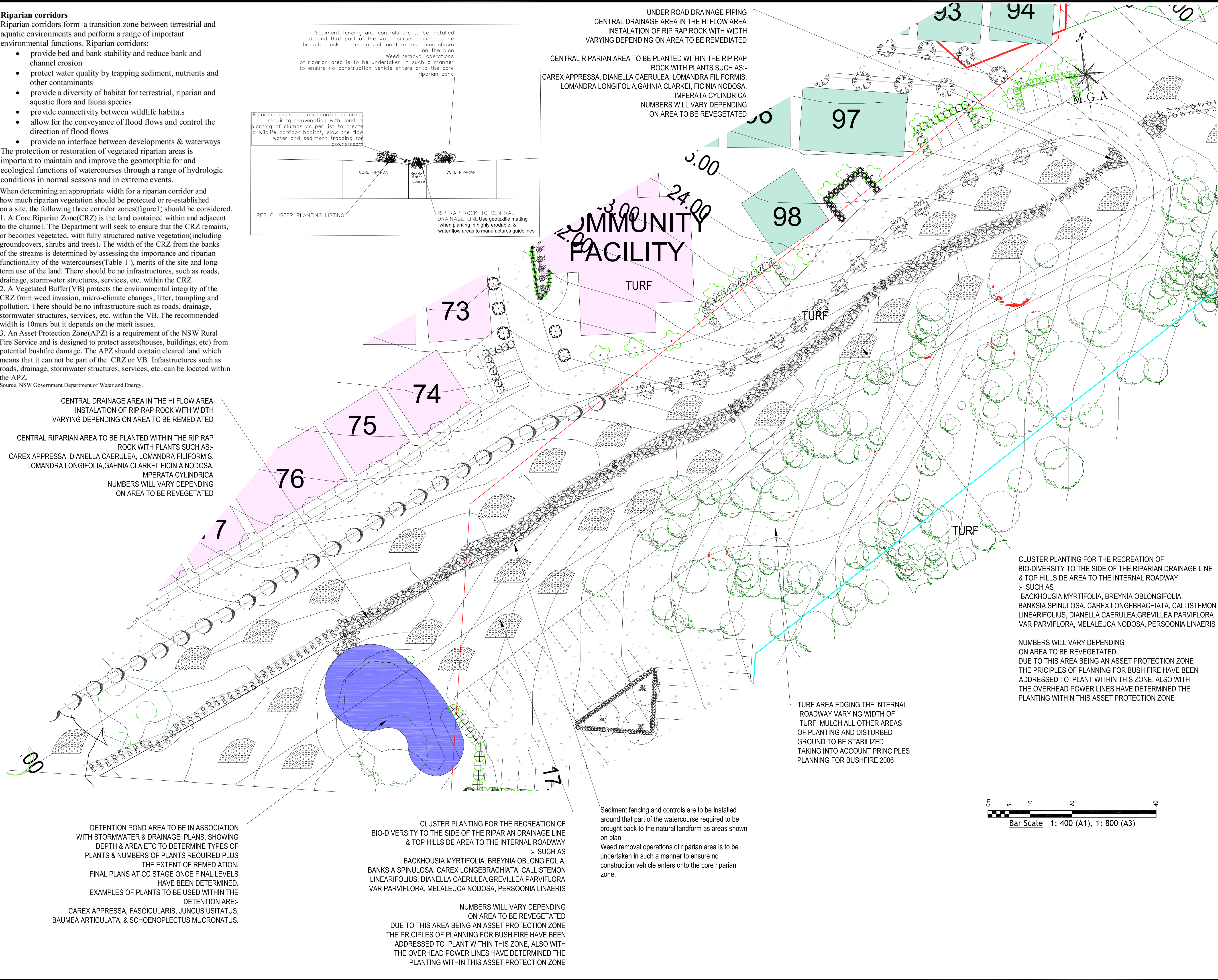
- provide bed and bank stability and reduce bank and channel erosion
- protect water quality by trapping sediment, nutrients and other contaminants
- provide a diversity of habitat for terrestrial, riparian and aquatic flora and fauna species
- provide connectivity between wildlife habitats
- allow for the conveyance of flood flows and control the direction of flood flows
- provide an interface between developments & waterways

The protection or restoration of vegetated riparian areas is important to maintain and improve the geomorphic for and ecological functions of watercourses through a range of hydrologic conditions in normal seasons and in extreme events.

When determining an appropriate width for a riparian corridor and how much riparian vegetation should be protected or re-established on a site, the following three corridor zones (figure 1) should be considered.

1. A Core Riparian Zone (CRZ) is the land contained within and adjacent to the channel. The Department will seek to ensure that the CRZ remains, or becomes vegetated, with fully structured native vegetation (including groundcovers, shrubs and trees). The width of the CRZ from the banks of the streams is determined by assessing the importance and riparian functionality of the watercourses (Table 1), merits of the site and long-term use of the land. There should be no infrastructures, such as roads, drainage, stormwater structures, services, etc. within the CRZ.
2. A Vegetated Buffer (VB) protects the environmental integrity of the CRZ from weed invasion, micro-climate changes, litter, trampling and pollution. There should be no infrastructure such as roads, drainage, stormwater structures, services, etc. within the VB. The recommended width is 10mtrs but it depends on the merit issues.
3. An Asset Protection Zone (APZ) is a requirement of the NSW Rural Fire Service and is designed to protect assets (houses, buildings, etc) from potential bushfire damage. The APZ should contain cleared land which means that it can not be part of the CRZ or VB. Infrastructures such as roads, drainage, stormwater structures, services, etc. can be located within the APZ.

Source: NSW Government Department of Water and Energy.



DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS-- STORMWATER-- ENGINEERS PLANS PLUS ASSOCIATED SHEETS ATTACHED

LEGEND

- CONCRETE PATHS & DRIVEWAY
- TURF
- STORMWATER DETENTION
- GRAVEL RIP/RAP DRAINAGE SECTION
- SELECTED PAVING
- 1.8M High Brick Pair & rod/pipe infills fence Watergum Street
- 1.8M High Steel Post & rod/pipe infills fence Mount Vincent Road
- 2.1M High Steel Post & Chainmesh Fence Southern & Eastern Boundary
- 1.8 High Colourbond Fence
- 1.5 High Pool Fence
- PARALINE
- 450 x 450 STEPPING PAVERS
- A AMENITY BUILDING
- B BAR B Q FACILITIES
- L LOUNGE AND GAMES ROOM
- P POOL
- TC TENNIS COURT
- APZ (ASSET PROTECTION ZONE)
- IPA (INNER PROTECTION AREA)
- DRAINAGE PIPE
- ROAD DRAINAGE GRATE
- EXISTING SITE TREES APPROX. POSITION



DATE	BY	AMENDMENT

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DRAWN JK	DATE 1/3/2017
SCALES 1:400 @ A1 1:800 @ A3	CHECKED
SHEET RIPARIAN DRAINAGE CORRIDOR	JOB No.