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Arboricultural Impact Evaluation Report

Site:

Hamlets A and B, Flowers Drive, Catherine Hill Bay

Prepared for:

Monteath & Powys for

Wallalong Land Developments

Prepared By

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1. Summary

The sites at Catherine Hill Bay currently used for semi-rural living are the subject of a proposal to develop the land into residential housing lots. It is proposed that the site is separated into Hamlet A on the eastern side of Flower Drive, and Hamlet B on the western side. The impact on trees situated in the Wallarah National Park that adjoins the proposed development sites is reviewed in this report.

The site was accessed and transects of the boundary were inspected on Thursday 5th August 2021. The entire boundary was not accessed due to the density of vegetation and steepness, but critical positions were identified and transects were walked to identify typical impacts.

Accessing the site on foot, using GPS to identify boundary corners and follow bearings gave an approximate indication of the density of trees present. There is great variation over the entire site largely influenced by the previous uses. The Northern boundary of Hamlet B was found to be largely cleared and there would be little or no impact on trees within the National park where coal mining operations, horse agistment and grazing have resulted in clearing that occurred prior to land being transferred National Parks & Wildlife.

In other less critical sections boundary lines were not easy to follow due to a lack of available access (dense weed and regrowth limited this) so an estimation of the impact has been made.

It was conveyed that a standard buffer of approximately 2.5 m or greater from the boundary line within the site would be used to reduce the extent of impact to existing trees within the National Park.

The typical boundary growth on the western side of Hamlet B is sparse and open with little impact likely on existing trees due to the buffer zone.

Sections of the eastern side of Hamlet A have dense growth of young trees following natural regeneration, and a 2.5 m buffer will not impact small trees in this way.

The southern boundary of Hamlet B has more mature trees, some typically close to the boundary and careful assessment of individual trees is required to minimise the proposed development implementation.

Overall, the site can be developed without impact to the adjoining National Park with due care to identify the species, position relative to the boundary and with clear details of what construction or excavation is to occur. Individual tree assessment and management work will be required where tree canopies extend over the boundary into the site or where large trees are close to the boundary area. It is considered that the appropriate time to undertake this assessment is during the detailed design phase.

2. Introduction

2.1. Disclaimer

This report provides data collected in the field and an assessment based on that data. The information contained in this report is advise Lake Macquarie City Council of the impact on that development. No other information is provided. Trees not assessed may pose a future risk of injury or damage. This report is limited in that no details of trees outside of the scope of works have been considered and no liability is accepted for any injury or damage from trees outside of the scope of works.

2.2. Brief

To assess the impact on trees on or near the boundary of the proposed hamlets A and B, and Wallarah National Park.

2.3. Methodology

A site inspection was undertaken on 5th August 2021. Multiple positions on the site were located using topographic features and GPS. The positions were identified as corner points to the lot boundaries. Steel star pickets were located, and the bearings of each boundary line were identified.

Once the direction and position of the boundary was identified at each point, a transect line was surveyed to identify the density of tree species, what species were present and a visual assessment of the likely impact of the proposed development was made. Images of each position were recorded, and a personal video of each position was made for later reference.

Each transect line was surveyed over an approximate distance of 50 m. The entire boundary was not surveyed due to site limitations such as dense weed growth, steep terrain, and lack of survey pegs for directions. Sample transects were identified as a means of estimating the impact on trees on the edge of the National Park.

Findings have been tabulated in the results in section 3 of this report.

Documents reviewed:

- Emails of instruction from Kosta Flamiatos dated 30/7/21 with segment regarding "Biodiversity – impacts to National Park interfaceand an assessment by an Arborist of the impact of the works upon the identified vegetation"
- 2. Extracted pages from 1950 Bushfire Assessment Report pages 15 24
- Extracted pages from 24530 FINAL CHB Ecology Final November 2010 _Part 1 & Part 4
- 4. GCA Engineering Solutions Proposed subdivision concept plans Hamlet A and Hamlet B, dated October 2022.
- 5. Moir Landscape Architects Catherine Hill Bay Landscape Development Application Documentation dated November 2022
- 6. NPWS Boundary Fencing Policy web site page <u>https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-policies/boundary-fencing</u>

3. Assessment of site and impact of proposed development

3.1. Development proposal summary

It is proposed to subdivide Hamlets A & B into residential lots with access roads. The site will require earthworks for retaining walls on sections of the site within 2.5 m minimum offsets.

The locations of retaining walls were on plans reviewed.

A "buffer zone" of approximately 2.5 m or greater from the boundaries of Hamlets A and B and the National Park will be used to reduce the impact of any excavation or other earthworks on trees within the National Park. All evaluations of trees and the impact of the development is based on the premise that the 2.5 m buffer zone will be applied within the development site entirely.

3.2. Site survey positions



Figure 1 shows the positions of transects 1 - 6 on site. The red lines indicate the direction of each transect along the boundary.

3.2. Survey and transect results

Transect position No	Easting and Northings – Zone 56H UTM – GDA94	Dominant species	Density of tree positions	Comments
1	0371180 mE 6331974 mN Transect bearing 287° Distance = 40 m	Acacia species Angophora costata Eucalyptus punctata Allocasuarina torulosa	Acacia species - very dense Allocasuarina sp – dense Angophora and eucalyptus – sparse 10 – 12 m separation	Acacia and Allocasuarina indicative of fire activity within last 7 – 10 years, trees reaching mature height and spread. Angophora and Euc. Punctata are semi-mature to mature in size. Likely regrowth after previous mine operations. Dense understorey of Lantana limiting regeneration of native species. Pockets of heavy regrowth of Dodonea sp. Likely impact of development would be low, clearing smaller trees and removal of weed species.
2	0371013 mE 6332052 mN Transect bearing 13°	Eucalyptus haemastoma Eucalyptus globoidea Angophora costata Corymbia gummifera	Tree density is low to medium with substantial open space between trees, 10 – 15 m.	Dense regrowth of Dodonea sp. Open areas of Kangaroo Grass with scattered Xanthorrhoea and low growing shrubs under E. haemastoma. Easy access in some

	Distance = 50m			positions. Vegetation density in many parts lacks shrub and middle level vegetation strata. Impact on individual trees will be minimal due to open tree positions. Transect zone reflects previous land use for grazing due to lack of shrub layer.
3	0371519 mE 6331859 mN Transect bearing approximately 270° Distance = 50 m	Angophora costata Eucalyptus piperita Eucalyptus globoidea	Tree density is greater on southern slope within National Park. Trees have strong asymmetrical form along transect, mostly canopy is greater on northern side of trunks. Dense understorey of Dodonea sp. and other species.	Mature tree heights are taller than other sections of the Hamlet B area. Site conditions reflect coastal wind influences inducing geotropic growth patterns. Previous land use is unclear, mature trees are not likely to have been harvested. Numerous fallen trees likely due to severe windstorms. Impact of the proposed development is considered negligible on most trees as root zones will be minimally affected.
4	0371255 mE 6332163 mN	Eucalyptus robusta Eucalyptus piperita Eucalyptus botryoides	Understorey of dense Acacia, Lantana, and other weeds. Some Livistona australis present. Canopy	The upper canopy is dense within the National Park. The area of native species ceases abruptly just north of the boundary at this point, with

	Transect bearing approximately 270° Distance = 50 m	Erythrina x sykesii	dominated by Eucalyptus robusta semi-mature trees. Tree density consistent with regrowth.	previous clearing extending just into the National Park by 2 – 5 m approximately. The Swamp Mahogany stands are dense but will unlikely be affected by the development due to previous clearing and ongoing grazing by horses.
5	0371955 mE 6332552 mN Transect bearing approximately 135° Distance = 50 m	Eucalyptus haemastoma Angophora costata Eucalyptus globoidea Corymbia gummifera Allocasuarina torulosa Melaleuca sp. Callistemon salignus	Tree density varied along transect. Higher areas consisted of sparse tree cover with distances of up to 20 m between larger trees to zones of dense Melaleuca, Callistemon & Allocasuarina with very close tree density.	The boundary of the new sub- division would need to be carefully surveyed as tree density in some positions is very close. The dense zones of trees contain with smaller trunk diameters requiring smaller protection zones and structural root zones. Careful management of individual trees in this area would be required to maintain a low or minimal impact on trees within the National Park.
6	0372105 mE 6332368 mN	Eucalyptus haemastoma Angophora costata Corymbia gummifera Allocasuarina torulosa	Tree density along transect was high, largely Allocasuarina indicating regeneration after bushfire. Mature trees were sparse, smaller	Access along the transect was inhibited by numerous fallen small trees and a dense understorey of grasses and forbs.

Transect bearing approximately 140° Distance = 30 m	diameter trunk trees were prolific and dense. This section of the site was a ledge of sandstone with steep slopes and shallow topsoil.	Impact on trees within the National park would be easily managed and minimal impact will be likely due to the requirement for a buffer zone. Coastal winds from the south may impact trees on the forest edge after any clearing as this section of the site seemed exposed to southerly winds.
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3.3. Summary of the Impact of the proposed development on trees within the National Park Hamlet A

The boundary of concern extends from Flowers Drive in the northern end to the remnants of the quarry along the southern end. This zone has a dense cover of smaller trees. The position of a 2.5 m buffer from any earthworks would be suitable where excavation is proposed. Where any filling is proposed, individual trees may need to be identified and controls put in place to minimise adverse impacts.

General impact on trees within the National park is considered low. Most trees along this boundary are not large, canopy spread and therefore root zone requirements.

Hamlet B

Trees in the National Park adjacent to the Southern Boundary have the greatest potential for adverse impact, largely due to their size and propensity to lean to the North. It is noted that earthworks are offset from this boundary from approximately 3m and up to 10m. It is envisaged that some trees along this boundary will require careful evaluation once the boundary position is accurately pegged out. Where trees lean over or are situated close to the boundary, individual tree care shall be applied. Some larger older trees in this zone have a greater likelihood of hollows for habitat opportunities. Pruning of branches that may extend well over the boundary and pose a risk of failure may be pruned using techniques to augment artificial hollows and branch failure.

Trees along the western boundary side but within the National Park are generally situated above the boundary line. The density of trees is sparser and more open probably due to previous grazing and clearing activities. The likelihood of adverse impact to trees in the National Park along this section is considered minimal with careful location of boundaries and selective tree management strategies.

The likelihood of adverse impact to trees in the National Park adjoining the northern boundary is considered minimal. Extensive clearing has occurred over the boundary and within the National park. While regeneration has occurred, it is unlikely that earthworks and development will adversely impact individual trees within the National Park. This report has been prepared by John Atkins on 4th November 2022.

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	5.	International Society of Arboriculture Tree Risk Assessment Qualification 2015
	6.	Graduate Certificate of Arboriculture 2018

Appendix 1 Site Images Hamlet B



Figure 2 shows the view at Site Transect 1 looking approximately North West along the boundary. The foreground is clear of vegetation as most of this small area was a zone of old coal chitter.



Figure 3 georeferenced image at Transect 1 looking approximately North West.



Figure 4 georeferenced image at transect 1 looking North to north east at dense Acacia species.



Figure 5 image at transect 2 looking approximately South East. Boundary mark is the yellow capped star picket in the foreground.

Figure 6 shows the vegetation at transect 2 looking approximately North North-east along the boundary. the boundary marker is in the foreground.

Local 02:16:37 PM GMT 04:16:37 AM

Altitude 65 meters Thursday, 05-08-2021

Figure 7 georeferenced image at transect 2.

Figure 8 looking approximately west along the approximate position of the boundary at Transect 3

Figure 9 looking approximately west along the boundary at transect 4. The right side of the image is National Park, the left is Hamlet B. Note the thick weeds present along the boundary position.

Figure 10 shows the Eucalyptus robusta dominated EEC within the National Park. This image was taken approximately 10 m inside the National Park adjacent to the Northern boundary of Hamlet B.

Hamlet A

Figure 11 shows the Transect 5 position with the boundary peg present in the foreground. The left of the peg is National Park. The right of the peg is Hamlet A.

Figure 12 shows the view approximately 50 m from the position shown in Figure 11 above. The cleared understorey is now dense with small Allocasuarina and Melaleuca species, with scattered Eucalypts.

Figure 13 shows the view at transect 6 looking North-west along the approximate position of the boundary.

Figure 14 shows the view along Transect 6 where dense dead growth and wind-thrown trees are present.