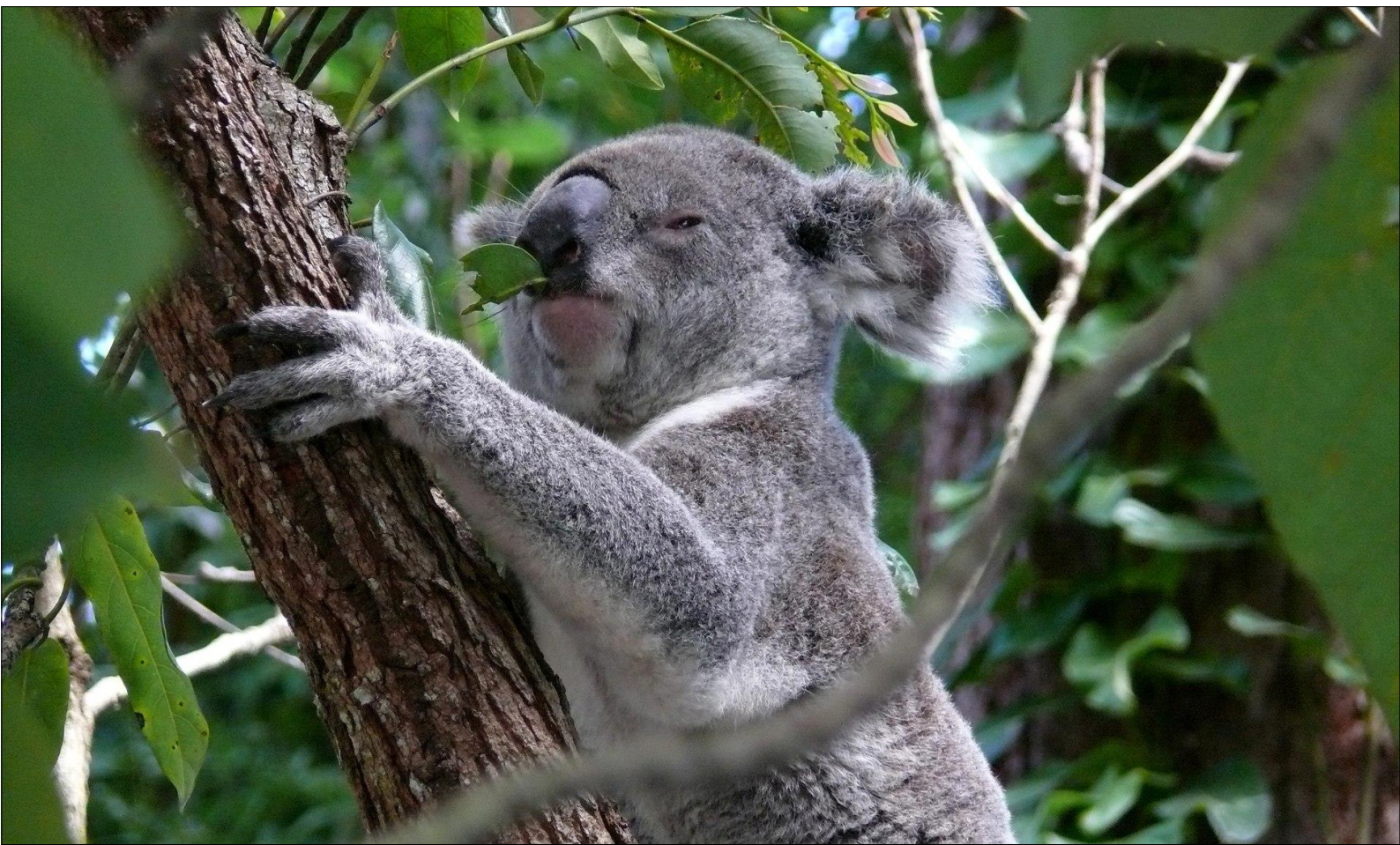


Koala Offset Management Plan

Tweed River High School
12-16 Heffron Street, Tweed Heads, NSW 2487

20202432

10 September 2021



10/156 Boundary Street, West End,
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1 INTRODUCTION

1.1 OVERVIEW

Kleinfelder was engaged by New South Wales (NSW) Department of Education to prepare a Koala (*Phascolarctos cinereus*) Offset Management Plan for the Tweed River High School. This was due to a request made by the Tweed Shire Council after their review of the Biodiversity Development Assessment Report (BDAR) for the Tweed River High School (TRHS) (Kleinfelder 2021). The Koala is vulnerable under the NSW *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act*.

The fauna field survey for the TRHS BDAR (Sections 4.1.4.1-3) did not detect any Koalas or their traces within the Development Site (Section 4.1.6). The Koala was tested for significant impacts (Section 4.1.4.5). The test determined that the Koala would not be significantly impacted because;

- No Koalas or traces of Koalas were found at the TRHS.
- There would only be one Koala feed tree (Swamp Mahogany, *Eucalyptus robusta*) removed and marginal habitat disturbed.
- There have not been any Koala sighting in the TRHS or surrounding suburbs since 1986.
- The TRHS was not in a Koala Linkage Precinct or Preferred Koala Habitat.
- The TRHS is in the Tweed Heads Koala Management Area where recovery of the Koala population is not considered possible in the Tweed Coast Comprehensive Koala Plan of Management (TCKKPM).
- The last Koala sighting was in natural habitat (34 ha) to the east of the TRHS, and separated from the TRHS by suburbia, was in 1994.

The Tweed Shire Council decided that the single Koala feed tree, that requires removal for the construction of new Building 2, should be offset as per Appendix C of the TCKKPM. Appendix C describes the offset requirements, including a Koala Offset Management Plan (KOMP). The NSW Department of Education agreed that as a best practice measure a KOMP would be a valuable tool.

1.2 SITE LOCATION AND LANDSCAPE

Tweed River High School is in the Tweed Shire Local Government Area on Lot 219 DP755440, Lot 1 DP781510, Lot 1 DP517503, Lot 2 DP517503 and Lot 7105 DP803772. The construction associated with the new development will occur in the first two property parcels above, within and adjacent to the footprint of existing buildings, sports facilities, carparks and agricultural areas. The TRHS schoolgrounds are zoned R2 – Low density residential. Full details on the location and proposed development can be obtained from the TRHS BDAR (Sections 1.2 and 1.3).

Tweed River High School is in the Burringbar-Conondale Ranges subregion of the South-eastern Queensland IBRA bioregion. It is situated on alluvial soils and is part of the Tweed River catchment. Full landscape details can be obtained from the TRHS BDAR (Sections 2). The location where the development will occur was determined to be planted vegetation (TRHS BDAR Section 3).

1.3 INFORMATION SOURCES

Information sources used in the development of this management plan include:

- Biodiversity Development Assessment Report for the Tweed River High School (Kleinfelder 2021).
- Threatened Species App (Office of Environment and Heritage NSW 2021a).
- Threatened Species Profile Database (Office of Environment and Heritage NSW 2021b).
- Tweed Coast Comprehensive Koala Plan of Management (TCKKPM) (Tweed Shire Council 2020).

2 KOALA OFFSET MANAGEMENT PLAN

2.1 OFFSET REQUIREMENTS

2.1.1 Number and Species of Koala Feed Trees

Appendix C of the TCCKPM describes the Offset Provisions for the loss of Koala feed trees from construction activities for a development. The development at the TRHS is classified as: Other than minor .

- In the Tweed Heads Koala Management Area
- Is not in a Koala Activity Precinct or Koala Linkage Project.
- No Koalas are present (Section 4.1.4.5 TRHS BDAR).

The number of preferred Koala feed trees required to offset the impact, for the single Koala feed tree >250 mm DBH (diameter at breast height – 1.5 m) to be removed, was determined to be 16. The trees are required to be placed 3 m apart.

There is a list of 10 koala feed trees for the Tweed Coast in Schedule 2 of the TCCKPM which includes the Swamp Mahogany. The Swamp Mahogany is the most prevalent (105) Koala feed tree species in the TRHS grounds with one Tallowwood (*Eucalyptus microcorys*) the only other Koala feed tree in the grounds. The Swamp Mahogany is well suited to TRHS school grounds because the area is low and retains water. It had to be drained by a canal prior to 1976 to allow expansion of the school grounds (**Plate 1**). High tide in the canal is just below ground level (approximately 0.5 m) in the southeastern corner of the school grounds.



Plate 1: Historical aerial photography of the study area from 1961 and 1976 (Queensland Government 2020).


The Swamp Mahogany is known to inhabit areas close to tidal influence and can tolerate an occasional inundation of brackish water (DECC 2007). This indicates that the Swamp Mahogany is the most appropriate species to be used the offset Koala feed tree.

2.1.2 Placement

The recommended placement of the 16 offset Koala feed trees within the southeast corner of the TRHS grounds is shown in **Figure 1**. This area was chosen due to it is already supporting Swamp Mahogany trees, it is in an area that is unlikely to be disturbed in the future and will not interfere with any existing sporting fields or infrastructure.

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<div>0369 m</div> <div>  <div>www.kleinfelder.com.au</div> </div>		<div>Project Reference: 20212432</div> <div>Date Drawn: 2021-09-08</div> <div>Drawn by: K. Wormington</div> <div>Data Source: NSW DF - 2020 Nearmap</div>	<div>Koala Feed Tree Placement and Offset Area</div> <div>SINSW01368-20 Far North Coast Project - Ecological Services</div>	<div>Figure:</div> <div>1</div>
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2.2 PLANTING

The planting of the Koala offset trees should be undertaken by an experienced bush regenerator(s) or the TRHS grounds staff if suitably qualified. The 16 Swamp Mahogany should be sourced from local provenance seed and supplied in tube stock before being installed onsite as per **Figure 1**. Any variation from this species will need to be substituted with other Koala feed trees and agreed in writing with an Ecologist and Council before changes are to be made. The hole for each tube stock plant should be:

- Twice the depth of the tube stock and minimum 7.5cm diameter to allow for root development.
- Watered with a minimum of 10 liters at time of installation to remove any air pockets and provide adequate moisture levels for the recently installed plant.
- The plant will be planted with the root/stem interface at the soil surface.
- Create a small depression at the surface to allow water flow to infiltrate to the plant root zone.

Amelioration of site conditions of the Offset Area will be attained by:

- Spraying the planting site with a non-residual herbicide (e.g. Roundup) twice two weeks apart prior to planting.
- The spraying of the groundlayer eliminates competition for nutrients and water by the existing grass and herbs.
- Immediately after the second spray event the Offset area should be covered with a forest blend mulch to a depth of 10 cm.
- Alternatively, a 1m ring of mulch around each plant will suffice.
- The mulch will help prevent evaporation of soil moisture, heat penetration of the soil which could stifle root growth and prevent the re-establishment of competitive grasses and weeds.
- The mulch should be sufficiently distanced from the plant to prevent mulch falling in and covering the stem of the seeding which can be detrimental.
- The spraying step can be avoided as the mulch will inhibit weed development, however it is unlikely to be as effective as spraying first.
- A temporary soft barrier should be placed around the Offset area to deter people and animals from entering and possibly trampling the plants.

Planting should occur between November and March which is a period of reliable rainfall to promote plant establishment and allows for follow up rains during April and May to keep a sufficient level of moisture in the soil. Plantings can be undertaken in spring however will require a suitable watering regime until the plants are established.

2.3 MAINTENANCE

Ongoing care and maintenance until the Koala feed tree plants are established (approximately 2 years) should be undertaken by an experienced bush regenerator or the TRHS grounds staff if suitably qualified.

After planting, the plants should be watered with minimum six litres of water at the following intervals:

- Twice a week for the first two weeks.
- Once a week for the next four weeks.
- Once a fortnight for the next six weeks.

Following the above period of watering, the plants will be assessed fortnightly for the next eight months to check if the soil is moist or if the plants are stressed. If either has occurred, the plants should be watered as the maintenance staff see fit. During this period if any plants die, they will require replacement. Any new plants will follow the above maintenance schedule. In the second year, the plants will be checked on a monthly basis and watered if required.

In the first two years, any grass or weeds, that grow through the mulch, should be target sprayed with a non-residual herbicide, taking care not to overspray. When mulching becomes too thin (<50 mm), additional mulch should be applied.



2.4 MONITORING AND REPORTING

Monitoring of the Koala offset trees will start when the plants are planted and occur after the first 12 weeks, six months, 12 months, 18 months and 24 months. The monitoring will include plant height, width of the plants foliage, and general condition of the plants on a scale of 1-5 (very poor, poor, moderate, good, and excellent). Any plant deaths should be noted.

A brief report is to be written using the data collected to determine the progress of the plant by the average growth rates and condition of the plants. The report will be started when the plants are planted and updated after 12 weeks, 6 months, 12 months, and 2 years. The average height, diameter of foliage and condition at each interval should be graphically displayed. The report will be made available to the Tweed Shire Council at the completion of monitoring.



3 REFERENCES

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