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Response to feedback from DECCW, DoP, and Newcastle
City Council regarding the Flora and Fauna Assessment and
Offset Strategy completed for the proposed HMRI medical
research and development facility.



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HMRI Medical Research and Development Facility

Response to feedback from DECCW, DoP, and Newcastle City Council regarding the Flora and Fauna Assessment and Offset Strategy completed for the proposed HMRI medical research and development facility

December 2009

Report prepared for the Hunter Medical Research Institute with instruction from APP Corporation Pty Limited.

This report was prepared for the sole use of the proponents, their agents and any regulatory agencies involved in the development application approval process. It should not be otherwise referenced without permission.

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1 Introduction

1.1. Purposes of this Report

This report has been completed to respond to the feedback letters received to date as a result of the lodged development application.

1.2. Proposed Development and development application submission process

Hunter Medical Research Institute (HMRI) is proposing to construct two medical research and development wings (East and West wings) with an option for future expansion and associated infrastructure within the John Hunter Hospital grounds (Figure 1).

The proposed development is to be undertaken in two stages. Stage One includes the demolition of the existing car park and Club Med building supporting the John Hunter Hospital and the construction of the equivalent numbers of carparks as was demolished to the east (Figure 2). Stage One covers an area of 1.7 ha, of which 1.4 ha is native vegetation. The vegetation to be disturbed as part of Stage One works includes 13 hollow bearing trees supporting 24 habitat hollows and 10 clumps of the 11 clump *Tetratheca juncea* population mapped (Figure 3). Stage Two will involve all works related to the construction of the proposed medical research and development facility (Figure 2). Stage two covers an area of 3.5 ha, of which 2.4 ha is native vegetation. It must be noted that 1 ha of the native vegetation will only have the understorey layers (Shrub, Mid-storey and ground covers) slashed on a regular basis to manage potential bushfire fine fuel levels. The over-storey will remain intact. The vegetation to be disturbed as part of Stage Two works includes 16 hollow bearing trees supporting 30 habitat hollows and 1 clump of the 11 clump *Tetratheca juncea* population mapped (Figure 3).

The development application for the medical research and development facility has been lodged under Part 3A of the EP&A Act.



1.3. Previous Environmental Studies

During March 2009 **ecobiological** was commissioned by the HMRI to prepare an assessment of flora, fauna and threatened species for the proposed construction of a medical research and development facility within the grounds of the John Hunter Hospital, New Lambton Heights NSW.

Data collected during the field surveys revealed that the study area supported 162 plant species within one plant community, Coastal Plains Smooth-barked Apple Woodland. Thirty-five trees within the study area supported 63 habitat hollows (Figure 3). An individual plant of the threatened flora species, *Tetratheca juncea* was recorded within the proposed development footprint. A total of 62 fauna species were recorded within the study area including the following threatened species listed as vulnerable under the NSW *Threatened Species Conservation Act 1995*: Little Bentwing-bat *Miniopterus australis*, Eastern Bentwing-bat *Miniopterus oceanensis*, Eastern Freetail-bat *Mormopterus norfolkensis*, Grey-headed Flying-fox *Pteropus poliocephalus*, Masked Owl *Tyto novaehollandiae*, Powerful Owl *Ninox strenua* and the Glossy Black-Cockatoo *Calyptorhynchus lathami*.

The Assessment of Significance revealed that for the majority of threatened species there would be minimal impact from the proposed development. However, an additional survey was required to determine the extent of impact on the threatened plant, *Tetratheca juncea*. Surveys for this species were conducted outside of the flowering season, and it was recommended that an additional survey for this species be undertaken within the study area during the known flowering period (September – December). It was recommended that the results of this targeted survey form an Addendum to this assessment.

On 10 September 2009, a detailed survey was undertaken to locate and map all clumps of *Tetratheca juncea* within the study area and an addendum was completed to support the original Flora, Fauna & Threatened Species Assessment (**ecobiological**, 2009a). Eleven clumps of *Tetratheca juncea* were found and mapped (Figure 4). The *Tetratheca juncea* population found was a small, sparse population. It was determined that the potential loss of the *Tetratheca juncea* population at the subject site would not put any other local populations of *Tetratheca juncea* at risk of extinction (**ecobiological**, 2009b).



Figure 1: Proposed HMRI medical research and development facility



Figure 2: Staged works - Stage 1 to be assessed and determined under Part 5 of the EP&A Act and Stage 2 to be assessed and determined under Part 3A of the EP&A Act.



Figure 3: Hollow Bearing Tree and *Tetratheca juncea* locations



2. Response to Initial Feedback from DoP, DECCW and NCC.

This section will look at responses from the above three bodies.

2.1. Response to DoP feedback

The DoP has asked for more information relating to the threatened species and the process used to avoid, minimise, mitigate and then offset potential environmental impacts. Specifically more detailed information relating to the proposed translocation of the *Tetratheca juncea* plants.

The proposed medical research and development facility has been proposed for this site due the significant benefit and synergy this type of facility would have with Newcastle's largest medical facility (John Hunter Hospital, JHH). The physical site has also been chosen based on topography constraints and the fact that the majority of the building will be situated on land already disturbed. The additional clearing required is mainly due the carpark facilities required and Asset Protections Zones required for protection. No other site within HNEAHS owned land with close proximity to the JHH exists which could reduce the levels of clearing required. Therefore all attempts to avoid impact, minimise the level of impact have been exhausted. Mitigation measures have been proposed and offset strategies designed.

With respect to the design of the carpark, other alternatives have been considered, however the re-alignment or re-design was not an option due to several factors including topography constraints, construction costs, and serviceability to the proposed facility and potential future land uses.

Therefore with respect to the proposed translocation of the *Tetratheca juncea* plants, translocation and monitoring was considered the most appropriate mitigation measure and offset strategy for this site and number of plants to be impacted. A more detailed *Tetratheca juncea* translocation process has been provided below in section 3 to respond to the six points outlined in the Attachment 1 of the DoP response letter.



2.2. Response to DECCW feedback

The DECCW letter has two main points to which I will respond; firstly that an offset has not been provided for the loss of potential threatened species habitat and secondly, states that translocation of *Tetratheca juncea* may not be a suitable mitigation measure.

There must be several factors considered when deciding whether a generalised statement such as “no offset has been provided” is accurate. Firstly the land to the north of the JHH is now zoned 7a conservation. Prior to its rezoning in 2003 it was zoned 5a special uses. The rezoning of this land to a conservation zoning with the land subject to this development application remaining as 5a, has been considered by the HNEAHS as an offset, knowing that the JHH facilities would be expanded and proposed for the remaining 5a land. Secondly, a weed management plan has been proposed to improve the quality of the native vegetation surrounding the proposed development extending north into the conservation land. Improvement of native vegetation is one of the key factors in offset strategies. The offset strategies proposed on the Zone 7a lands to support the development application also looked at offsetting the loss of key habitat features such as habitat hollows at a 1: 1 ratio. It is therefore believed that the attached offset strategy report (Appendix 1) is adequate for the proposed development and aims to maintain and improve biodiversity.

In response to the translocation of *Tetratheca juncea* being a suitable mitigation measure or not, it has been recommended with translocation constraints in mind, and aims to improve the outcome of translocation projects. **Ecobiological** has translocated *Tetratheca juncea* plants in the past with varying success as openly acknowledged in the offset strategy report. However in the past the volume of soil translocated with the plants was considerably less than is currently being recommended and the *Tetratheca juncea* plants were not watered in for the time period being recommended in this case. These factors will be addressed in any future translocation procedure for *Tetratheca juncea*. The translocation of threatened plants is an important area of research requiring further investigation, as increasing pressures from urban expansion and transport routes will continue to impact threatened plants species. The protection of habitat is critical, however the ability to translocate these species successfully is also a critical part of the overall protection and long-term survival of our threatened species. It is therefore proposed that the translocation of a small number of plants, such as is being recommend in the attached offset strategy report is



a good sized research opportunity with a reasonable expectation of greater than 40% survival rate. The proposed translocation of the *Tetralthea juncea* plants also has taken into consideration the mycorrhizal fungi relationship these plants have, thus the larger volume of in-situ soil being translocated along with the plant. The below revised detailed *Tetralthea juncea* translocation process (section 3) will expand on what has previously been recommended and includes the concerns of the DECCW letter.

2.3. Response to NCC feedback

The response letter from NCC raises several points requiring a response. Firstly NCC has noted concerned for the *Tetralthea juncea* translocation process and their concerns have been considered when revising the translocation process in section 3. Namely, the expansion of the monitoring period from one year out to four years. The contingency measures also mentioned by NCC have been built into the more robust translocation process. This has been done through experience in translocating this flora species previously and subsequently building in translocation processes that have not been previously included and thought to have contributed to the low survival rate of *Tetralthea juncea* in previous translocation projects.

NCC's second point is seemingly a rhetorical statement, with no obvious question put forward. However it is noted that incremental loss of habitat has been one of the Key Threatening Processes resulting in the number of flora and fauna species listed as vulnerable or endangered today. With respect to this development proposal, when considered with other potential developments in the area (Newcastle City bypass) that will have a considerable environmental impact, the overall loss of 3.8ha of edge habitat will not result in any of the threatened species considered being put at risk of extinction in the region. This has also to be placed in the context of proposed habitat enhancement measures, ie. the provision of nest-boxes and the management of weeds as important environmental offsets for this development. The translocation, if successful, will not result in the loss of any genetic diversity within the local populations *Tetralthea juncea*.



3. Revised *Tetratheca juncea* translocation process

The translocation / monitoring program should be implemented as follows:

- 1) Each clump should be removed using a small excavator, ensuring that the root system is kept intact and that a large volume of soil is taken with the plant (this will help to support the myccrohizal fungi relationship required for the survival of the *Tetratheca juncea* clumps);
- 2) Clumps with their root mass and associated soil shall be carefully maintained and kept in a stable, humid environment until translocation is imminent;
- 3) The clumps shall be translocated into a vegetation community with an overstorey dominated by *Angophora costata* and with co-dominant species such as *Eucalyptus umbra*, *Eucalyptus piperita* subsp. *piperita* and *Eucalyptus resinifera* subsp. *resinifera*. The shrub layer should contain both *Banksia spinulosa* and *Xanthorrhoea latifolia*. The translocation area should be as close as possible to the clumps' original location and be planted within an area inside the John Hunter Hospital grounds that will not be developed in the future (possibly the land zoned 7a conservation to the north, Figure 4, this zoning provides for a level of security to protect the translocated plants from future development and is owned by HNEAHS); The area being suggested as the translocation area supports the above recommended vegetation community, is located on the same aspect and drainage line as the plants are being translocated from and is easily accessible for watering and monitoring events;
- 4) The translocated clumps should be well watered in and watered on a weekly basis for 8 weeks and then monthly for 4 months (a total of 6 months watering).



5) The translocated clumps should be monitored for a four year period, with monitoring occurring every watering event, then once during September 2010, 2011, 2012 and 2013 and again during November 2010, 2011, 2012 and 2013. September is the recommended monitoring period as it is the period when the *Tetratheca juncea* plants flower most prolifically. November provides a long enough period after the initial flowering event for seed capsules to have developed. The monitoring periods will provide an indication of the health and reproductive success of the plants. The following information should be recorded during the initial translocations;

- Ø The number of stems per clump
- Ø The general health of the translocated clump;
- Ø The exact location of the clump using a hand held GPS;
- Ø The surrounding vegetation type and dominate species per stratum; and
- Ø The number of flowers or seed capsules per clump if they are translocated during spring or summer.

During the watering events the general health of the plants should be noted, giving an indication of the response to the translocation process.

During the September monitoring events the monitoring should record;

- Ø the general state of the translocated plants health;
- Ø if they proceeded to flower;
- Ø Count the number of stems per clump; and
- Ø The number of flowers per clump.



The November monitoring events should count the number of seed capsules per clump. A report should be completed on an annual basis outlining the results of the data collected. Once the initial years monitoring has been completed, data can be compared between years and the overall health of the plants evaluated. On completion of the four year monitoring, the success of the translocation process can be evaluated and recommendations can be provided that may have resulted from the translocation program process.

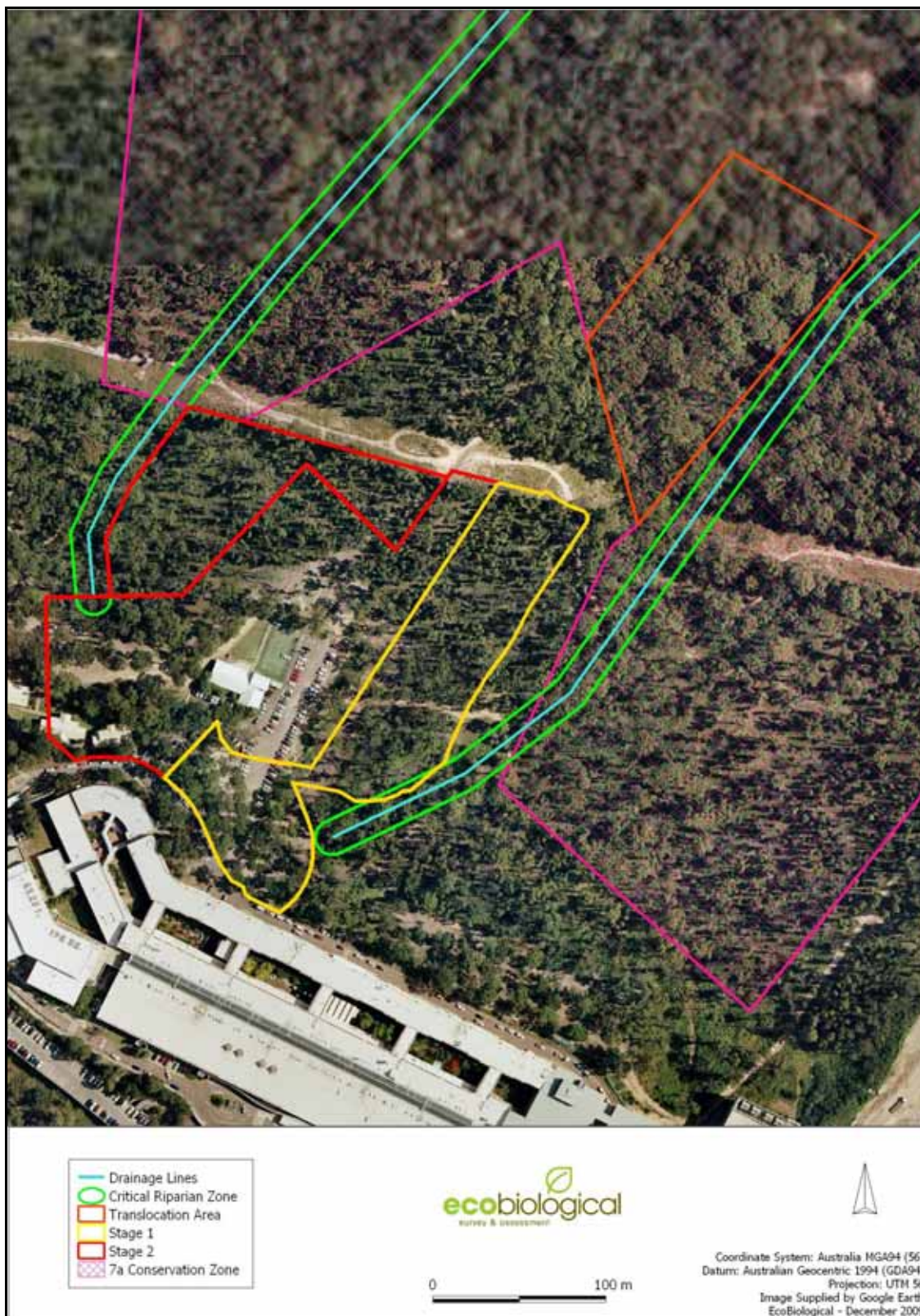


Figure 4: Proposed translocation area



References

ecobiological (2009a). Flora, Fauna and Threatened Species Assessment for a proposed medical research and development facility, 2 Lookout Road, New Lambton Heights NSW. Report prepared for the Hunter Medical Research Institute, May 2009.

ecobiological (2009b). Targeted *Tetratheca juncea* Survey – Addendum to the Flora, Fauna and Threatened Species Assessment (Ecobiological, May 2009). Prepared for the Hunter Medical Research Institute, September 2009.



Appendix 1 -



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Offset Strategy for Stages 1 & 2 of the development
of the Hunter Medical Research Institute's proposed
medical research and development facility.

Offset Strategy

Proposed Medical Research and Development Facility, 2 Lookout Road, New Lambton Heights NSW.

October 2009

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1 Background Information

1.1 Proposed Development

Hunter Medical Research Institute (HMRI) is proposing to construct two medical research and development wings (East and West wings) with an option for future expansion and associated infrastructure within the John Hunter Hospital grounds (Figure 1).

The proposed development is to be undertaken in two stages. Stage One includes the demolition of the existing car park and Club Med building supporting the John Hunter Hospital and the construction of the equivalent numbers of carparks as was demolished to the east (Figure 2). Stage One covers an area of 1.7 ha, of which 1.4 ha is native vegetation. The vegetation to be disturbed as part of Stage One works includes 13 hollow bearing trees supporting 24 habitat hollows (Figure 3) and 10 clumps of the 11 clump *Tetratheca juncea* population mapped (Figure 4). Stage Two will involve all works related to the construction of the proposed medical research and development facility (Figure 2). Stage two covers an area of 3.5 ha, of which 2.4 ha is native vegetation. It must be noted that 1 ha of the native vegetation will only have the understorey layers (Shrub, Mid-storey and ground covers) slashed on a regular basis to manage potential bushfire fine fuel levels. The over-storey will remain intact. The vegetation to be disturbed as part of Stage Two works includes 16 hollow bearing trees supporting 30 habitat hollows (Figure 3) and 1 clump of the 11 clump *Tetratheca juncea* population mapped (Figure 4).

The development application for the medical research and development facility has been lodged under Part 3A of the EP&A Act.

1.2 Previous Environmental Studies

During March 2009 **ecobiological** was commissioned by the HMRI to prepare an assessment of flora, fauna and threatened species for the proposed construction of a medical research and development facility within the grounds of the John Hunter Hospital, New Lambton Heights NSW.

Data collected during the field surveys revealed that the study area supported 162 plant species within one plant community, Coastal Plains



Smooth-barked Apple Woodland. Thirty-five trees within the study area supported 63 habitat hollows (Figure 3). An individual plant of the threatened flora species, *Tetratheca juncea* was recorded within the proposed development footprint. A total of 62 fauna species were recorded within the study area including the following threatened species listed as vulnerable under the NSW *Threatened Species Conservation Act 1995*: Little Bentwing-bat *Miniopterus australis*, Eastern Bentwing-bat *Miniopterus oceanensis*, Eastern Freetail-bat *Mormopterus norfolkensis*, Grey-headed Flying-fox *Pteropus poliocephalus*, Masked Owl *Tyto novaehollandiae*, Powerful Owl *Ninox strenua* and the Glossy Black-Cockatoo *Calyptorhynchus lathami*.

The Assessment of Significance revealed that for the majority of threatened species there would be minimal impact from the proposed development. However, an additional survey was required to determine the extent of impact on the threatened plant, *Tetratheca juncea*. Surveys for this species were conducted outside of the flowering season, and it was recommended that an additional survey for this species be undertaken within the study area during the known flowering period (September – December). It was recommended that the results of this targeted survey form an Addendum to this assessment.

On 10 September 2009, a detailed survey was undertaken to locate and map all clumps of *Tetratheca juncea* within the study area and an addendum was completed to support the original Flora, Fauna & Threatened Species Assessment (**ecobiological**, 2009a). Eleven clumps of *Tetratheca juncea* were found and mapped (Figure 4). The *Tetratheca juncea* population found was a small sparse population. It was determined that the potential loss of the *Tetratheca juncea* population at the subject site would not put any other local populations of *Tetratheca juncea* at risk of extinction (**ecobiological**, 2009b).



Figure 1: Proposed HMRI medical research and development facility



Figure 2: Staged works.



Figure 3: Habitat hollow locations within the study area.

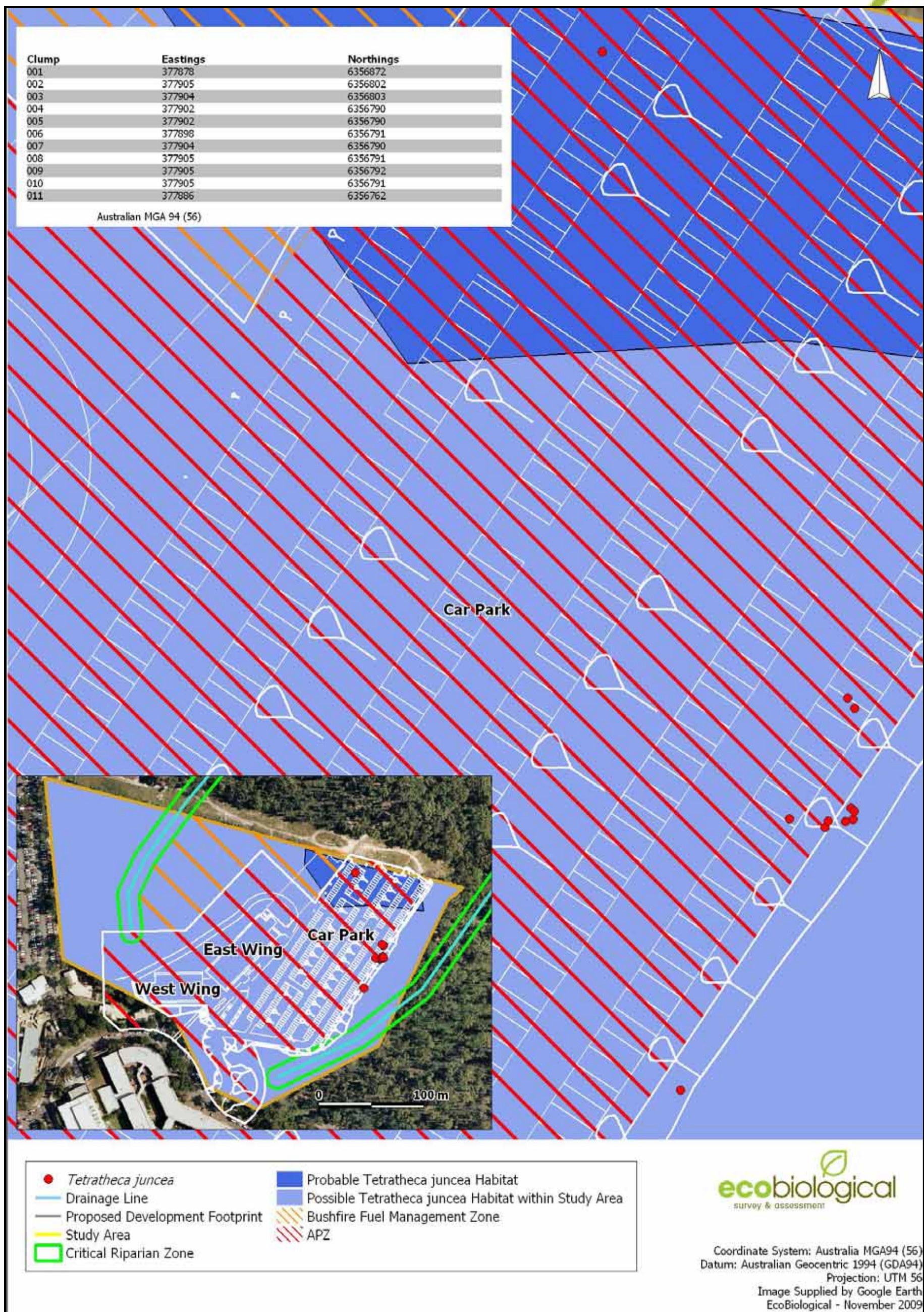


Figure 4: *Tetradleca juncea* clump locations.



2 Mitigation Measures

The recommended offset strategy includes the following two mitigation measures aimed at offsetting the loss of key habitat features and impacts to the threatened flora species, *Tetratheca juncea*.

2.1 Mitigation Measure 1: Nest Box installation and monitoring

In total 13 hollow bearing trees supporting 24 habitat hollows will be removed as a result of the Stage One works and 16 hollow bearing trees supporting 30 habitat hollows will be removed as a result of Stage Two works. It is therefore recommended that the habitat hollows lost be replaced at a 1: 1 ratio and monitored annually (during September) for a 3-year period.

The habitat hollows to be removed include 18 small, 28 medium and eight large hollows. Therefore, the nest boxes to be installed should include 18 boxes with a small entrance size to target microchiropteran bats, 28 with a medium entrance size to target arboreal mammals such as the Squirrel and Sugar Glider and eight large nest boxes to target larger arboreal mammals such as the Common Brushtail Possum. At least one of the large nest boxes should be designed for housing large forest owls, such as the Powerful owl or Masked Owl.

These nest boxes should be installed to the north of the power line easement in land which is zoned 7(a) conservation and owned by the HNEAHS. The on-going monitoring should include: 1) recording of when a nest box was initially occupied; 2) what species are occupying it; 3) any necessary maintenance of the nest boxes; and, 4) removal of pest species found to be occupying any nest box.

2.2 Mitigation Measure 2: Translocation of *Tetratheca juncea*

Eleven clumps of *Tetratheca juncea* were mapped. It is recommended that these clumps be translocated and monitored for a four year period.

The translocation / monitoring program should be implemented as follows:



- 1) Each clump should be removed using a small excavator, ensuring that the root system is kept intact and that a reasonable amount of soil is taken with the plant;
- 2) The clumps should be translocated into a vegetation community with an overstorey dominated by *Angophora costata* and with co-dominant species such as *Eucalyptus umbra*, *Eucalyptus piperita* subsp. *piperita* and *Eucalyptus resinifera* subsp. *resinifera*. The shrub layer should contain both *Banksia spinulosa* and *Xanthorrhoea latifolia*. The translocation area should be as close as possible to the clumps' original location and be planted within an area inside the John Hunter Hospital grounds that will not be developed in the future (possibly the land zoned for conservation to the north);
- 3) The translocated clumps should be well watered in and watered on a weekly basis for 8 weeks and then monthly for 4 months (a total of 6 months watering).
- 4) The translocated clumps should be monitored, with monitoring occurring every watering event, then once during September 2010 and again 12 months from the initial translocation date. The monitoring should simply record the state of the translocated plants and if they proceeded to flower (during its flowering period); and,
- 5) Upon completion of the 12 month monitoring period, a letter should be submitted to the appropriate authorities reporting on the success of the translocation program and provide any recommendations that may have resulted from the translocation program process.

2.3 Mitigation Measure 3: Weed Management Plan

A weed management plan (WMP) should be written to improve habitat quality along the length of the drainage lines to the east and west of the proposed medical research and development facility, extending north to the boundary of lands owned by HNEAH (Figure 5).



The weed management plan should concentrate on the areas identified as critical riparian zone (an area which is 20m wide, i.e. 10m either side of the centre of the drainage line). If any upslope weed sources are identified they should also be included in the WMP. The WMP should aim to have: 1) an initial weed management stage; 2) a replanting stage, whereby areas previously dominated by weeds are planted out with native species; and, 3) a monitoring period of up to 5 years to ensure that the replanting or natural regeneration is progressing effectively and that no re-infestation of weeds is occurring. If re-infestation is identified during the 5-year monitoring period, further weed management will be required.

The use of insecticides should be avoided within the study area where possible to retain the integrity of the surrounding habitat for insectivorous microchiropteran bats, Large Forest Owls and amphibian species. It is acknowledged that herbicides will be required to be used to control weeds along the drainage lines, therefore, the following recommendations are made to protect the ecologically sensitive surrounding environment: 1) Any weed spraying should take place only when the possibility of rain is considered low; 2) Round-up, Bi-active or a similar herbicide suitable for aquatic environments are the main recommended herbicides, however, these will kill all plant species with contact and therefore should be applied in a highly controlled manner.

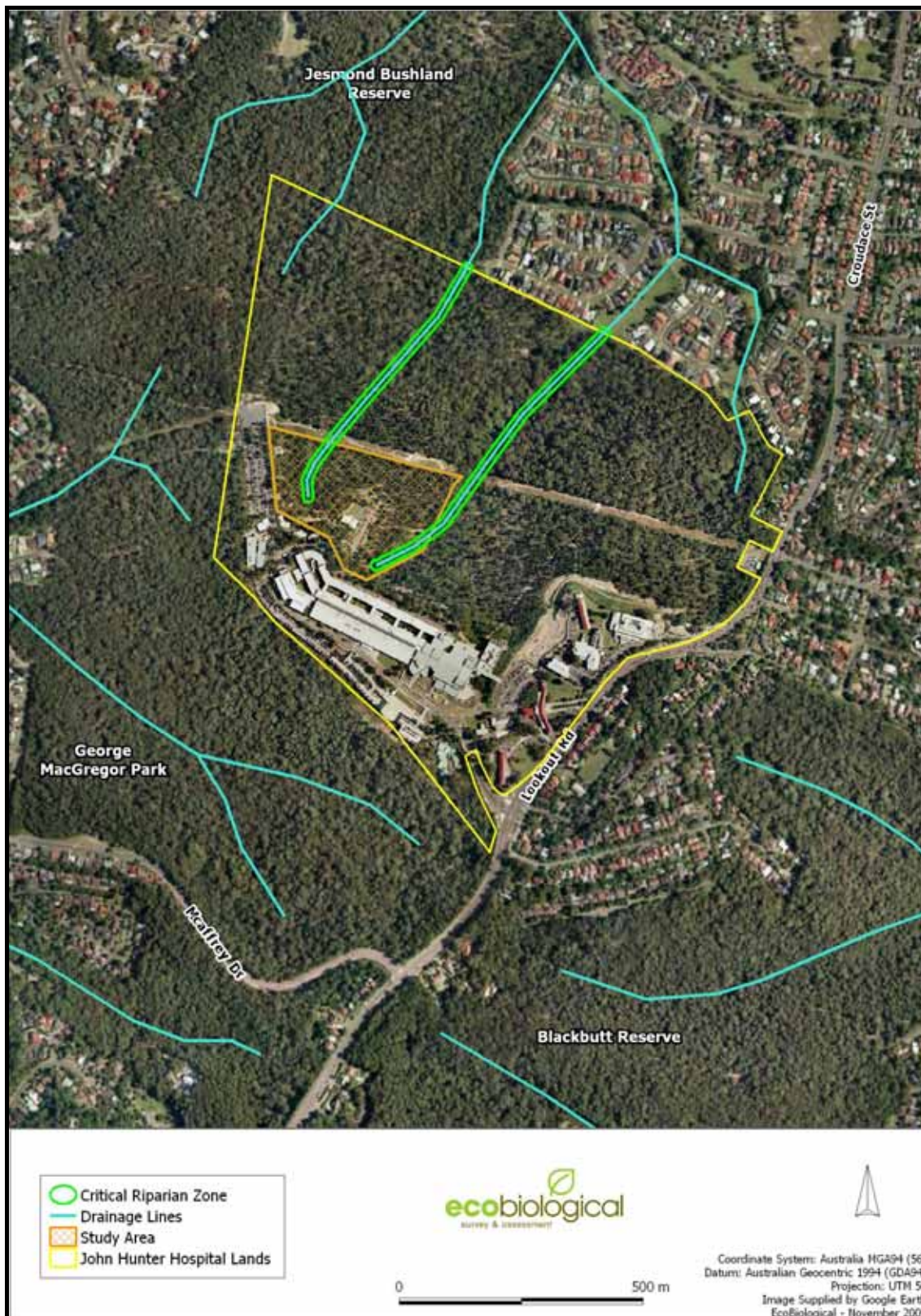


Figure 5: Target critical riparian zone habitat for the weed management plan.



2.4 Mitigation Measure 4: *Tetratheca juncea* survey and mapping

A detailed survey of all land owned by the HNEAHS should be undertaken with the aim of identifying and mapping all clumps of the threatened flora species, *Tetratheca juncea*. The purpose of this survey is to better inform local government and the Department of Environment, Climate Change and Water (DECCW) of the status of *Tetratheca juncea* in the area. The clumps should be recorded using a hand held GPS. Clumps should be defined according to Payne *et al.* (2002) i.e. a group of stems separated by 30cm from any other group of stems. The survey should be conducted during the main flowering period of the species (between late September and early November). Results of the survey should be forwarded to DECCW's threatened species unit for inclusion in the NSW Wildlife Atlas.



3 Conclusion

The proposed mitigation measures forming the Offset Strategy are best suited for the subject site and the proposed level of impact, as it will result in the *Tetratheca juncea* population being translocated, with the potential for its long term survival on-site, habitat hollows being removed to be replaced resulting in no net loss of important habitat features, an improvement in habitat quality with the weed management plan being implemented and an increase in the knowledge of *Tetratheca juncea* population distribution and population size within the NCC LGA through the completion of a detailed survey of HNEAHS land.

References

ecobiological (2009a). Flora, Fauna and Threatened Species Assessment for a proposed medical research and development facility, 2 Lookout Road, New Lambton Heights NSW. Report prepared for the Hunter Medical Research Institute, May 2009.

ecobiological (2009b). Targeted *Tetratheca juncea* Survey – Addendum to the Flora, Fauna and Threatened Species Assessment (Ecobiological, May 2009). Prepared for the Hunter Medical Research Institute, September 2009.