Australia Government 20 Million Trees Program 2014

Little Llangothin Lagoon Ramsar Site – Restoring Critically Endangered Woodland

SITE ACTION PLAN

Prepared by WetlandCare Australia August 2015

1. Property and Landholder Details

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Landholder:	NSW National Parks and Wildlife Service	**Contact:**	Koen Dijkstra
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Postal Address:	PO Box 281, Glen Innes, NSW 2370		
Property Address:	Little Llangothlin Nature Reserve		
Property Details:	Little Llangothlin Nature Reserve		

2. Project Aims

This project will restore 45 ha of critically endangered New England Peppermint Woodland within the Little Llangothlin Nature Reserve Ramsar Site. Revegetating previously cleared areas will link existing remnants of the terrestrial nationally critically endangered threatened ecological community (TEC) New England Peppermint Woodland with the aquatic nationally endangered Upland Wetland TEC present at Little Llangothlin Lagoon. Little Llangothlin Lagoon is internationally significant wetland (Ramsar site) supporting migratory waterbirds and threatened fauna. Restoring native vegetation will help to protect and maintain these habitat values by enhancing fauna habitat including providing nesting and roosting habitat for waterbirds to protect the ecological character of the Ramsar site. This project will expand a recent successful trial to re-establish 2.5ha New England Peppermint Woodland at the site. This project will undertake native revegetation of about 5000 native plants to restore the degraded native vegetation community incorporating New England Peppermint Woodland, a nationally endangered ecological TEC. Improved native vegetation adjacent to Little Llangothlin will also improve water quality entering this Upland Wetland TEC.

Management Objectives

- Restore 45 ha of native vegetation, New England Peppermint Woodland TEC, within Little Llangothlin Nature Reserve through revegetation with native species characteristic of the community.
- Plant 5000 trees to expand, connect and consolidate existing New England Peppermint Woodland TEC remnants and link them to other ecological communities in the landscape including the nationally endangered Upland Wetlands of the New England Tableland (Little Llangothlin Lagoon).
- 45 ha of previously cleared land will be restored to New England Peppermint Woodland with a *Eucalyptus nova-anglica* dominated canopy (at least 50%) and a density of 100 trees per hectare (to satisfy TEC listing advice).
- Work with local stakeholders and contractors to successfully undertake planting of 5000 trees.

3. Revegetation Strategy

Benson and Ashby (2000) described the vegetation of the Guyra area and classified 97 hectares of the Little Llangothlin Lagoon Nature Reserve as 'cleared' with only 44 hectares of native vegetation remaining. Remnant vegetation was comprised of mixed Black Sallee/Snow Gum low open forest or woodland with small patches of Ribbon Gum/Mountain Gum/Snow Gum tall open forest (see Map 1 below).

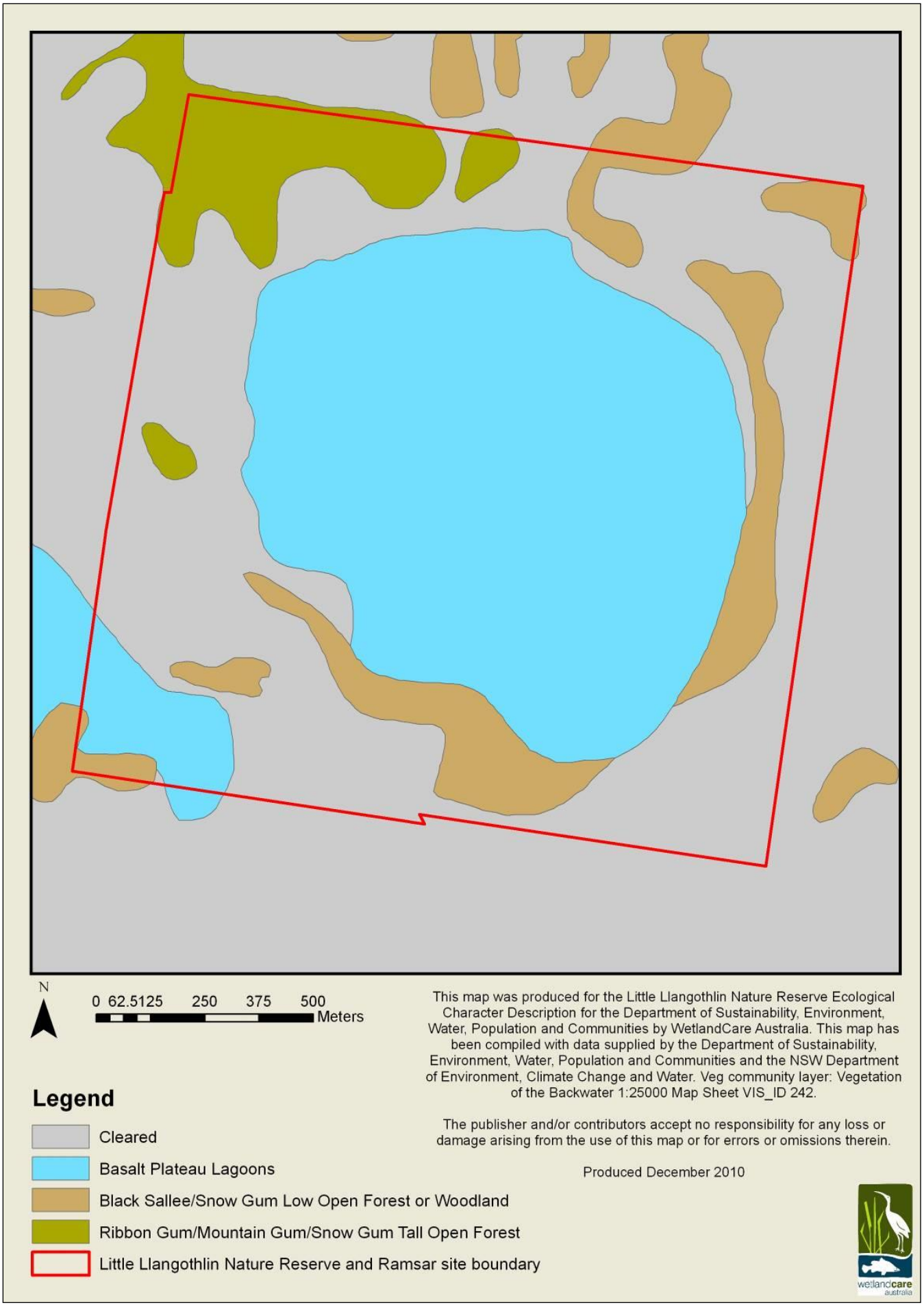
Hunter (2011) recently reported that Eucalypt woodland communities which could be classified as New England Peppermint Woodland TEC could be found right throughout the reserve in non-inundated areas. He noted that most of the intact woodland within the reserve (18% of reserve area) was dominated by *Eucalyptus pauciflora, Eucalyptus nova-anglica, Eucalyptus stellulata, Eucalyptus acaciiformis¸ Eucalyptus dalrympleana* subsp. *heptantha,* and *Eucalyptus viminalis* with 15-35% canopy cover. These communities were termed Snow Gum - Peppermint Woodland. Most of the non-inundated parts of the reserve (27% of reserve area), however, were found to be over-cleared and not yet regenerated. Canopy trees were usually absent with only 5-10% cover with only *Eucalyptus nova-anglica* remaining. These communities were termed New England Peppermint Open Woodland however are obviously highly degraded from their natural state (see photos in Section 5). Map 2 below shows the distribution of the relatively intact community (Snow Gum - Peppermint Woodland) and the distribution of the cleared and degraded community (New England Peppermint Open Woodland) within the reserve.

The targeted planting areas are focused on the predominantly cleared and non-regenerating areas of the reserve represented by the mapped New England Peppermint Open Woodland community shown on Map 2. Planting areas were developed and mapped as shown on Map 3 to fill in these previously cleared areas to re-instate 45 hectares of New England Peppermint Woodland TEC and restore connectivity between remnants of intact woodland communities at the site. As shown on Map 3, the proposed planting area has been divided into three areas to reflect the three planting stages within the timeframe of the project.

Revegetation species selection was guided by the New England Peppermint Woodland TEC listing advice (DSEWPaC 2011). This advice describes the key characteristics and condition thresholds of the community as having an overstorey dominated or co-dominated (>30-50% of canopy) by *Eucalyptus nova-anglica,* with a range of other associated tree species which may be co-dominant in the ecological community, including *E. pauciflora* (Snow Gum), *E. dalrympleana* subsp.*heptantha* (Mountain Gum) and E. stellulata (Black Sallee). On this advice it was decided to include > 50% *Eucalyptus nova-anglica* as the basis of the planting list with a mixture of the other identified canopy species. The listing advice notes that the shrub layer in the community is typically sparse or absent and the ground layer vegetation is usually dense, dominated by native grasses and herbs including *Poa sieberiana* and *Themeda australis*. The existing intact woodland vegetation within the Reserve as described by Hunter (2011) was also considered, which noted the occurrence of a sparse shrub layer dominated by *Acacia dealbata* (Silver Wattle) within the surrounding vegetation communities. On this basis it was decided to include a small number of *Acacia dealbata* in the planting list. The final planting list as shown below in Table 1 was developed to align with both the official listing advice for New England Pepplermint Woodland TEC as well as the descriptions of the existing intact woodland vegetation within the reserve surrounding the planting areas.

Table1: Revegetation species list

Scientific Name	*Common Name*	*Spring 2015*	*Spring 2015*	*Total*
Acacia dealbata	Silver Wattle	240	180	420
Eucalyptus dalrympleana	Mountain Gum	120	100	220
Eucalyptus nova anglica	New England Peppermint	1440	1200	2640
Eucalyptus pauciflora	Snow Gum	560	300	860
Eucalyptus stellulata	Black Sallee	560	300	860
Total		2920	2080	5000



Map 1: Broad vegetation communities within LLNR Ramsar site (adapted from Benson and Ashby 2000)

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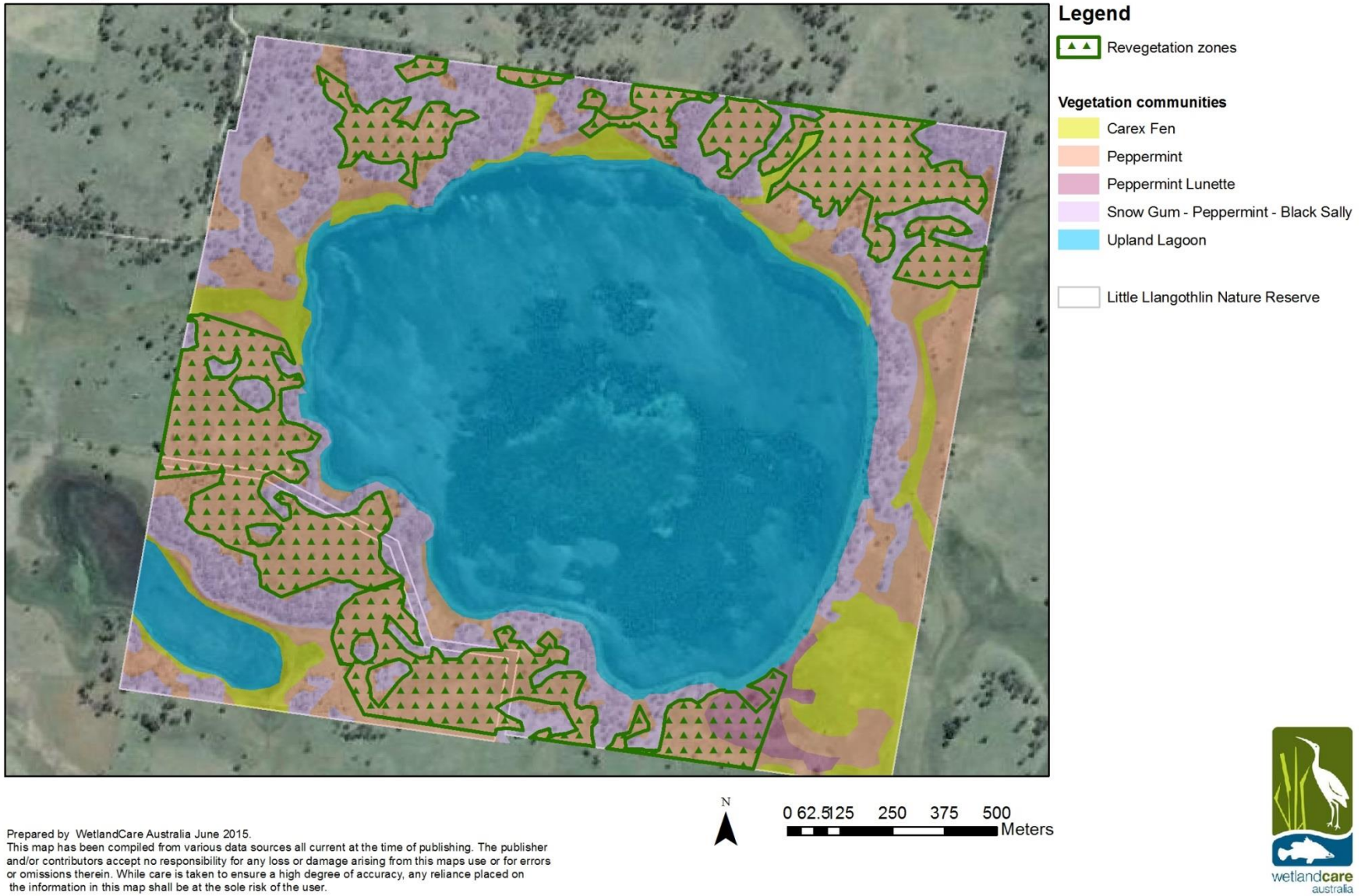

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Map 2: Existing vegetation communities at LLNR Ramsar site showing remnant vegetation planting areas.

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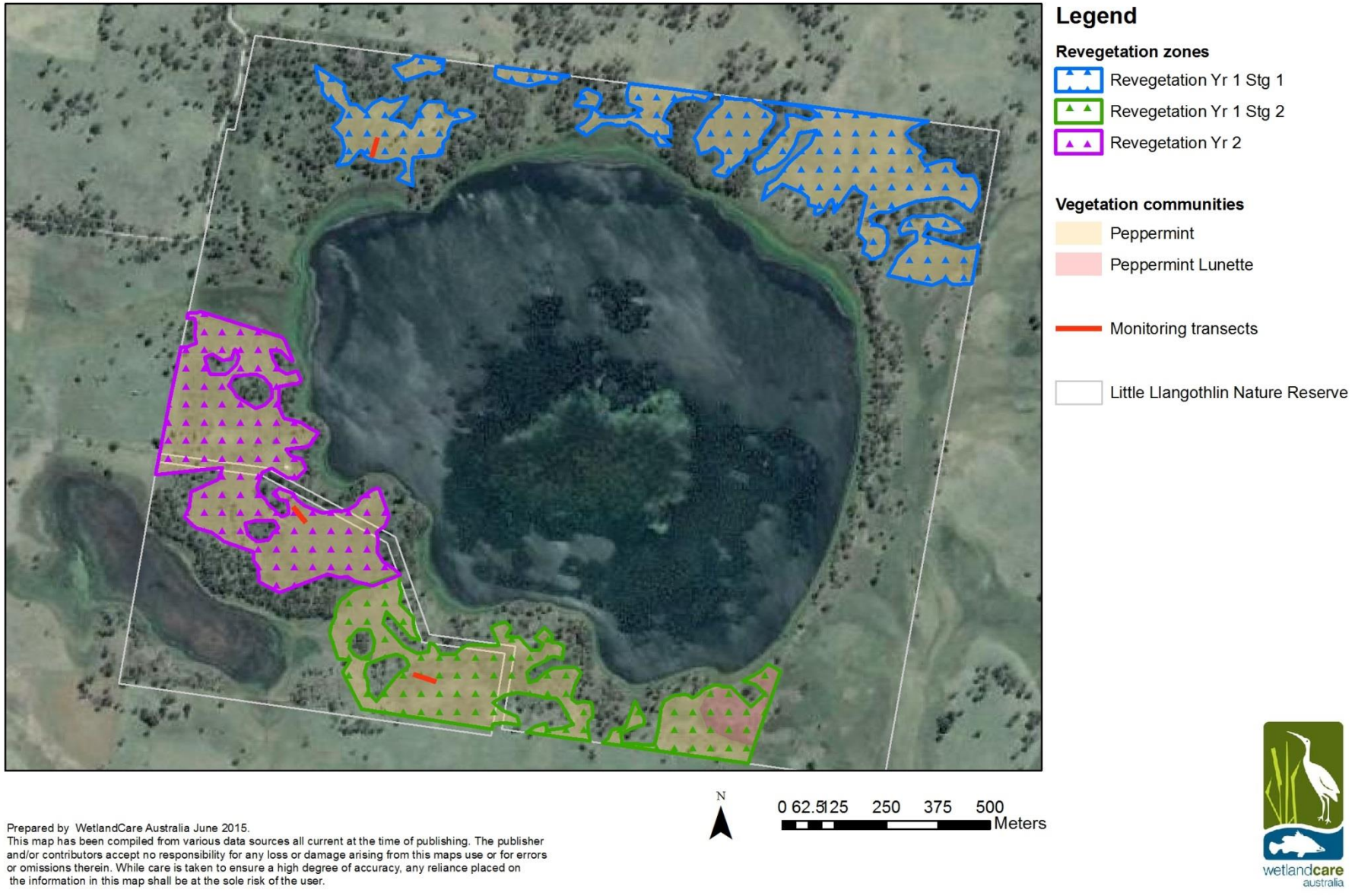

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Map 3: Revegetation stages at LLNR Ramsar site showing monitoring transect locations.

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4. Management Actions

This project will directly expand on a successfully completed revegetation project which re-established 2.5 ha New England Peppermint Woodland within Little Llangothlin Nature Reserve Ramsar site. This project will utilise the proven methodologies used in the previous trial project and continue the existing working partnerships established between WetlandCare Australia, NSW National Parks and Wildlife Services, local contractors and the community to ensure successful completion and project outcomes based on a tried and tested example already undertaken at the site.

The EPBC Act listing advice for the critically endangered New England Peppermint Grassy Woodlands defines the ecological community as having a canopy dominated by *Eucalyptus nova-anglica* (comprising at least 30% of canopy species), with a density more than 20 trees per hectare. The community is noted to have a sparse shrub layer but has an understory of native herbs and grasses. This description will be used as a guide in order to re-establish previously cleared areas of this community within the site. Understory grasses and herbs remain within the proposed restoration area, however the canopy is largely absent due to previous prolonged and extensive clearing. The community will be re-established by revegetating with 100 native seedlings per hectare, of which at least 50% are *Eucalyptus nova-anglica,* as per the species list in Table 1.

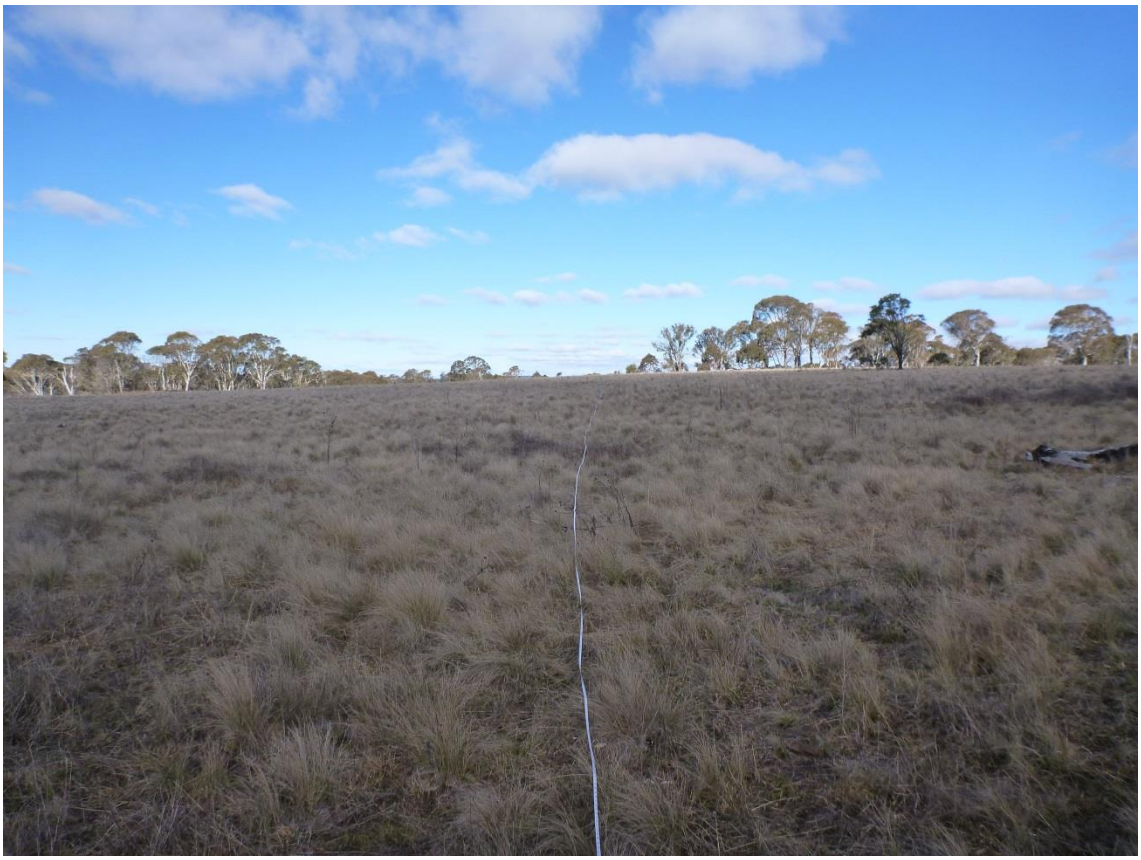
Seedlings will be sourced locally and installed at approximately 10m x 10m spacings. Seedlings will be installed with minimal disturbance to the broader grass and herb layer apart from invasive species suppression and directly around each planting site to prevent competition with seedlings. Seedlings will be mulched and watered and tree guards will be installed to protect seedlings from grazing by Kangaroos until they have become well established. Revegetation will be completed in stages over the term of the project to minimise risks and enable maintenance. Two planting stages will occur in spring 2015, and the remaining trees will be planted in the third stage in spring 2016. Planting times have been chosen to minimise the risk of summer and winter extremes.

Monitoring will be undertaken to measure the success of the revegetation activities and demonstrate changes in the vegetation community within planting areas. Three 50 m permanent vegetation assessment transects will be installed across the site (locations shown in Map 3) and data will be collected to quantify the composition and structure of the vegetation community before and after project activities. Six permanent photo points will also be established (at each end of vegetation transects) with photo monitoring undertaken to visually demonstrate changes in the vegetation community.

Table2: Summary of Management Actions

Management Action	Description	Zones	Timing	Responsibility
Monitoring	3 x vegetation transects (community composition and structure) 6 x photopoints	All	Data collected before, during and after project activities commence.	WetlandCare Australia
Native Vegetation Restoration Stage 1-1	Revegetate approximately 17 ha of native woodland (including New England Peppermint EEC).	Year 1 Stage 1	Spring 2015	Glen Industries
Native Vegetation Restoration Stage 1-2	Revegetate approximately 13 ha of native woodland (including New England Peppermint EEC).	Year 1 Stage 2	Spring 2015	Glen Industries
Native Vegetation Restoration Stage 2	Revegetate approximately 15 ha of native woodland (including New England Peppermint EEC).	Year 2	Spring 2016	Glen Industries
Monitoring and Maintenance	Monitor plant survival and undertake maintenance as required.	All	2015 - 2019 Check trees once monthly Undertake Maintenance 1 day every 3 months 2020 - 2024 Check trees once every 3 months Undertake Maintenance 1 day every 6 months	NPWS

5. Photos



Revegetation zones at LLNR Ramsar site showing current cleared condition with remnant Eucalypt woodland communities in background.

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6. References

Benson, J.S. and Ashby, E.M., 2000. Vegetation of the Guyra 1:100 000 map sheet New England Bioregion, New South Wales. Cunninghamia 6 (3)

DSEWPaC, 2011. Threatened Ecological Community Listing Advice for New England peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands, Australian Government, Canberra.

Hunter, J. T., 2011. Vegetation and Floristics of Little Llangothlin Nature Reserve. A report to the Parks and Wildlife (DRAFT), NSW.