

Rehabilitation Plan Reserve 35302 (Lot 1985 Pln:91222)

Reserve 35302, Flemming Grove Road, Scaddan is proposed as an Environmental Offset site for CPS 9341/1. 4.306 ha of the 116.75 ha proposed as a land acquisition offset remains clear in 2022. This report details additional works planned by the Shire of Esperance to address these areas.

The environmental values specific to this area include conserving the high diversity of Proteaceous species in the area and the critical role Kwongkan plays for Carnaby Black Cockatoo, *Calyptorhynchus latirostris*, foraging grounds. The Shire of Esperance aims to restore the ecological values of the ecosystem present at Reserve 35302 (Lot 1985 Pln:91222) by rehabilitating areas to become self-sustaining and representative of the original vegetation unit.

Pre-Rehabilitation Weed Control

Weed control works have been undertaken in 2022 and these will be monitored 6 monthly in March and October for 3 years, for any re-growth. Due to the small weed loading prior to control works, it is unlikely that much (if any) follow up work will be required.

Works included a small section of approximately ten Golden Wattle (*Acacia pycnantha*) on the northern side of Fleming Grove road there was which have been ringbarked and sprayed in June 2022. Two *Pinus pinaster*, and a small area where a trailer load of garden refuse had been previously dumped including succulents, *lavendula dentata* and rose pelargonium has all been sprayed and hand pulled in June 2022. As at September 2022, all weeds treated were dead.

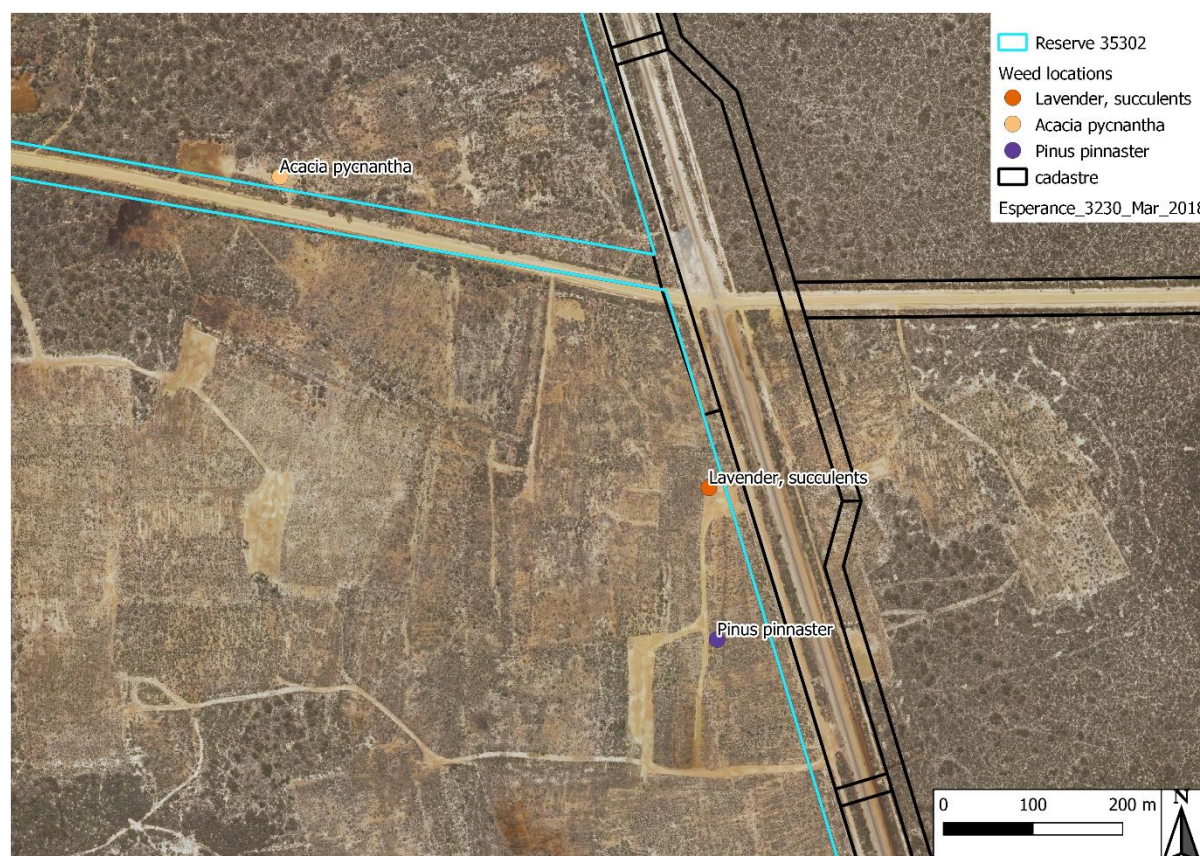


Figure 1. Location of weeds treated within the proposed offset site.

Rehabilitation Earthworks

Three hectares comprising of mostly large areas will be ripped with a dozer and if any topsoil stockpiles remain these will be spread over the site. Due to the small size of these areas and the fact that the dozer will inadvertently disturb intact vegetation in this process, no additional seed or seedlings should be required. Due to the sensitivity of the vegetation to *Phytophthora* dieback, strict hygiene including cleaning prior to works commencing at the site will be implemented.

The main east-west track in the southern portion of the reserve will be left open (un-rehabilitated) for fire and management access.

Revegetation works will consist of ripping to a depth of 200-350mm deep and spreading existing topsoil stockpiles. No direct tube stock planting or direct seeding will occur immediately, and only be used as a contingency technique if this method fails.

Revegetation works will be carried out over April-June 2023 prior to the onset of the main winter rains.



Figure 2. Location of proposed rehabilitation areas to be ripped within the proposed offset site.

Disease Hygiene Management

There are a large number of plant pathogens that can be spread by moving infected soil and plant material. Specifically, of focus is *Phytophthora* Dieback, such as *P. cinnamomi*. The project falls within

the rainfall zone in which *Phytophthora* dieback may occur. Hygiene measures to minimise the risk of diseases are a standard part of Shire of Esperance’s practices when clearing vegetation, including:

- All machinery, plant and equipment shall be free of soil and vegetative matter prior to entering and leaving the site.
- The movement of soil shall be avoided in wet conditions.

There is an assumption that no dieback is currently present at the site (based on DIDMS information and healthy looking Proteaceous species observed at the site during initial survey). The Shire of Esperance will use best practice clean down to ensure dieback is not introduced into the site due to our operations, however given that the site is on a public road, and accessible by the public, we cannot guarantee that dieback will not be introduced into the site by a member of the public, or be rail maintenance operations and this may impact upon completion criteria.

Completion criteria

All planned rehabilitation areas belong to vegetation types A and B:

- Vegetation Type A: Open Tallerack Mallee-heath and *Lambertia inermis* over mixed heath
- Vegetation Type B: *Banksia armata* dominated low heath with diverse Ericaceae, Myrtaceae and Proteaceae heath

Prior to clearing, it is likely that all of these areas would have met the the criteria for the ‘Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)’ threatened ecological community (TEC) criteria, due to Criterion 2a of Proteaceous species having a foliage cover of greater than 30% (Commonwealth of Australia 2014). Rehabilitation is considered to successful return the site to pre-clearing ecological values when the rehabilitated vegetation once again meets the Kwongkan TEC criteria. However, Criterion 2b, described as ‘two or more diagnostic Proteaceae species are present that are likely to form a significant vegetative component when regenerated’ will be used as a measure of whether the returning vegetation meets Kwongkan TEC criteria. The use of diagnostic species is for situations in which the cover of Proteaceae species is reduced due to recent disturbance, such as gravel extraction.

Table 1. Completion criteria following the SMART (specific, measurable, achievable, relevant, time-bound) principles for the rehabilitation of Reserve 35302, Fleming Grove Road (Lot 1985 PIn 91222)

Criterion	Baseline Floristic data	Completion Target	Completion Criteria
1	No baseline data exists, however based on the soil types and surrounding vegetation the site was likely to contain the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)’ threatened ecological community prior to clearing	80% of the Site meets the Key diagnostic characteristics and condition thresholds for Kwongkan TEC, using criterion 2b of the Approved Conservation advice for Kwongkan TEC. Note criterion 2b is used due to the disturbance.	80% of the revegetation site has two or more diagnostic Proteaceae species present within a 0.05ha area. This is to be achieved by 4 years post ripping.

3	<i>Eucalyptus pleurocarpa</i> and/or <i>Eucalyptus incrassata</i> or <i>Eucalyptus leptocalyx</i> is present as the dominant tree species in Vegetation A	Return of dominant tree species	<i>Eucalyptus pleurocarpa</i> , <i>Eucalyptus leptocalyx</i> and/or <i>Eucalyptus incrassata</i> is present in the rehabilitation area scattered throughout at a density of one tree per 500m ²
4	Some weeds at site but in low density	Significant Environmental weed species are absent from the revegetation site.	No <i>Acacia pycnantha</i> , <i>lavender</i> , <i>Pinus pinaster</i> , succulents, or rose pelargonium are found in the rehabilitation area
5	Planned revegetation sites have some weeds at site but in low density	No weeds mapped in Figure 14 Of the Offset proposal are present. Weed cover within Reserve 35302 is restricted to edge effects from neighbouring farmland and there will be no new weed species introduced to site	No new seedlings or resprouting of weeds mapped in Figure 14 of the Offset proposal. If new weeds are introduced to the site, monitoring quadrants will be installed to ensure control is effective
6	Planned revegetation sites currently have 0% ground cover	Ground cover after 10 years to be greater than 50%.	NDVI will be quantified using multispectral camera mounted on drone.
7	Planned revegetation sites vegetation condition is currently "Completely Destroyed"	Planned revegetation sites vegetation condition to meet "good" condition in 4 years and "very good" within 15 years.	

Monitoring

Monitoring of the rehabilitated area following gravel extraction will determine if completion criteria have been achieved and if contingency measures are required. The methodology for monitoring will involve onsite visual assessments to determine whether revegetation has been implemented as planned and that completion criteria have been met, as outlined in Table 1. Monitoring will occur annually after the third year by the Shire of Esperance's Environmental Officers, who have a tertiary level education in Environmental Science or similar qualifications. This will continue for up to six years post rehabilitation event or until rehabilitation has been deemed successful.

Contingency measures

Where the rehabilitation is deemed unsuccessful by comparison to the completion criteria, contingency measures will be undertaken, until the completion criteria are met sufficiently. This is an adaptive process and dependent on what completion criteria has failed. A few standard techniques are outlined below:

- If the composition of species does not meet criteria, then specific species will be infill planted or seeded during the next revegetation season from April to June.
- If listed environmental weeds exist in the site then herbicide and or manual control will be applied to affected areas.

Species selection

Keystone and dominant species will be selected as a contingency measure if respreading topsoil and stockpiled vegetation has unsuccessful germination and does not meet the completion criteria. The incidental species list from the October 2019 survey (Appendix 1) will be the basis for determining species selection for seed and tubestock seedlings, based on availability. Seed can also be collected from the adjacent road reserve or the 240 ha Crown Reserve 32802 immediately to the north of the area as these contain similar vegetation types and are local province.

Reporting

The Annual Compliance Report for CPS 9341/1 will include a report on revegetation activities, outlining the measurable targets outlined in Table 1 as the completion activities and results of the monitoring. The Annual Compliance report for clearing permits administered by DWER are generally required to be submitted to DWER by 30th June, covering from the 1st January to 31st December of the preceding year.