CARBON SEQUESTRATION PROJECT

Lake Warden and Lake Bryde Natural Diversity Recovery Catchments

In 2006, the then Department of Conservation and Land Management (CALM), Department of Environment and the State Supply Commission (State Fleet) signed an interagency agreement to implement a carbon sequestration project on CALM managed lands. The project is in accordance with the directive of the Western Australian Government to sequester carbon dioxide to offset the emissions of the Government light vehicle fleet. Revegetation plantings have been undertaken within the Lake Warden and Lake Bryde Natural Diversity Recovery Catchments.

This report details the Department of Environment and Conservation's (DEC) activities in meeting the requirements listed under Appendix A of the agreement.

Table 1: Summary of the revegetation undertaken for the Carbon Sequestration Project.

Site	Plots	Area (ha)	Planted	Stand-type
Lake Bryde	Block G	20	2006	Eucalyptus/Melaleuca
Lake Bryde	Block D	21	2007	Eucalyptus/Melaleuca
Lake Bryde	Block S2	11	2007	Eucalyptus/Melaleuca
Lake Warden	LWCSP_1	3.28	2006	Salt Tolerant
Lake Warden	LWCSP_2	3.14	2006	Mixed Heath
Lake Warden	LWCSP_3	10.38	2006	Salt Tolerant
Lake Warden	LWCSP_4	0.70	2006	Sandplain
Lake Warden	LWCSP_5	4.80	2006	Mixed Heath
Lake Warden	LWCSP_6	3.30	2006	Salt Tolerant
Lake Warden	LWCSP_7	2.77	2006	Mixed Heath
Lake Warden	LWCSP_8	2.66	2006	Mixed Heath
Lake Warden	LWCSP_9	5.33	2006	Salt Tolerant
Lake Warden	LWCSP_10	7.70	2006	Sandplain
Lake Warden	LWCSP_11	1.43	2006	Salt Tolerant
Lake Warden	LWCSP_12	2.40	2006	Sandplain
Lake Warden	LWCSP_13	0.32	2006	Sandplain
Lake Warden	LWCSP_14	3.29	2006	Salt Tolerant
Lake Warden	LWCSP_15	1.37	2006	Mixed Heath
Lake Warden	LWCSP_16	12.27	2006	Salt Tolerant
Lake Warden	LWCSP_17	3.40	2006	Mixed Heath
Lake Warden	LWCSP_18	0.91	2006	Sandplain
Lake Warden	LWCSP_19	4.65	2006	Sandplain
Lake Warden	LWCSP_20	6.54	2006	Sandplain

Maps showing the plot locations are provided in Appendix 1 and a list of the species within each stand type is included in Appendix 2.

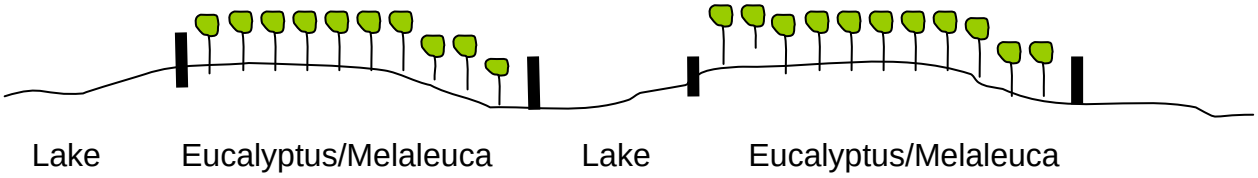
Site Descriptions

Lake Bryde

The project site comprises three separate plots adding up to approximately 52 ha, with similar soil and landscape positions. Three stand-types have been planted to reflect minor differences in elevation between plots, however, approximately 80% of the species are the same across all three plots.

Planting was undertaken in 2006 and 2007 with some in-filling undertaken in 2008. Survival of all stand-types is between 80% - 85%.

Schematic Side Elevation Profile: Cross-section of Block D, between lakes

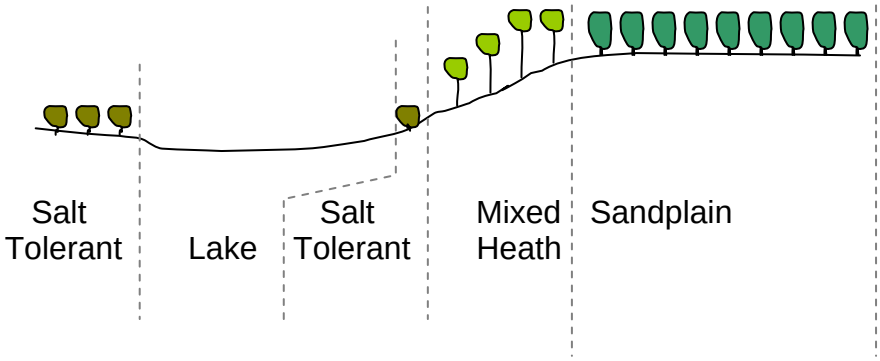


Lake Warden

The project site comprises numerous plots within a mosaic of lakes, totaling just over 80ha. There are a mix of soil types across the site, which are planted with three stand-types; Salt Tolerant in the low areas, Mixed Heath for the sandy loam areas, and Sandplain on the white sandy soils on dunes.

Plantings were undertaken in 2006 with in-filling occurring in 2007 and 2008. Survival of all stand-types is between 40% - 95%. A revegetation plan to further in-fill Lake Warden plantings is currently being developed by DEC's Esperance District.

Schematic Side Elevation Profile: Cross-section along western boundary of site, between plots 1 and 17.

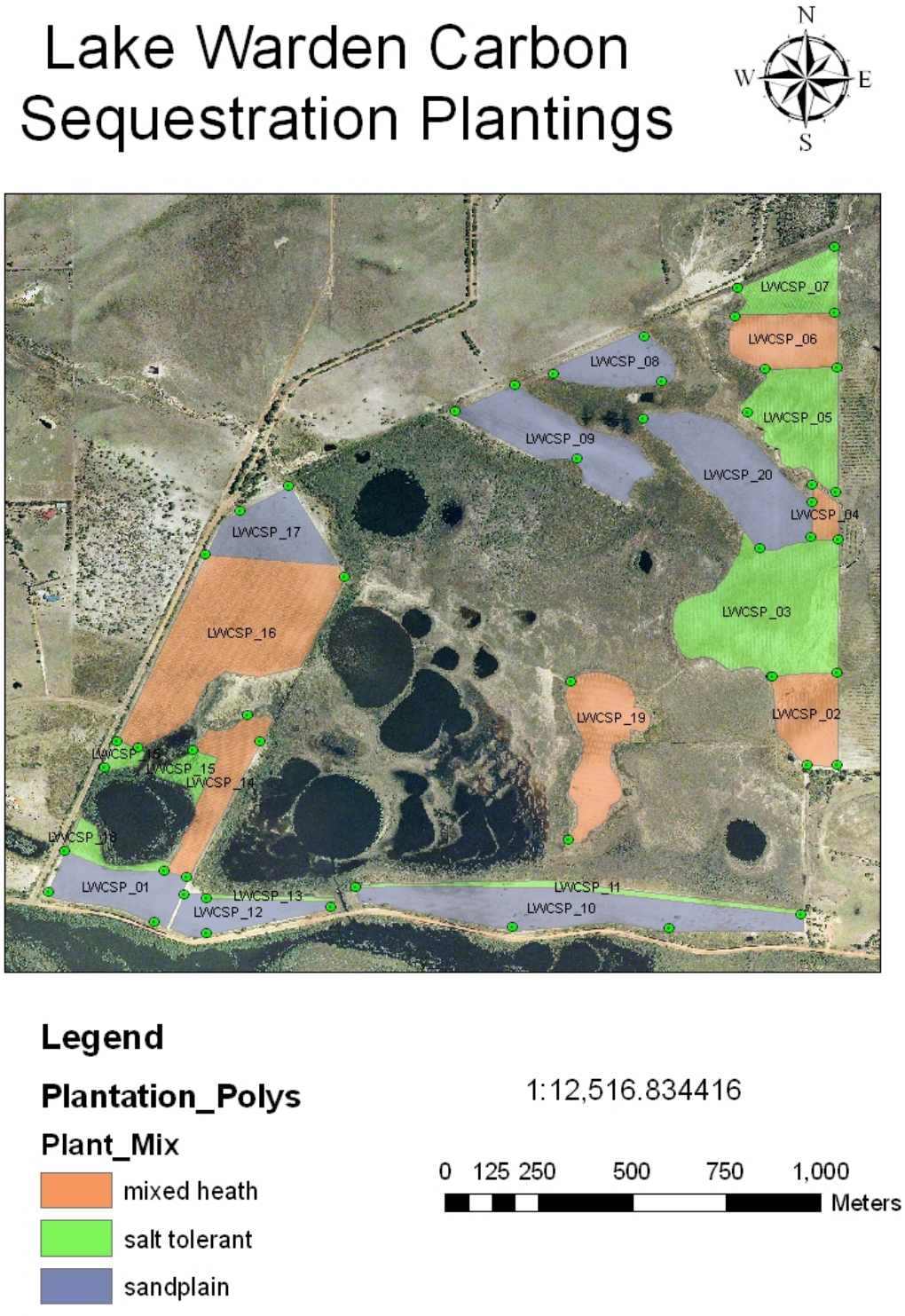


Outcomes

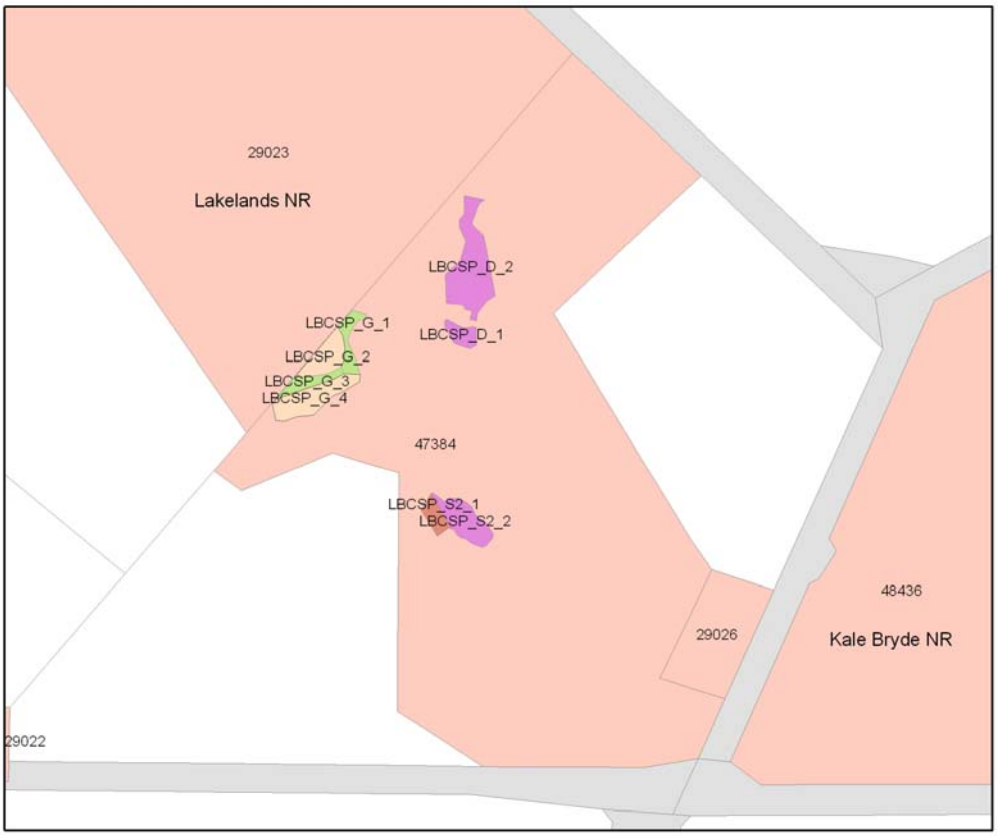
The interagency agreement stated that DEC was required to revegetate approximately 100 ha in the Lake Warden and Lake Bryde Natural Diversity Recovery Catchments. As at January 2010, DEC has revegetated and undertaken follow up in-fill plantings of approximately 132 ha. All planting areas across both Lake Bryde and Lake Warden were undertaken on previously agricultural lands that had been cleared prior to 1990.

Documentation in accordance with Part Two, Section 1.3 of the Australian Greenhouse Office's material on Field Measurement Procedures for Carbon Accounting has been completed. Each plot has had between 2-4 take-off-points installed and planting boundaries mapped with GPS (max error +/- 7m). The digital shape files of the plots at both sites have been forwarded to the cartographic officer at DEC's Information Management Branch in preparation for the production of Deposited Plans. DEC has a process in place to develop Deposited Plans for Conservation Covenants and this process can be initiated for the Carbon Right and Carbon Covenant, if required by the Department of Treasury and Finance.

APPENDIX 1: Location of the plots at Lake Warden and Lake Bryde.



Lake Bryde Carbon Sequestration Plantings Overview Map



Legend

carbon_plantation_polys

PLANT_MIX

- Elev Euc Mel
- Low Ti Tree
- Mixed Euc Mel
- Raised Euc Mel
- mixed heath
- salt tolerant
- sandplain

Meters
0 550 1,100 2,200

1 centimeter equals 370 meters

N
W E
S

Map created by Mick Davis on 30/12/2009

APPENDIX 2: Species lists

Lake Bryde plantings

Block G
Eucalyptus calcigona
Eucalyptus dissimulata
Eucalyptus kondininensis
Eucalyptus perangusta
Eucalyptus phenax
Eucalyptus sporadica
Eucalyptus subgrandis
Eucalyptus tenera
Melaleuca acuminata
Melaleuca adnata
Melaleuca atroviridis
Melaleuca depauperata
Melaleuca laterflora
Melaleuca scalena
Melaleuca thyoides

Block D
Eucalyptus dissimulata
Eucalyptus kondininensis
Eucalyptus perangusta
Eucalyptus phenax
Eucalyptus sporadica
Eucalyptus subgrandis
Eucalyptus tenera
Melaleuca adnata
Melaleuca atroviridis
Melaleuca brophyi
Melaleuca carrii
Melaleuca depauperata
Melaleuca hamulosa
Melaleuca laterflora
Melaleuca scalena
Melaleuca thyoides

Block S2
Eucalyptus calcigona
Eucalyptus perangusta
Eucalyptus phenax
Eucalyptus sporadica
Eucalyptus subgrandis
Melaleuca acuminata
Melaleuca atroviridis
Melaleuca brophyi
Melaleuca carrii
Melaleuca laterflora
Melaleuca scalena
Melaleuca thyoides

Lake Warden plantings

Salt tolerant
Acacia cyclops
Acacia saligna
Atriplex paladosa/versicaria
Eucalyptus angustissima
Eucalyptus densa subsp. densa
Eucalyptus halophila
Eucalyptus occidentalis
Eucalyptus rigens
Ghania trifida
Hakea adnata
Halosarcia halocnedmoides spp caudate
Halosarcia indica ssp bidens
Isolepis nodosa
Melaleuca brevifolia
Melaleuca cuticularis
Melaleuca lanceolata
Melaleuca thyoides

Sandplain
Acacia cochlearis
Banksia speciosa
Eucalyptus angulosa
Eucalyptus platypus var heterophylla
Eucalyptus incrassata
Eucalyptus uncinata
Hakea corymbosa
Hakea nitida
Lambertia inermis
Melaleuca striata
Melaleuca thymoides
Phymatocarpus maxwellii
Calothamnus quadrifidus

Mixed Heath
Combination of Salt Tolerant and Sandplain