# VEGETATION MONITORING OF TOOLIBIN LAKE AND RESERVES

## DEPARTMENT OF ENVIRONMENT AND CONSERVATION

FINAL

Prepared by:

**Ecoscape (Australia) Pty Ltd**

**Limitations Statement**

This report has been exclusively drafted for the needs of **DEPARTMENT OF ENVIRONMENT AND CONSERVATION**. No express or implied warranties are made by Ecoscape (Australia) Pty Ltd regarding the research findings and data contained in this report. All of the information details included in this report are based upon the existent land area conditions, research provided and obtained, and so forth at the time Ecoscape (Australia) Pty Ltd conducted its analysis into the area. Ecoscape (Australia) Pty Ltd will not be responsible for the application of its recommended strategies by **DEPARTMENT OF ENVIRONMENT AND CONSERVATION**.

Please note that the strategies devised in this report may not be directly applicable towards another organisation's needs or any other specific land area requiring management strategies. We would also warn against the environmental dangers of adapting this report's strategies to another land area which has not been researched and analysed by Ecoscape (Australia) Pty Ltd. Instead, please contact Ecoscape (Australia) Pty Ltd to provide a tailored report for your area's needs. Otherwise, Ecoscape (Australia) Pty Ltd accepts no liability whatsoever for a third party's use of, or reliance upon, this specific report.

Direct all inquiries to:

**Ecoscape (Australia) Pty Ltd**
9 Stirling Highway • PO Box 50 North Fremantle WA 6159
Ph: (08) 9430 8955 Fax: (08) 9430 8977
mail@ecoscape.com.au

**Document Status**

| Rev. No. | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| 0 | NR | LA | | | | |
| 1 | NR | AW | | | | 7/6/2007 |


**COPYRIGHT STATEMENT FOR:**
**Vegetation Monitoring of Toolibin Lake and Reserves**

# Table of Contents

## Vegetation Monitoring of Toolibin Lake and Reserves

## LIST OF TABLES

# Summary

## Vegetation Monitoring of Toolibin Lake and Reserves


The wetland trees of Lake Toolibin and reserves continue to show a decline in numbers.

The overall number of *Casuarina obesa* trees has declined in the last two years. Following higher than average rainfall in 2003 some of the stressed trees recovered resulting in an increase in the portion of healthy trees. Since then the years following had below average rainfall resulting in the overall decline in *C. obesa* vigour.

The three transects used for monitoring the *C. obesa* seedlings that germinated in 1998 on the west side of the lake around pump 9 were re-monitored in 2006/2007. Whilst the height ranges within all the transects indicate that germination has continued after the initial recruitment in 1998, it appears that within the last years the transects have had no significant change in seedling numbers with only a small increase in seedlings. The lower soil salinity around pump 9 should favour seedling establishment however there is considerable variability within the area and high seedling densities are found in areas with electrical conductivities in the top 50 cm of soil in excess of 200 mS/m.

There has been a decrease in the EM38 horizontal readings in 2006/2007 but it is difficult to state if this is a significant change, given that the EM38 horizontal readings varied from the direct EC measurement by an average of 50%, and readings can be affected by soil moisture and temperature, and the accuracy of the zeroing process for the EM38.

The *Melaleuca strobophylla* population has also continued to decline over the last few years with relatively few mature healthy individuals remain on the lake floor. However there has been some recruitment of seedlings in areas within the lake but outside the original plots. In 2004 an additional plot was established to monitor a stand of 312 healthy seedlings, two more were recorded in 2006/2007. It is unclear from the data collected within this project whether the decline in *M. strobophylla* is related to continuing elevated salinity levels, water availability or other factors.

The terrestrial tree species of the Toolibin reserves have declined slightly in vigour since the last round of monitoring in 2002. Not all the declines in tree vigour are associated with salinity. One example of this is plot 30, which is not saline but lost virtually all mature trees in the period between 1998 and 2002 this may have resulted from a combination of drought stress leading to the death of mature trees and a lack of germination.

The understorey plant community within the study area has changed slightly since 2004. *Atriplex semibaccata*, although was still present at the Plots it was previously recorded in was found to be less abundant in 2006/2007 compared to 2004. there was also two species previously not recorded at any of the Plots, *Angianthus tomentosus* was observed from Plots, 6, 7, 8, and 10 and *Goodenia viscida* was observed from Plots 7 and 33.

The results showed a trend towards a decline in *Halosarcia lepidosperma*. It was found to be absent or nearly absent from Plots 3, 5, 6, 8, 21, 36 and 37 in 2006/2007. Such changes

may be reflected in the amount of rainfall between years or the fact that it has been 10 years since the lake was last inundated rather than significant changes in salinity. Discounting grazing pressures it is most likely that changing water regimes is the crucial factor causing this change.

From the 2006/2007 monitoring programme, it is recommended that:

1. The heights of seedlings are measured until they reach a nominal height (based on the depth to which the lake fills). When they reach this nominal height they are deemed to be 'mature' and then allocated to height classes;
2. Clarify method used to determine the point at which seedlings become 'mature' trees;
3. Establish protocols to tag recently matured trees to minimise damage to still growing individuals;
4. The requirement for diameter at breast height to be frequently measured be reviewed;
5. A single estimate of the percentage cover of each overstorey species in each plot be made;
6. Previous raw data be made available to the data collectors to enable the consistent collection of data at individual plots;
7. The monitoring program reviewed and long term trends only measured from a date at which all data is being collected in a consistent manner;
8. Review the vegetation descriptions for each of the plots (still include original description);
9. Remove all dead trees from data set and only count live individuals;
10. Soil samples to be taken at 25 and 50 cm depths only and at the same plots they were collected in 2004 and 2006 for validation of the EM38 horizontal readings;
11. Identify the *Eucalypt* seedlings found at Plots 7, 28 and 33; and
12. The population dynamics of *B. prionotes* be investigated and in particular the impediments to germination and recruitment of this species.

# 1.0 Introduction

**Vegetation Monitoring of Toolibin Lake and Reserves**

## 1.1 Background

The background for the project, as documented by Ogden and Froend (1998) is as follows:

> *The monitoring is an integral part of the Recovery Plan and has been conducted since 1977 when a baseline flora and vegetation survey was conducted for the Northern Arthur River Wetlands Rehabilitation Committee by Mattiske Consulting.*
>
> *The baseline work involved the establishment of 22 monitoring plots and the mapping of plant communities and their status and condition. Four additional plots were established in 1980 in the reserve to the north of the Lake, to record the impact of burning and clearing activities. Of these 26 plots, eleven are located on the lake bed, with the remainder located in the reserves to the north east of the lake. Reassessment of the plots was conducted in 1980, 1982, 1986 and 1992.*
>
> *In 1983, additional research plots were established by Dr Ray Froend, Edith Cowan University, to investigate the causes of lake bed tree mortality. Four plots were established in this study, one across the Northern Arthur River channel, two plots on the lake edge with similar elevational gradients and vegetation zonation but differing soil conditions, and a plot located on the lake bed with no elevational gradient.*
>
> *Five more vegetation plots were added in 1998, 2 in the Banksia prionotes woodland in the south east of the reserve and 3 on the lake bed. The lake bed plots were located in the west and south west areas of the lake to improve the coverage in these areas and to replace the plots lost during construction of the separator channel.*
>
> *The 1998 Vegetation Monitoring of Toolibin Lake and Reserves found a general decline in the health of both the aquatic and terrestrial vegetation in most of the 30 plots sampled. Some recovery of trees was noted in certain areas of the lake, particularly in the vicinity of pump 9 on the western side where significant numbers of seedlings were found. This improvement in both the tree health and soil salinity was likely to be in response to the effectiveness of the groundwater pump. The existing vegetation monitoring plots were not well located to monitor the effectiveness of the network of groundwater abstraction bores so in 2000, five additional plots were established on the lake bed in close vicinity to pumps 1, 2, 12, 13 and 15. Independent monitoring of the seedling recruitment around pump 9 was also undertaken in 2000 and these transects have now been formally marked and added to the Lake Toolibin vegetation monitoring plots. The system of monitoring plots now*

*consists of 18 plots on the lake bed, 2 in the reserve to the east of the lake, 15 in the reserves to the north east and 3 seedling transects on the west side of the lake.*

*In the 1998 monitoring, all existing plots were upgraded to the standard of the Salinity Action Plan Wetland Vegetation Monitoring program and all new plots have been established using this methodology. Regular (every three years) monitoring of these plots using the Salinity Action Plan methods was a key recommendation of the 1998 report.*

## 1.2 Objectives

As part of the Toolibin Lake Recovery Plan, The Department of Conservation and Land Management (CALM) oversee and implement the monitoring of lake and reserve vegetation composition and health. This report documents the results of the 2006/2007 round of monitoring.

The following was undertaken for the 2006/2007 vegetation monitoring of the Toolibin Lake and reserves:

1. Re-survey and reassess 36 monitoring plots in and around Lake Toolibin consistent with the methodology used by Froend *et al*. (1998);
2. Record EM38 readings across all plots and validate against soil samples;
3. Present data and results in a similar format to Froend *et al*. (1998);
4. Discuss management options in light of the results of the vegetation monitoring.

# 2.0 Method

**Vegetation Monitoring of Toolibin Lake and Reserves**

## 2.1 Overview of the Salinity Action Plan Methodology

The SAP Program methodology used in the 1998 reassessment involved the collection of a significant amount of additional data on biotic and abiotic factors. The methodology used was specifically designed to address change in wetland vegetation floristics, physiognomy, individual plant vigour and population vigour and dynamics in response to long-term changes in hydrology and salinity. An overview of the various components of the SAP methodology follows (how this methodology was applied to the Toolibin plots is discussed later):

1. Transect establishment

   The locations of each transect determined using GPS and marked on maps for future reference. All location markers and tags are metal. Transects made up of contiguous 20 x 20 m quadrats running perpendicular to the shoreline into upland vegetation. Each of the 20 x 20 m quadrats divided into five 4 x 20 m quadrats. Photographs were taken each monitoring year from a marked reference point. Site data such as, topographic position, slope, aspect, surface soil characteristics, litter and water depth recorded.

2. Floristic composition

   Within each 4 x 20 m subplot of each 20 x 20 m quadrat all overstorey species and large understorey species (>1.5 m) were identified. All trees were tagged and given a unique reference number. Data for each overstorey subplot will be kept distinct to determine gradient transitions. Understorey 4 x 4 m subplots focus on species < 1.5 m. Presence of seedlings of tree and large shrub species recorded in overstorey sub-plots.

3. Density and foliage cover

   Density of understorey species was generally estimated for each subplot. Percentage foliage cover for each overstorey species was estimated for entire plots.

4. Physiognomy

   Height ranges for each vegetation strata measured within quadrats and subplots. Profile diagrams depicting vegetation structure constructed for each transect.

5. Tree vigour

   The vigour of each individual tree within overstorey subplots categorised using a subjective 3 factor system based on crown density, presence of dead branches and epicormic growth.

6. Population dynamics

   The size class structure of key tree species was determined by measuring height and diameter at breast height (DBH) of each individual in each 20 x 20 m quadrat. Seedling recruitment events recorded in the field when found.

7. Distribution of wetland plant communities, populations

   The different structural units of vegetation at each wetland mapped from aerial photography and groundtruthing. At the transect scale, distribution of plant populations or community types is related to hydrology and salinity. The ground level (in relation to the deepest point in the lake) at each end of the 4 x 20 m overstorey subplots is measured using an auto level and staff. These relative levels are converted to mAHD if suitable benchmarks exist. The elevation gradient along each transect can then be compared to wetland water levels (information from other DEC SAP projects) and the water regime determined for different positions on the transect. Where available, historical wetland water levels will be related to vegetation distribution to identify past impacts and explain current distributions.

8. Physio-chemical parameters

   Transects are located adjacent to piezometers (if present) established as part of the Wetland Monitoring Project. Information on groundwater level and salinity is vital to correct interpretation of vegetation change. Surface soil salinities at each transect measured each monitoring year using an EM 38 and validated with limited soil sampling and direct measurement (EC of 1:5 soil:water extracts).

9. Database

   All data collected as part of the wetland vegetation monitoring project are databased using Microsoft Excel and presented to the Department of Environment and Conservation in digital form.

## 2.2 Plot Establishment and Maintenance

Each plot was subdivided into subplots for measurement of understorey and overstorey vegetation. From the north-west corner of each plot, 4 x 20m subplots were marked out with measuring tapes running in a southerly direction for assessment of the overstorey. Understorey subplots were then established at the northern end of each overstorey subplot to provide a set of contiguous 4 x 4m understorey plots (Fig. 2.1).

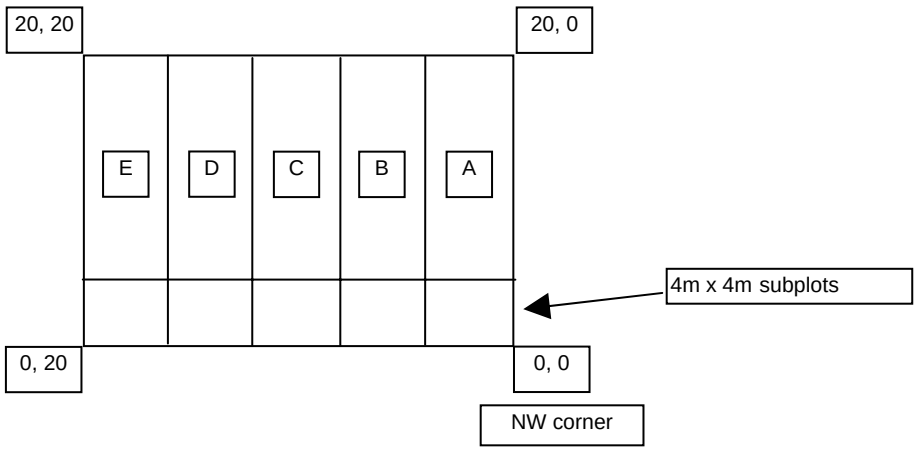


***Figure 2.1: Plot Design***

Where plot markers were missing, the original location was determined with tapes and an optical square and a new star picket installed. All tree tags were inspected and replaced where necessary. Some trees, which have increased in girth, have either begun to enclose the head of the nail or push the tag off the nail. Attempts to remove the nails appeared to do more damage to the tree than simply leaving the nail. Most tags that had worn through from swinging on the nail were found and reattached or replaced with a new tag. The majority of the remaining tags were bent over the nail head to prevent this from occurring in the future.

More regular inspection of the trees within the monitoring plots may be necessary to prevent tags and nails damaging vigorously growing trees.

## 2.3 Overstorey

For each tree within each 4 x 20m subplot, the tag number, diameter at tag height and crown condition was recorded. Stem diameter was measured directly under the tag if nailed or at breast height if wired onto the tree. In the case of individual trees with multiple stems, all stems were measured at the same height as the position of the tag or at breast height.

Crown assessment was carried out using a subjective three-part scale where a score is recorded for crown density, dead branches and epicormic growth. Using diagrams for comparison, crown density is given a score out of nine, dead branches a score out of nine and epicormic growth a score out of five (Ladd, 1996) (Fig. 2.2). The higher the overall score, the better the condition of the tree. For the purpose of comparison with previous results, crown assessment values less than or equal to 11 were considered stressed and values greater than 11 considered healthy. It was found that recording the number of dead individuals became problematic over time as some had fallen over, some remained standing and some were no longer able to be found due to decomposition. Mentioned later within this report is the possibility of excluding dead species from the dataset if they were recorded as dead over two monitoring periods prior.

In dense stands of trees, stand height was measured with a clinometer and tape measure and presented as a height range for each species present. In open woodlands, height was directly measured for each tree less than 4 metres only. Number, species and height of seedlings were also measured within the 4 x 20m subplots.

## 2.4 Understorey

Within the 4 x 4m subplots, all perennial understorey plants were identified and percentage foliage cover determined by direct measurement (two foliage measurements at right angles) or percentage estimate. Height ranges for each species was also recorded.

## 2.5 Soil Salinity

EM38 measurements, which determines soil conductivity over 1-1.5m depths, were taken at three points across each plot, every 4m along the transect. Adequate distance was always allowed when measuring near the fence posts or other metallic objects in the plots. EM38 data was validated against direct conductivity measurement of one soil sample taken at the North West corner of each plot. For plots 39 to 41, vertical and horizontal EM38 measurements were taken down the centre of the 5m wide transects every 5 metres from 0 to 100m. Salinity measurements are interpreted using the Agwest Soil Salinity Classes for Revegetation (Agwest, 2002) which provides a more accurate comparison for EM38 data than the modified Hunt and Gilkes (1992) scale used in the1998 report.

## 2.6 Reference Photographs

One photograph was taken from approximately 1m directly behind the tagged corner post looking diagonally across the plot.

## 2.7 Plot Locations

The GPS readings for plot locations were not found to be accurate. The GPS readings were retaken for each plot in 2006/2007 (GDA 94 Datum, MGA Zone 50 Projection) and used for placing plot locations on an aerial photo in this report to reduce time lost in relocating the plots in future years.

## 2.8 Seedling Transects

Three 100m transects were established in 2000 through a recruitment area of *C. obesa* seedlings. Both the start and end points of the transects are marked and run in a west to east direction with the tagged marker and starting point at the west end. *C. obesa* seedlings were counted to five metres south of the tagged marker and each five metre section along the transect line. EM38 readings were measured every five metres along the transect.

Coordinates for the transects are shown in Table 2.1

***Table 2.1 C. obesa seedling transect coordinates***

| Plot | Start Coordinates | End Coordinates |
|---|---|---|
| 39 | 6357325 | 6357297 |
| | 0555988 | 0556079 |
| 40 | 6357283 | 6357255 |
| | 0555982 | 0556075 |
| 41 | 6357242 | 6357220 |
| | 0555978 | 0556071 |

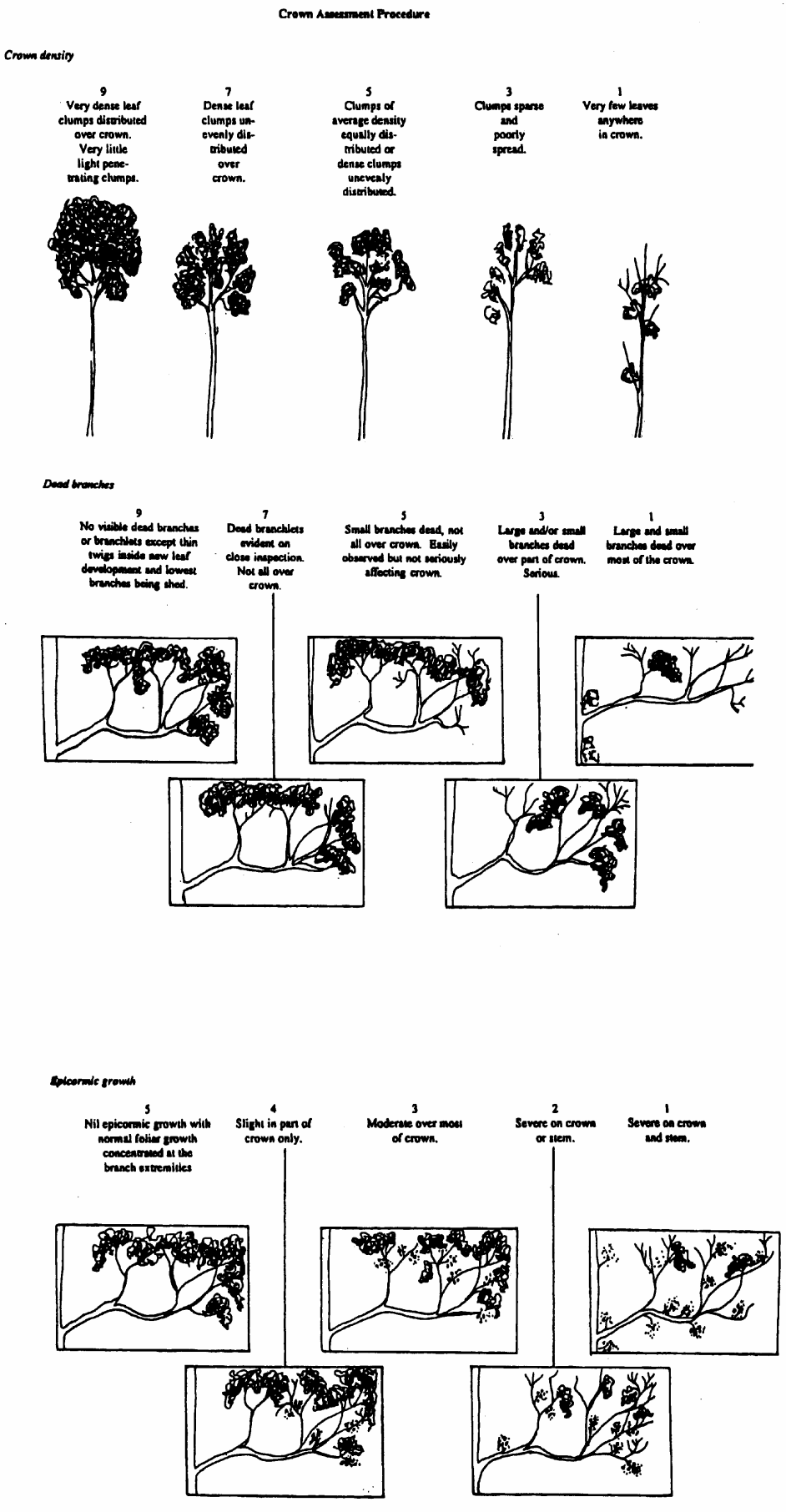



***Figure 2.2: Crown Assessment Procedure Diagrams (Ladd, 1996)***

# 3.0 Results

**Vegetation Monitoring of Toolibin Lake and Reserves**

## 3.1 Plot Data

There were 35 plots monitored in 2006/2007. Previously established plots not reassessed were Plots 1, 2, 14 and 31. Plots 1 and 2 were destroyed during the construction of the separator channel. Plot 14, near Dulbinning Lake, could not be located in 1998, 2002 or 2004. Plot 31 could not be located in 2004 or 2006/2007.

Plots assessed in 2006/2007 are shown in Map 1 and their co-ordinates (GDA 94 Datum, MGA Zone 50 Projection) are listed in Table 3.1.

***Table 3.1 Co-ordinates for Plots within Study Area***

| Plot | Northing | Easting |
|---|---|---|
| 3 | 6357405 | 556083 |
| 4 | 6357442 | 556413 |
| 5 | 6357462 | 556423 |
| 6 | 6357575 | 557266 |
| 7 | 6357711 | 557496 |
| 8 | 6357664 | 557391 |
| 9 | 6357844 | 557519 |
| 10 | 6357950 | 557117 |
| 11 | 6358405 | 557036 |
| 12 | 6358562 | 557122 |
| 13 | 6358921 | 557643 |
| 15 | 6360835 | 559729 |
| 16 | 6360805 | 559788 |
| 17 | 6360778 | 560503 |
| 18 | 6360808 | 561068 |
| 19 | 6360800 | 561345 |
| 20 | 6360428 | 559060 |
| 21 | 6359773 | 561051 |
| 22 | 6360018 | 561128 |
| 23 | 6359500 | 558891 |
| 24 | 6359428 | 558858 |
| 25 | 6359808 | 558828 |
| 26 | 6358783 | 558882 |
| 27 | 6357284 | 556032 |
| 28 | 6356601 | 556189 |
| 29 | 6356584 | 556496 |
| 30 | 6356494 | 557422 |
| 32 | 6359030 | 557307 |
| 33 | 6357330 | 556116 |

| Plot | Northing | Easting |
|---|---|---|
| 34 | 6358111 | 556927 |
| 35 | 6356552 | 556796 |
| 36 | 6356958 | 557290 |
| 37 | 6357053 | 556887 |
| 38 | 6357859 | 556708 |
| 42 | 6357715 | 557540 |

The salinity status of the plots was based on EM38 horizontal readings and the class boundaries shown in Table 3.2.

***Table 3.2 Salinity Class Boundaries***

| | Measures and Units | |
|---|---|---|
| **Classes** | ECe (mS/m) | EM-38 hor (mS/m) |
| Non-saline | <200 | <50 |
| Slightly | 200-400 | 50-100 |
| Moderately | 400-800 | 100-150 |
| Very | 800-1600 | 150-200 |
| Extremely | >1600 | >200 |

George, R & Short, R (2004)

The average EM38 horizontal reading for each plot and its salinity class is shown in Table 3.3, and the salinity classes are shown in Map 2.

***Table 3.3 Salinity Classes of Plots***

| Plot | Average EM38 horizontal reading for Plot (mS/m) | Salinity Class |
|---|---|---|
| 3 | 229 | Extremely |
| 4 | 160 | Very |
| 5 | 175 | Very |
| 6 | 151 | Very |
| 7 | 193 | Very |
| 8 | 185 | Very |
| 9 | 163 | Very |
| 10 | 291 | Extremely |
| 11 | 297 | Extremely |
| 12 | 35 | Non-saline |
| 13 | 19 | Non-saline |
| 15 | 101 | Moderately |
| 16 | 117 | Moderately |
| 17 | 160 | Very |
| 18 | 187 | Very |
| 19 | 371 | Extremely |
| 20 | 127 | Moderately |
| 21 | 918 | Extremely |
| 22 | 825 | Extremely |
| 23 | 156 | Very |
| 24 | 116 | Moderately |

| Plot | Average EM38 horizontal reading for Plot (mS/m) | Salinity Class |
|---|---|---|
| 25 | 111 | Moderately |
| 26 | 59 | Slightly |
| 27 | 78 | Slightly |
| 28 | 191 | Very |
| 29 | 270 | Extremely |
| 30 | 3 | Non-saline |
| 32 (RF1) | 132 | Moderately |
| 33 (RF4) | 148 | Moderately |
| 34 | 263 | Extremely |
| 35 | 194 | Very |
| 36 | 258 | Extremely |
| 37 | 259 | Extremely |
| 38 | 238 | Extremely |
| 42 (new seedling ) | 169 | Very |

Key results are presented for each plot below, including vegetation description, tree vigour trends, salinity trends and a reference photograph. Tree vigour categories are Healthy (H), Stressed (S) and Dead (D).

The data collected during 2006/2007 is included in the Appendices at the rear of this report:

- **Appendix 1** includes overstorey data for each plot. This includes species composition, DBH, height and crown health;
- **Appendix 2** is comprised of the vigour vs time tables for the dominant species of each plot. This data set includes information since 1977 (since 1983 for plots 32 and 33; since 1998 for plots 27 to 31 and since 2000 for plots 34 to 38) for all plots monitored;
- **Appendix 3** comprises the understorey data, including the density, % cover and height of perennial species.
- **Appendix 4** contains EM38 readings;
- **Appendix 5** contains seedling number, seedling height and EM38 data for the three transects established in April 2000 to monitor the *C. obesa* recruitment on the west side of the lake around pump 9; and
- **Appendix 6** comprises the percentage cover of each overstorey species within all the Plots.

### *Plots 1 and 2*

Destroyed during construction of separator channel.

### *Plot 3*

**Location E 556083; N 6357405**

Western side of the lake bed, east of track and north of pump 9.

**Vegetation Description:**

Low woodland of *Casuarina obesa*. Understorey initially of *Halosarcia lepidosperma* and *Maireana brevifolia*

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

Most of the *C. obesa* trees are dead. The overall condition of the remaining trees in the plot appears to have remained stable since 2004, but this should be tempered with the fact that change is based on the assessment of a total of three trees.

Twenty three *C. obesa* seedlings were recorded in this plot in 2002. Eleven seedlings were recorded in 2004 with the majority of new seedlings found in subplot E. There appeared to be little growth in the seedlings since 2004 with evidence the seedlings have been grazed.

Conditions within the plot have changed with no *Halosarcia lepidosperma* or *Maireana brevifolia* found. Instead there was an increase in C. obesa seedlings and *Atriplex semibaccata* was recorded, both in subplot E.

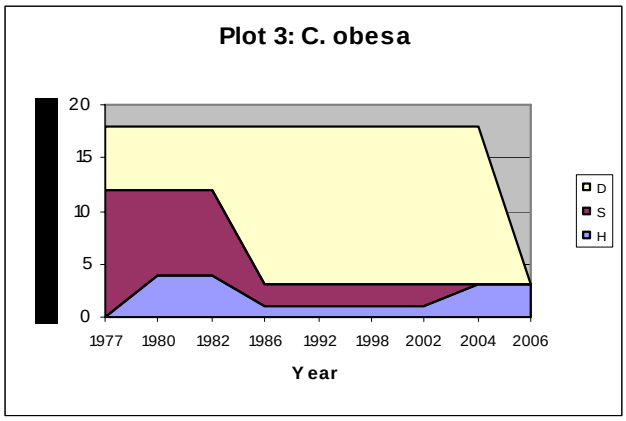



***Figure 3.1: Trend in the vigour of the dominant species at Plot 3***

***Plate 1: Facing diagonally across Plot 3***

### *Plot 4*

**Location: E 556413; N 6357442**

Western side of the lake bed, north-east of pump 9.

**Vegetation Description:**

Woodland of *Casuarina obesa* and *Melaleuca strobophylla*. Understorey consists of *Halosarcia lepidosperma* and *Atriplex semibaccata*.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

The proportion of live *C. obesa* that are healthy has fallen with a recent death since 2004. The three *C*. *obesa* seedlings are present in this plot in 2002 were still present in 2004.

The *M. strobophylla* trees are dead and the number of seedlings within the subplots has remained consistent between 2004 and 2006/2007 which suggests salinities are still within the tolerance range for germination and establishment. Some growth was recorded however, there was evidence of grazing.

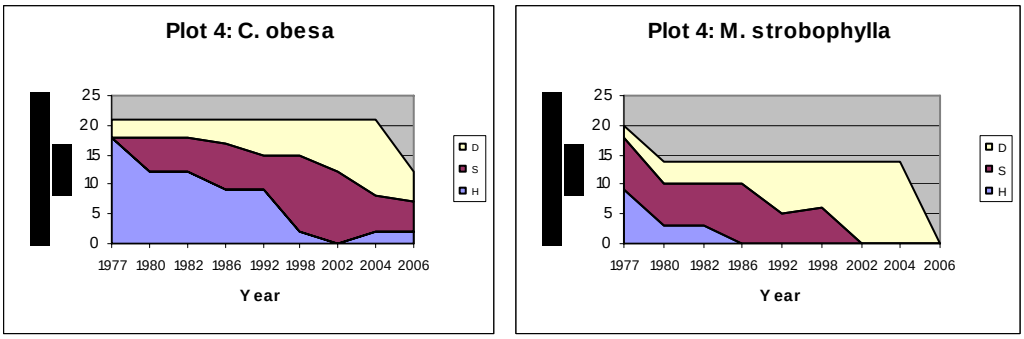



***Figure 3.2: Trend in the vigour of the dominant species at Plot 4***

***Plate 2: Facing diagonally across Plot 4***

### *Plot 5*

**Location: E 556423; N 6357462**

Western side of the lake bed, adjacent to, and north of, Plot 4.

**Vegetation Description:**

Woodland of *Casuarina obesa – Melaleuca strobophylla*. Dense stand in parts (closed canopy). Large number of younger plants. Understorey of *Atriplex semibaccata* and *Halosarcia sp.*

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

The proportion of live *C. obesa* that are healthy rather than stressed has declined. The seedling recorded in 2004 was still present but showed little sign of growth.

The decline in the *M. strobophylla* that commenced more than a decade ago has continued since 2004. Of the 60 live trees surveyed in 1998, 11 were alive in 2004 and only 3 are still alive (2 of which are stressed). At this rate there may be no mature *M. strobophylla* in the plot within several years. Despite this, some recruitment of seedlings has occurred with 20 seedlings being recorded. Soil salinities are lower than in 2004 but remain high.

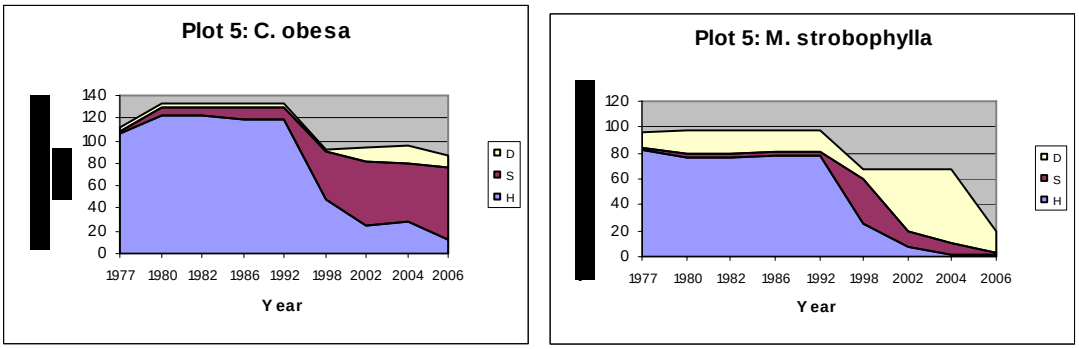



***Figure 3.3: Trend in the vigour of the dominant species at Plot 5***

***Plate 3: Facing diagonally across Plot 5***

### *Plot 6*

**Location: E 557266; N 6357575**

Eastern edge of lake bed.

**Vegetation Description:**

Initially an open woodland of *Eucalyptus rudis*. Understorey of *Halosarcia lepidosperma* and *Atriplex semibaccata*.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

All trees are dead and have been since 1980.

The understorey has changed since 2004, with *Atriplex semibaccata* and *Halosarcia lepidosperma* dropping out. *Wilsonia rotundifolia* provided less significant cover compared to 2004, and *Angianthus tomentosus,* which was not previously recorded for the plot, now provides significant cover.

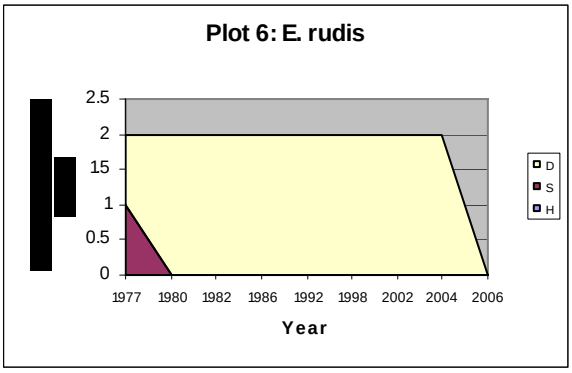



***Figure 3.4: Trend in the vigour of the dominant species at Plot 6***

***Plate 4: Facing diagonally across Plot 6***

### *Plot 7*

**Location: E 557496; N 6357711**
Eastern edge of lake bed, to the east of Plot 6.

**Vegetation Description:**
Open woodland of *Casuarina obesa – Eucalyptus rudis* with a sparse understorey of *Halosarcia lepidosperma*, *Maireana brevifolia* and *Atriplex semibaccata.*

**Salinity Class:**
Very saline.

**Condition in 2006/2007 and Trend To-date:**
All *E. rudis* are dead and have been since 1986.

The vigour of *C. obesa* declined significantly in 1986 and 1992 but increased in 1998, indicating a revival of the adults of this species. The condition of these trees has remained essentially unchanged since 1998.

The composition of the understorey species has changed since 2004. *Atriplex semibaccata, Maireana brevifolia,* and *Wilsonia rotundifolia* were not observed while *Angianthus tomentosus* and *Goodenia viscida* which were not previously recorded, now provide considerable cover. The three *Eucalyptus* seedlings recorded in 2002 and 2004 are still surviving in 2006/2007 and are healthy.

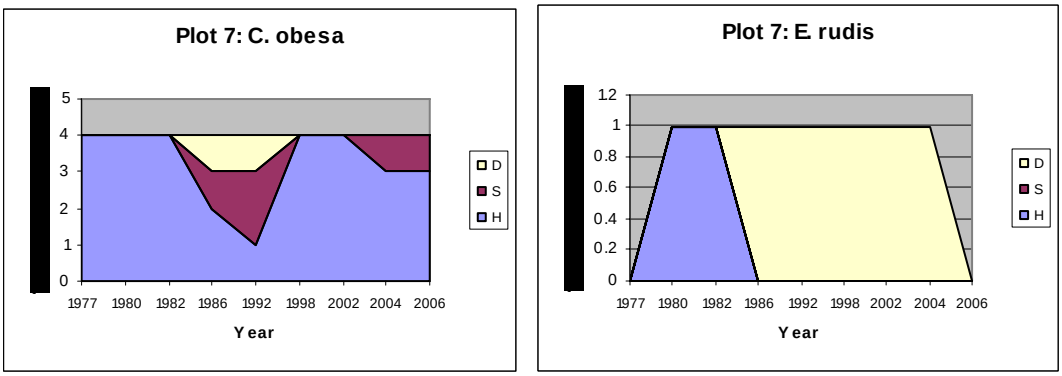



***Figure 3.5: Trend in the vigour of the dominant species at Plot 7***

***Plate 5: Facing diagonally across Plot 7***

### *Plot 8*

**Location: E 557391; N 6357664**

Eastern edge of lake bed.

**Vegetation Description:**

Surrounded by an open woodland of *Casuarina obesa – Melaleuca strobophylla*. The plot itself has never contained any trees and has a sparse understorey of *Wilsonia rotundifolia and Angianthus tomentosus*.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

No trees present. The understorey has changed since 2004. *Maireana brevifolia* and *Halosarcia lepidosperma* have been lost while *Angianthus tomentosus* has become established and provides significant cover.

***Plate 6: Facing diagonally across Plot 8***

### *Plot 9*

**Location: E 557519; N 6357844**
Eastern fringe of the lake bed.

**Vegetation Description:**
Woodland of *Casuarina obesa – Melaleuca strobophylla*. No understorey.

**Salinity Class:**
Very saline.

**Condition in 2006/2007 and Trend To-date:**
The *M. strobophylla* population has been in poor condition since assessment began and all individuals were dead by 1998.

The proportion of live *C. obesa* that are healthy has declined since 2004. Soil salinities have also declined since 2004.

No recruitment was recorded in the plot.

There continues to be no understorey in the subplots.

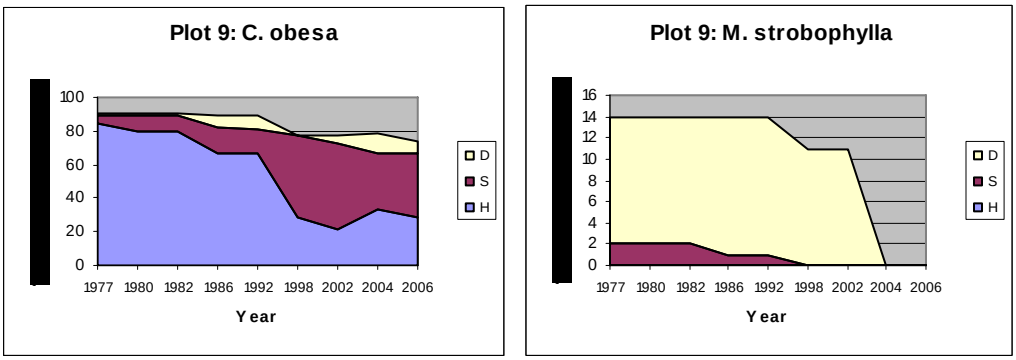



***Figure 3.6: Trend in the vigour of the dominant species at Plot 9***

***Plate 7: Facing diagonally across Plot 9***

### *Plot 10*

**Location: E 557117; N 6357950**
Northern end of lake bed.

**Vegetation Description:**
Open woodland of *Casuarina obesa, Melaleuca strobophylla* and *Eucalyptus rudis*. Understorey of *Halosarcia lepidosperma* and *Atriplex semibaccata*.

**Salinity Class:**
Extremely saline.

**Condition in 2006/2007 and Trend To-date:**
All *E. rudis* trees have been dead since 1980.

As with most plots assessed the proportion of live *C. obesa* that are healthy has declined along with the overall number.

The one stressed *M. strobophylla* individual from 2004 still remains in 2006/2007.

The understorey has changed. *Maireana brevifolia* was not found within the plot and *Atriplex semibaccata* was less abundant in 2006/2007 than 2004. *Angianthus tomentosus* was found but had not previously been recorded.

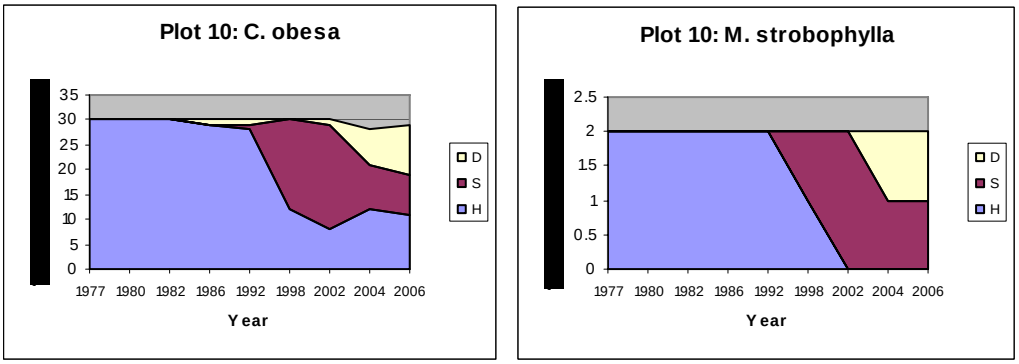



***Figure 3.7: Trend in the vigour of the dominant species at Plot 10***

***Plate 8: Facing diagonally across Plot 10***

### *Plot 11*

**Location: E 557036; N 6358405**
Northern lake edge.

**Vegetation Description:**
Originally a woodland of *Eucalyptus rudis* with substorey of *Melaleuca strobophylla* and *Casuarina obesa*. Now an open woodland of *C. obesa* with a dense understorey of *Halosarcia lepidosperma* and *Halosarcia indica.*

**Salinity Class:**
Extremely saline.

**Condition in 2006/2007 and Trend To-date:**
All *M. strobophylla* trees have been dead since 1992.

The condition of the *C. obesa* trees has remained stable since 1998.

The understorey has not changed greatly but *Atriplex semibaccata* was recorded in more subplots in 2006/2007 than 2004.

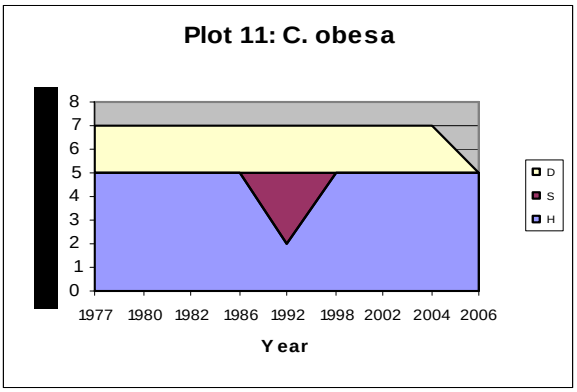



***Figure 3.8: Trend in the vigour of the dominant species at Plot 11***

***Plate 9: Facing diagonally across Plot 11***

### *Plot 12*

**Location: E 557122; N 6358562**

On sandy soils to the north of the lake.

**Vegetation Description:**

Woodland of *Eucalyptus loxophleba* with a substorey of *Acacia acuminata* and *Allocasuarina huegeliana*. Understorey dominated by *Atriplex semibaccata* and *Austrostipa elegantissima.*

**Salinity Class:**

Non-saline.

**Condition in 2006/2007 and Trend To-date:**

There has been minimal change in the vigour of *E. loxophleba* and *A. acuminata* from 2002.

*Atriplex semibaccata* was recorded within two of the subplots and has not been previously recorded.

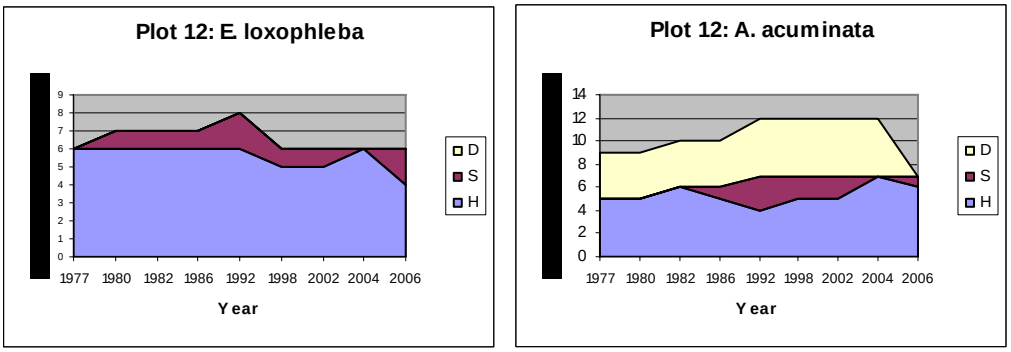



***Figure 3.9: Trend in the vigour of the dominant species at Plot 12***

***Plate 10: Facing diagonally across Plot 12***

## *Plot 13*

**Location: E 557643; N 6358921**
North of the lake, roadside.

**Vegetation Description:**
Low open forest of *Allocasuarina huegeliana – Banksia prionotes*. *Banksia attenuata* also nearby on sandy soils. Diverse understorey dominated by *Jacksonia furcellata*.

**Salinity Class:**
Non-saline.

**Condition in 2006/2007 and Trend To-date:**
The condition of the mature *A. huegeliana* population remains relatively unchanged. The number of *A. huegeliana* seedlings decreased from 8 to 5 individuals between 2004 and 2006/2007. The range of heights for the remaining seedlings recorded in 2006/2007 has increased.

No significant change in the status of *B. prionotes* is evident. All individuals are within the healthy class range.

Of the 12 *Jacksonia furcellata* seedlings from 2004, 10 remained in 2006/2007.

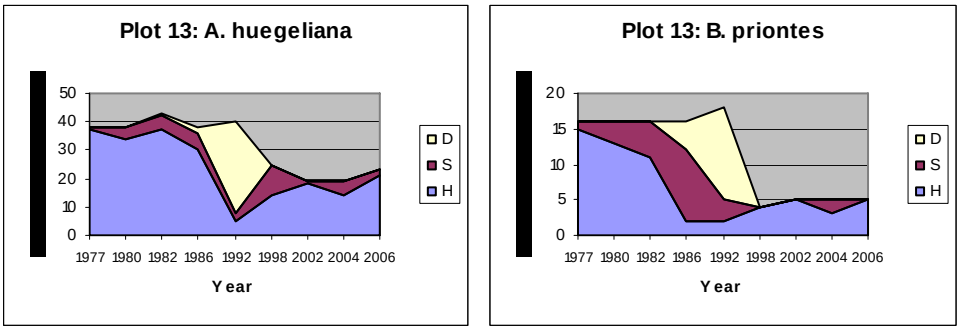



***Figure 3.10: Trend in the vigour of the dominant species at Plot 13***

***Plate 11: Facing diagonally across Plot 13***

### *Plot 15*

**Location: E 559729; N 6360835**

On northern fence-line of Dulbinning Nature Reserve, south of dam in adjacent property.

**Vegetation Description:**

Open woodland of *Eucalyptus salmonophloia – Eucalyptus wandoo*. Understorey of *Gahnia ancistrophylla, Lomandra micrantha* and *Daviesia debilior.*

**Salinity Class:**

Moderately saline.

**Condition in 2006/2007 and Trend To-date:**

The status of *E. wandoo* and *E. salmonophloia* has remained unchanged since 1996.

There was no significant change in understorey species. However, *Atriplex semibaccata* was not observed within the plot in 2006/2007.

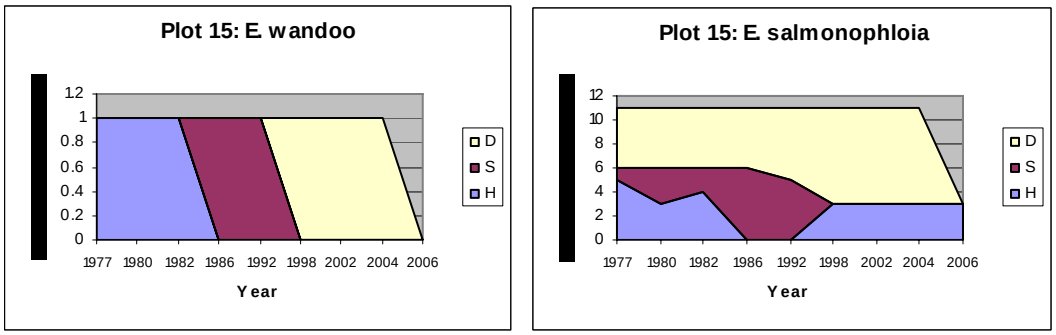



***Figure 3.11: Trend in the vigour of the dominant species at Plot 15***

***Plate 12: Facing diagonally across Plot 15***

### *Plot 16*

**Location: E 559788; N 6360805**

Situated on the northern fringe of Dulbinning Nature Reserve; south of dam in adjacent property; just east of Plot 15.

**Vegetation Description:**

Open woodland of *Eucalyptus salmonophloia*. Understorey dominated by *Gahnia trifida* and *Lomandra micrantha.*

**Salinity Class:**

Moderately saline.

**Condition in 2006/2007 and Trend To-date:**

*E. salmonophloia* vigour has remained stable since 1996.

A decline in understorey diversity was noted in 2002 but this trend was reversed in the two years after. *Atriplex semibaccata* has become established in all of the subplots since 2002 and have maintained presence as have the two *Dianella revoluta var divaricata* that were established in one subplot.

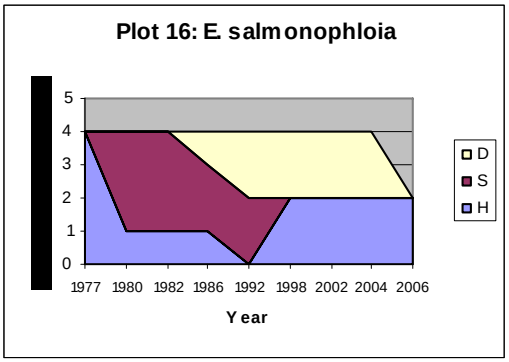



***Figure 3.12: Trend in the vigour of the dominant species at Plot 16***

***Plate 13: Facing diagonally across Plot 16***

### *Plot 17*

**Location: E 560503; N 6360778**

Situated on the northern fringe of the Dulbinning Nature Reserve; south of the fence-line and east of Plots 15 and 16.

**Vegetation Description:**

Initially an open woodland of *Eucalyptus salmonophloia*. Understorey dominated by *Melaleuca acuminata* and *Gahnia ancistrophylla*.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

All *E. salmonophloia* have been dead since 1998.

*M. acuminata* vigour remains high.

Understorey remains relatively unchanged.

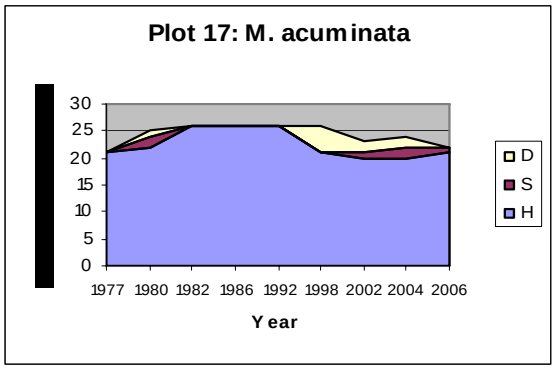



***Figure 3.13: Trend in the vigour of the dominant species at Plot 17***

***Plate 14: Facing diagonally across Plot 17***

### *Plot 18*

**Location: E 561068; N 6360808**

Situated on the northern fringe of Dulbinning Nature Reserve; east of Plot 17.

**Vegetation Description:**

Initially an open woodland of *Eucalyptus salmonophloia*. Understorey dominated by *Melaleuca acuminata* and grasses.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

All *E. salmonophloia* and *E. loxophleba* have been dead since monitoring began.

Monitoring of *M. acuminata* commenced in 2002, as this is now the dominant overstorey species. The change in the number of Melaleucas may reflect the number of individuals on the boundary of the plot that were counted. The overall vigour of *M. acuminata* has reduced from 2004 to 2006/2007 due to additional dead individuals.

There was an increase in the individual numbers of *Atriplex semibaccata*, while *Halosarcia indica* present in 2004 was not observed in two of the subplots in 2006/2007.

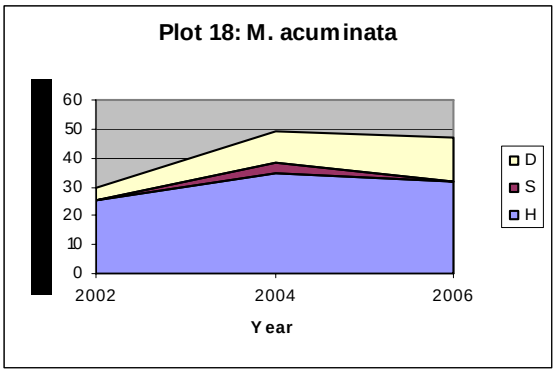



***Figure 3.14: Trend in the vigour of the dominant species at Plot 18***

***Plate 15: Facing diagonally across Plot 18***

### *Plot 19*

**Location: E 561345; N 6360800**

Northern fringe of Dulbinning Nature Reserve on western edge of drain.

**Vegetation Description:**

Closed scrub of *Melaleuca lateriflora.* Very dense stand. Sparse understorey of *Atriplex semibaccata.*

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

Seven *M. lateriflora* individuals were recorded as dead.

Significant changes have occurred in the understorey. In 2004 *Atriplex semibaccata* was recorded in all subplots and *Halosarcia indica* was recorded in one. In 2006/2007 *Atriplex semibaccata* has disappeared from the subplots which are now dominated by *Halosarcia indica*.

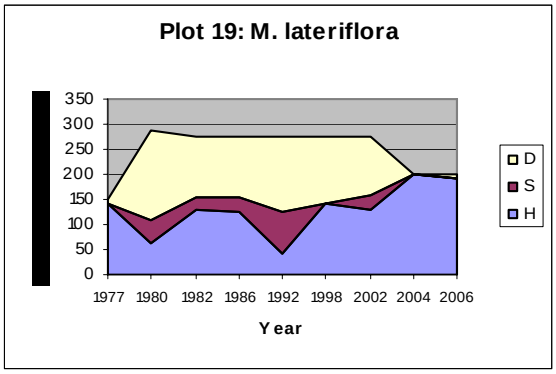



***Figure 3.15: Trend in the vigour of the dominant species at Plot 19***

***Plate 16: Facing diagonally across Plot 19***

### *Plot 20*

**Location: E 559060; N 6360428**

Situated in Dulbinning Nature Reserve, near Oval Rd (between Chadwick's block and the reserve).

**Vegetation Description:**

Initially an open woodland of *Eucalyptus salmonophloia*. Understorey dominated by *Melaleuca acuminata* and grasses.

**Salinity Class:**

Moderately saline.

**Condition in 2006/2007 and Trend To-date:**

All *E. salmonophloia* trees have been dead since 1998.

The *M. acuminata* understorey has remained relatively healthy and unchanged since 2002.

*Atriplex semibaccata,* which was present in 1998 and 2004, but not in 2002, has again dropped out of all but one subplot.

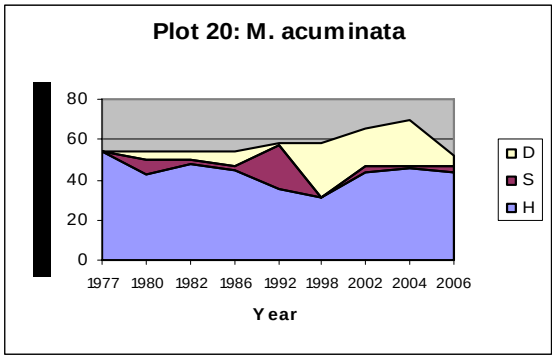



***Figure 3.16: Trend in the vigour of the dominant species at Plot 20***

***Plate 17: Facing diagonally across Plot 20***

### *Plot 21*

**Location: E 561051; N 6359773**

Situated on the southern fringe of Dulbinning Nature Reserve, just north of dam on adjacent property.

**Vegetation Description:**

Initially a woodland of *Eucalyptus rudis, Casuarina obesa* and *Melaleuca strobophylla*. Understorey of *Melaleuca lateriflora*. Only *Halosarcia* species remain.

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

All trees are dead and have been since monitoring began.

Understorey of samphires has been present since 1977.

In 2004 both *Halosarcia indica* and *Halosarcia lepidosperma* were recorded, while in 2002 and 2006/2007 only *Halosarcia indica* was recorded. There was also an increase in the percentage cover of the individuals.

***Plate 18: Facing diagonally across Plot 21***

### *Plot 22*

**Location: E 561128; N 6360018**

Located on the southern fringe of Dulbinning Nature Reserve, immediately west of dam in reserve (not the same dam as mentioned near Plot 21).

**Vegetation Description:**

Initially a woodland of *Eucalyptus rudis, Casuarina obesa* and *Melaleuca strobophylla*. Understorey of *Melaleuca lateriflora*. Only *Halosarcia indica* and *H. lepidosperma* remain.

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

All trees are dead and have been since monitoring began.

The understorey of samphires has been present since 1977. There were hundreds of *Halosarcia indica* germinants in 2006/2007.

***Plate 19: Facing diagonally across Plot 22***

### *Plot 23*

**Location: E 558891; N 6359500**

On the Dulbinning Nature Reserve to the west of Oval Rd.

**Vegetation Description:**

Open woodland of *Eucalyptus salmonophloia, E. loxophleba*. Understorey of dense *Melaleuca acuminata* and *M. lateriflora*.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

The plot occurs within the bulldozed and burnt area of Dulbinning Nature Reserve. Monitoring began in 1980, after the disturbance.

Vigour of the *E. loxophleba* trees has declined since 1986 and this trend has continued over the last 2 years.

There has been no significant change to the number of *M. acuminata* individuals, but their overall vigour has declined. The remainder of the understorey is also unchanged (i.e. the soil remains bare).

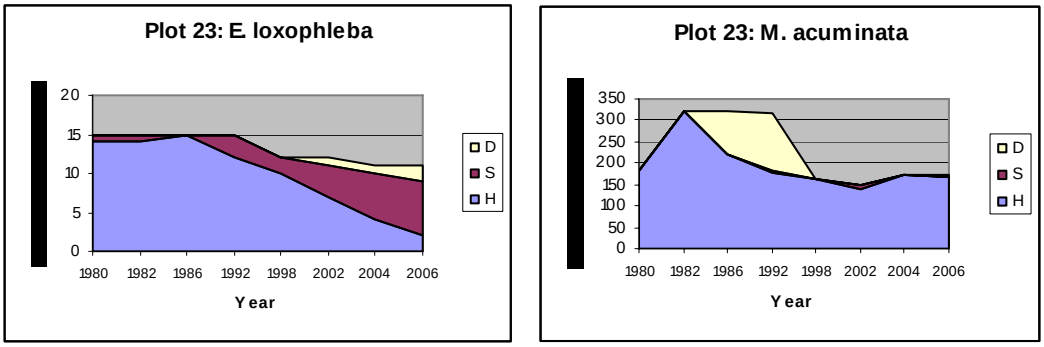



***Figure 3.16: Trend in the vigour of the dominant species at Plot 23***

***Plate 20: Facing diagonally across Plot 23***

### *Plot 24*

**Location: E 558858; N 6359428**

Approximately 100m west of Oval Rd. In the regeneration area to the south of Plot 23.

**Vegetation Description:**

Initially open woodland of *Eucalyptus salmonophloia*. Now an open woodland of *E. loxophleba* and *E. wandoo*. Dense understorey of *Melaleuca acuminata* and *M. lateriflora*.

**Salinity Class:**

Moderately saline.

**Condition in 2006/2007 and Trend To-date:**

The plot occurs within the bulldozed and burnt area of Dulbinning Nature Reserve. Monitoring began in 1980, after the disturbance. Very sparse trees of *E. loxophleba* and *E. wandoo* remain in the vicinity.

Based solely upon the data, there appears to have been a germination event of *Melaleuca acuminata* between 1986 and 1992 when the number of individuals increased from 2 to 33 healthy individuals. Since then there has been little change in the number of healthy individuals but those identified as stressed in previous years have now died.

The overall vigour of *M. lateriflora* and *M. acuminata* has declined in 2006/2007 from 2004 with an increase in stressed and dead individuals.

The understorey remains relatively unchanged.

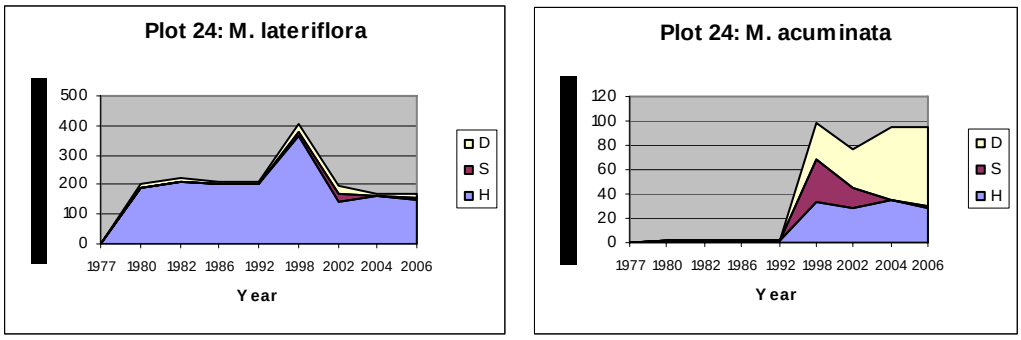



***Figure 3.17: Trend in the vigour of the dominant species at Plot 24***

***Plate 21: Facing diagonally across Plot 24***

### *Plot 25*

**Location: E 558828; N 6359808**

On the Dulbinning Nature Reserve to the west of Oval Rd. Plot is approximately 150m south of northern boundary and 100m west of Oval Rd.

**Vegetation Description:**

Open woodland of *Eucalyptus wandoo* (identified as *E. salmonophloia* in reports prior to 1998). Understorey of dense *Melaleuca acuminata*, grasses and small herbs

**Salinity Class:**

Moderately saline.

**Condition in 2006/2007 and Trend To-date:**

The vigour of *E. wandoo* onsite remains relatively unchanged. Two of the three *E. wandoo* seedlings recorded in 2004 were still surviving in 2006/2007.

There was no significant change in the number of *M. acuminata* individuals from 2004 to 2006/2007. Only *Lepidosperma tenue* was observed in the Understorey.

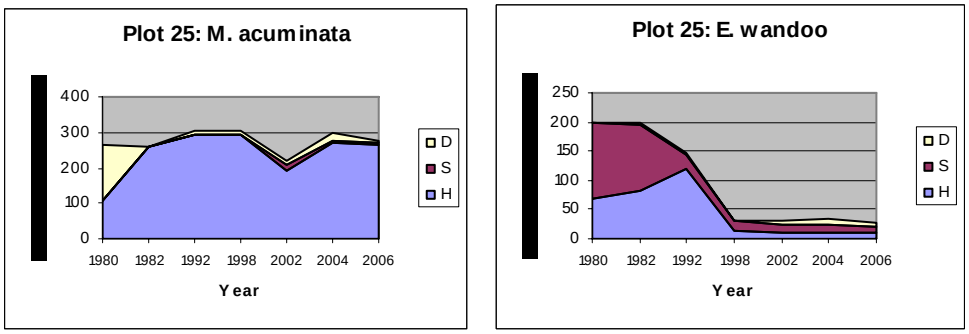



***Figure 3.18: Trend in the vigour of the dominant species at Plot 25***

***Plate 22: Facing diagonally across Plot 25***

### *Plot 26*

**Location: E 558882; N 6358783**

To the west of Oval Rd. Located in the regeneration area to the south of Plots 23-25.

**Vegetation Description:**

Initially *Eucalyptus loxophleba* with *Acacia acuminata* and *Casuarina obesa* (identified as *Allocasuarina huegeliana* in previous reports) substorey. Now only *Acacia acuminata* and *Casuarina obesa* remain. No perennial understorey.

**Salinity Class:**

Slightly saline.

**Condition in 2006/2007 and Trend To-date:**

Most of the *A. acuminata* remain healthy although one individual has died since 2004.

The two *C. obesa* trees in the plot remain healthy.

There has been no change in the understorey as the soil remains bare.

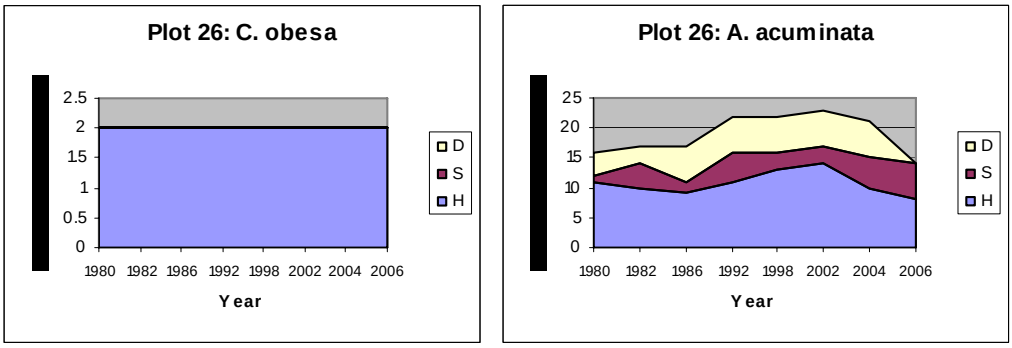



***Figure 3.19: Trend in the vigour of the dominant species at Plot 26***

***Plate 23: Facing diagonally across Plot 26***

### *Plot 27*

**Location: E 556032; N 6357284**

Western edge of lake bed, just south of Plot 3. Plot established in 1998.

**Vegetation Description:**

Open woodland of *Casuarina obesa*.

**Salinity Class:**

Slightly saline.

**Condition in 2006/2007 and Trend To-date:**

Almost all of the mature *C. obesa* trees are healthy, with only one individual which was recorded as stressed.

*C. obesa* seedling numbers have continued to increase (from 117 in 1998 to 891 in 2002 to 1069 in 2004 and then 1085 in 2006/2007). The seedlings remained in good health in 2006/2007 and some grazing was noted.

The samphires present in the understorey in 1998 were absent in 2004 and 2006/2007.

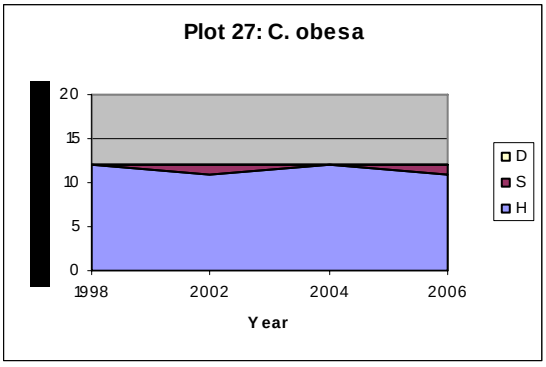



***Figure 3.20: Trend in the vigour of the dominant species at Plot 27***

***Plate 24: Facing diagonally across Plot 27***

### *Plot 28*

**Location: E 556189; N 6356601**

Southern portion of lake bed, near abstraction bore 7. Plot established in 1998.

**Vegetation Description:**

Woodland of *Casuarina obesa*. Some *Melaleuca strobophylla*. Very sparse understorey of *Halosarcia lepidosperma* and *Maireana brevifolia*

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

The number of healthy *C. obesa* is continuing to decline.

One *M. strobophylla* tree is still present and has remained stressed. The one *M. strobophylla* seedling recorded in 2002 and 2004 was still surviving in 2006/2007, and had grown from 1.1 m to 2.1m during this time.

The four unidentified eucalypt seedlings from 2004 were still remaining in 2006/2007.

The number of subplots in which *Halosarcia lepidosperma and Atriplex semibaccata* were recorded has decreased since 2004. *Atriplex semibaccata* only remains in one subplot.

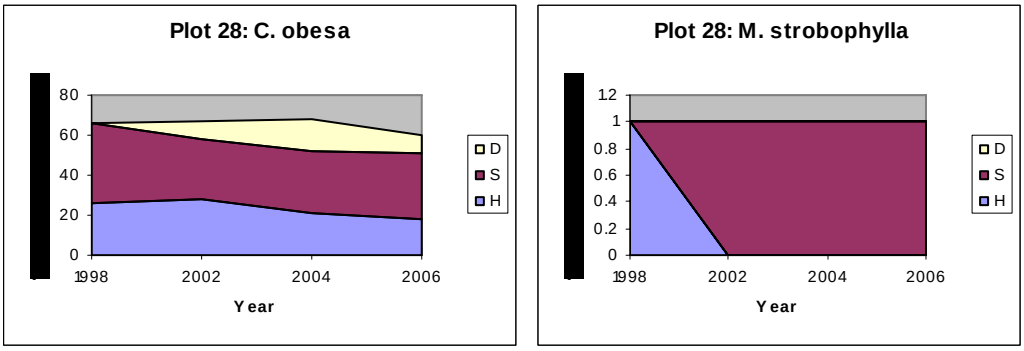



***Figure 3.22: Trend in the vigour of the dominant species at Plot 28***

***Plate 25: Facing diagonally across Plot 28***

### *Plot 29*

**Location: E 556496; N 6356584**

Southern portion of lake bed, 300m east of Plot 28. Plot established in 1998.

**Vegetation Description:**

Open woodland of *Casuarina obesa*. Very sparse understorey of *Halosarcia lepidosperma*.

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

The decline in *C. obesa* has continued since 1998 and there have been no healthy trees since 2002. No change in the overall vigour of *C. obesa* occurred from 2004 to 2006/2007.

The composition of understorey species was unchanged, however *Atriplex semibaccata and Halosarcia lepidosperma* were absent from two of the subplots.

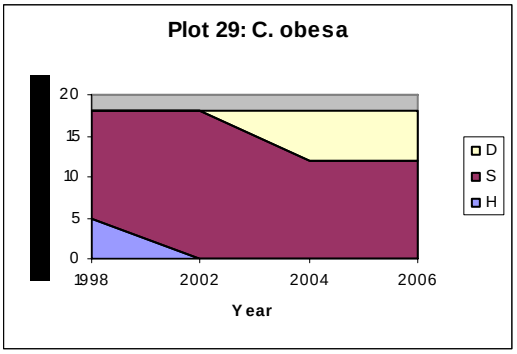



***Figure 3.23: Trend in the vigour of the dominant species at Plot 29***

***Plate 26: Facing diagonally across Plot 29***

### *Plot 30*

**Location: E 557422; N 6356494**

On the deep sand dunes near the eastern fringe of the lake. Plot established in 1998.

**Vegetation Description:**

Woodland of *Banksia prionotes*. Understorey of grasses and small herbs.

**Salinity Class:**

Non-saline.

**Condition in 2006/2007 and Trend To-date:**

Of the 36 *B. prionotes* surveyed in 1998, only one was alive in 2004 and again in 2006/2007.

Of the three *B. prionotes* seedlings observed, all were healthy in 2006/2007. In 2004 the two live seedlings were judged to occur just outside the bounds of the plot.

The understorey appears largely unchanged and consisted predominately of exotic grasses. The predominant native species in the subplots was *Lomandra rupestris.*

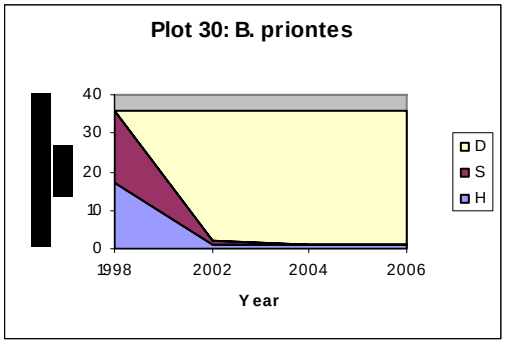



***Figure 3.24: Trend in the vigour of the dominant species at Plot 30***

***Plate 27: Facing diagonally across Plot 30***

### *Plot 32*

**Location: E 557307; N 6359030**

Across the Northern Arthur River, 50m south of road. Plot runs across the river and extends approximately 30m east and 30m west from the river channel. Plot originally established in 1983.

**Vegetation Description:**

Woodland of *Eucalyptus loxophleba, Casuarina obesa* and *Melaleuca strobophylla*. Understorey of *Halosarcia indica* and *H. lepidosperma*.

**Salinity Class:**

Moderately saline. Soil salinities range from Slightly (EM38 horizontal of 47 mS/m) at higher ground to Very (EM38 horizontal of 189 mS/m) near or in the channel.

**Condition in 2006/2007 and Trend To-date:**

The overall vigour of *C. obesa* has slightly improved from 2004 to 2006/2007 with an increase in healthy individuals.

The overall health of the *M. strobophylla* population appears to have improved slightly with an individual rating as Healthy.

The cause of the decline in numbers of *E. loxophleba* in 2004 is uncertain, there appeared to be a discrepancy between the number of trees in the raw data and the summarized data from previous monitoring.

Understorey was estimated across the entire plot rather than recorded on a plot by plot basis. There was no significant change from 2004 to 2006/2007.

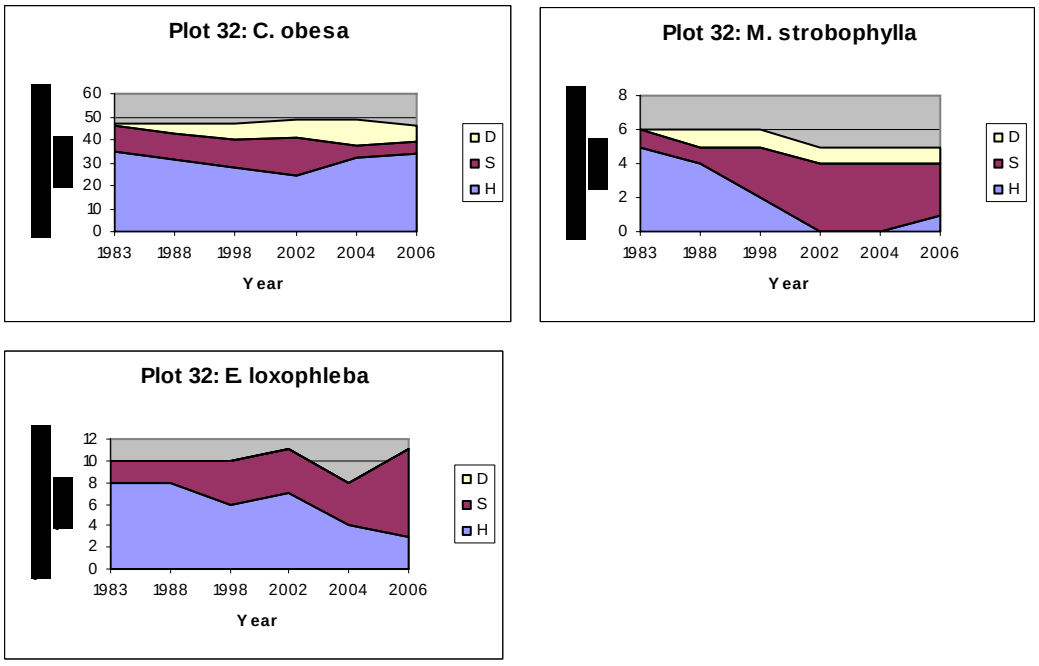



***Figure 3.26: Trend in the vigour of the dominant species at Plot 32***

***Plate 29: Facing diagonally across Plot 32***

### *Plot 33*

**Location: E 556116; N 6357330**

South west corner of the lake bed. Plot originally established in 1983. Plot is 20 m x 40 m in size.

**Vegetation Description:**

Woodland of *Casuarina obesa*. Understorey of very sparse *Halosarcia lepidosperma* and small herbs.

**Salinity Class:**

Moderately saline.

**Condition in 2006/2007 and Trend To-date:**

There has been an improvement in the vigour of *C. obesa* in the plot.

Four unidentified Eucalypt seedlings were also observed within the plot ranging from 0.4m to 2.3m which were not previously recorded in 2004.

Understorey was estimated across the entire plot rather than recorded within subplots. *Maireana brevifolia* was not observed in 2006/2007, *Halosarcia lepidosperma* increased its percentage cover and a new species was observed, *Goodenia viscida*.

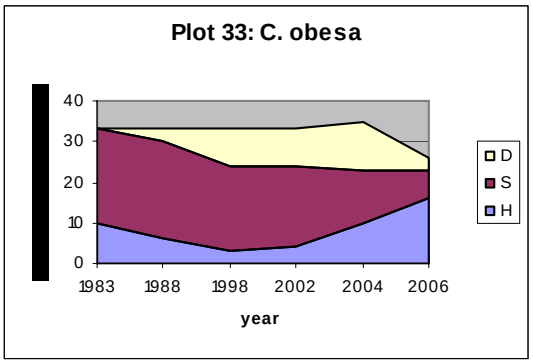



***Figure 3.27: Trend in the vigour of the dominant species at Plot 33***

***Plate 30: Facing diagonally across Plot 33***

### *Plot 34*

**Location: E 556927; N 6358111**

Approx. 25m east of Pump 1. Plot established in 2000.

**Vegetation Description:**

Dense *C. obesa* and *M. strobophylla* stand on undulating gilgai mounds. Scattered *Halosarcia sp.* understorey.

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

This plot is still declining. Another 10 *C. obesa* have died in the last two years and only one individual's vigour remains healthy. All *M. strobophylla* individuals were recorded as dead since 2004.

The understorey remains relatively stable.

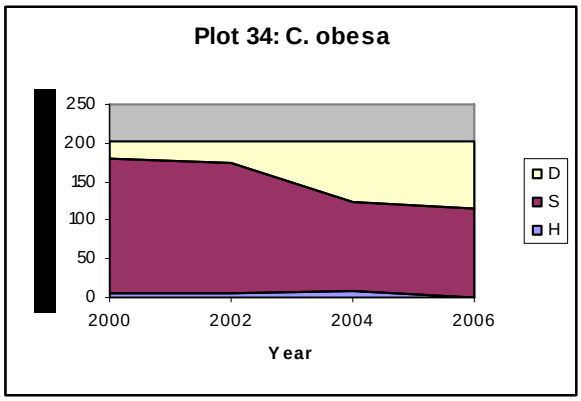



***Figure 3.28: Trend in the vigour of the dominant species at Plot 34.***

***Plate 31: Facing diagonally across Plot 34***

### *Plot 35*

**Location: E 556796; N 6356552**

Approx. 50m south west of Pump 13. Plot established in 2000.

**Vegetation Description:**

Open woodland of *C. obesa*. Generally large trees occurring on flat ground. Occasional *Carpobrotus sp.,* otherwise no understorey present.

**Salinity Class:**

Very saline.

**Condition in 2006/2007 and Trend To-date:**

There was no significant change in the vigour of the *C. obesa*. No individuals had died since 2004, however, there were more stressed individuals recorded in 2006/2007 than 2004.

The understorey of *Carpobrotus* was significantly less abundant in 2006/2007 than in 2004, and was absent at three of the plots. *Atriplex semibaccata* was not found in 2006/2007 but *Maireana brevifolia* was recorded and had not been previously recorded in 2004. Soil salinities are lower than in 2004.

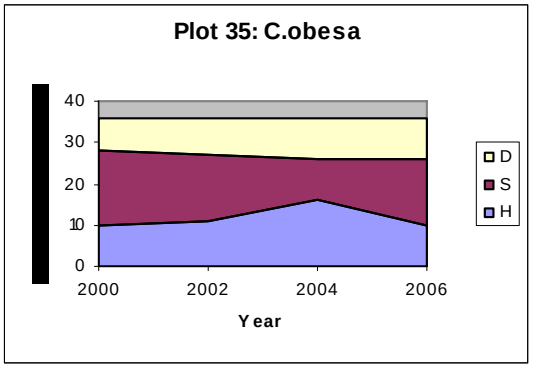



***Figure 3.29: Trend in the vigour of the dominant species at Plot 35.***

***Plate 32: Facing diagonally across Plot 35***

### *Plot 36*

**Location: E 557290; N 6356958**

Approx. 80m west of Pump 15. Plot established in 2000.

**Vegetation Description:**

Woodland of *C. obesa* and *M. strobophylla*. Density of stems ranges from high on the raised gilgai mounds to low in and around depressions. Understorey consists of occasional *Halosarcia lepidosperma*

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

There was no significant change in the overall vigour for either species within this plot. There were less healthy *C. obesa* trees, but only one death since 2004. Only one *M. strobophylla* individual had died since 2004

The abundance of both *Atriplex* and *Halosarcia* species has decreased significantly since 2004.

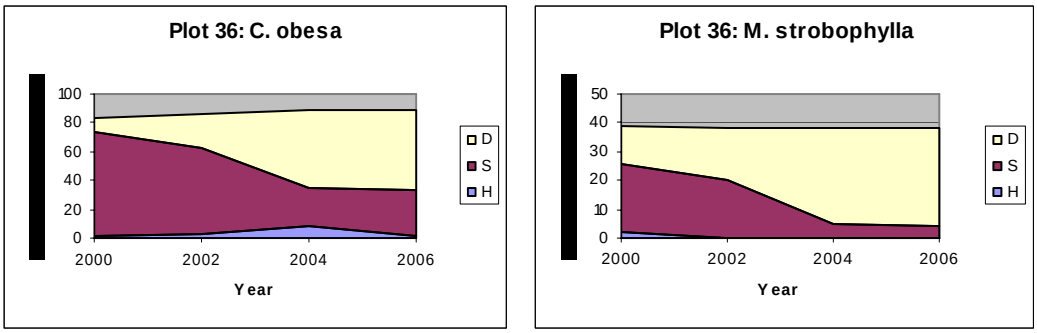



***Figure 3.30: Trend in the vigour of the dominant species at Plot 36***

***Plate 33: Facing diagonally across Plot 36.***

### *Plot 37*

**Location: E 556887; N 6357053**

Approx. 50m south of Pump 12. Plot established in 2000.

**Vegetation Description:**

Plot samples one stand of *C. obesa* in an open woodland of *C. obesa*. The majority of trees to the south of Pump 12 are restricted to areas of higher elevation (ie. on gilgai mounds) with scattered *Halosarcia sp.* in the understorey.

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

All *E. rudis* trees are dead and have been since 2000.

The majority of the *C. obesa* is stressed and two trees have died since 2004.

There was a significant change in the understorey with both *Atriplex semibaccata* and *Halosarcia lepidosperma* not recorded in 2006/2007, leaving only *Halosarcia pergranulata*.

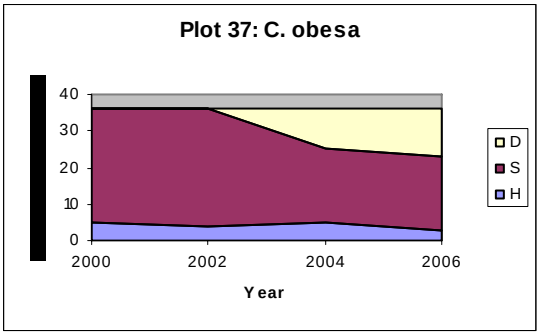



***Figure 3.31: Trend in the vigour of the dominant species at Plot 37***

***Plate 34: Facing diagonally across Plot 37.***

### *Plot 38*

**Location: E 556708; N 6357859**

Approx. 50m west of Pump 2. Plot established in 2000.

**Vegetation Description:**

Open woodland of *C. obesa* with low open shrubland of *Halosarcia lepidosperma.*

**Salinity Class:**

Extremely saline.

**Condition in 2006/2007 and Trend To-date:**

The number of healthy *C. obesa* has increased from 14 to 17 and only 2 trees have died since 2004 showing increased health among the previously stressed individuals.

*Atriplex semibaccata* was not recorded within the subplots in 2006/2007. *Halosarcia lepidosperma* has increased during the past two years.

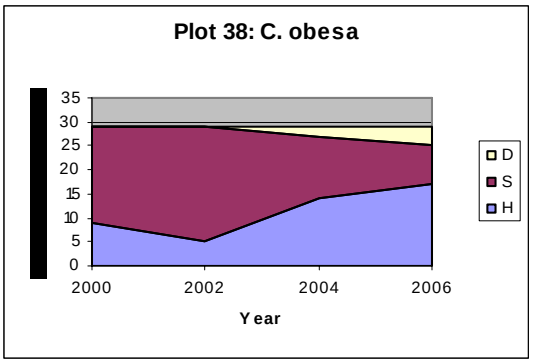



***Figure 3.33: Trend in the vigour of the dominant species at Plot 38.***

***Plate 35: Facing diagonally across Plot 38.***

### *Plot 42 Melaleuca seedling plot (established 2004)*

**Location: E 557540; N 6357715**

Situated on the north-western edge of the lake bed, south of Plot 9 and just east of Plot 7.

**Salinity Class:**

Very saline

**Description:**

This plot was established in 2004 to monitor a recruitment event by measuring a dense stand of *M strobophylla* seedlings. A total of 312 *M strobophylla* seedlings and 2 *C obesa* seedlings were present in 2004 with 314 *M strobophylla* seedlings and 1 *C obesa* seedling present in 2006/2007.

***Plate 38: Seedling plot 42, photo taken from NW corner post***

## 3.2 Seedling Data

***Plot 39: Seedling Transect***

**Location: E 555988; N 6357325**

Runs east-west, 60m north of pump 9. Plot established in 2000.

**Salinity Class:**

Slightly saline

**Description:**

Transect runs at the northern end of the seedling recruitment area and samples a relatively low density of *C. obesa* seedlings in a generally open area. There was an increase the last two years from 136 to 145. This is likely to be a real increase as there were a number of seedlings less than 50 cm high.

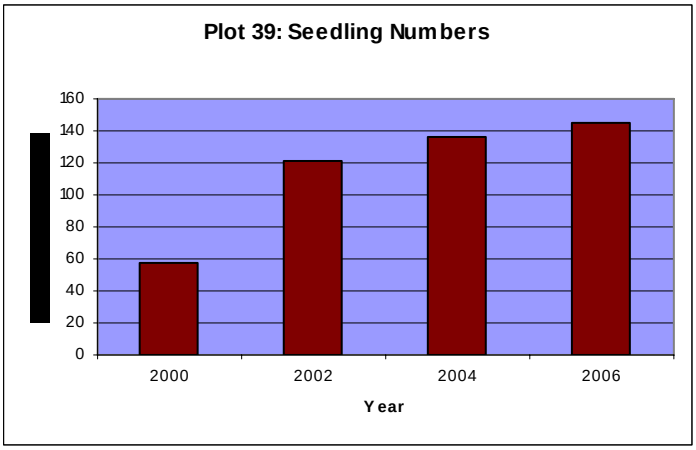



***Figure 3.34: Seedling numbers at plot 39.***

***Plate 36: Seedling plot 39, facing east***

### *Plot 40: Seedling Transect*

**Location: E 555982; N 6357283**

Runs east-west, 20m north of pump 9. Plot established in 2000.

**Salinity Class:**

Slightly saline

**Description:**

This transect passes through the stand of *C. obesa* trees just north of pump 9 and into the open area east of the pump. *C. obesa* seedling densities are low under the trees becoming higher in the open areas to the east and west.

Seedling numbers have increased from 517 in 2000 to 927 in 2002 to 1143 in 2004 and then 1192 in 2006/2007. The increase in the last two years may be within the range of error in counting large numbers of very small seedlings.

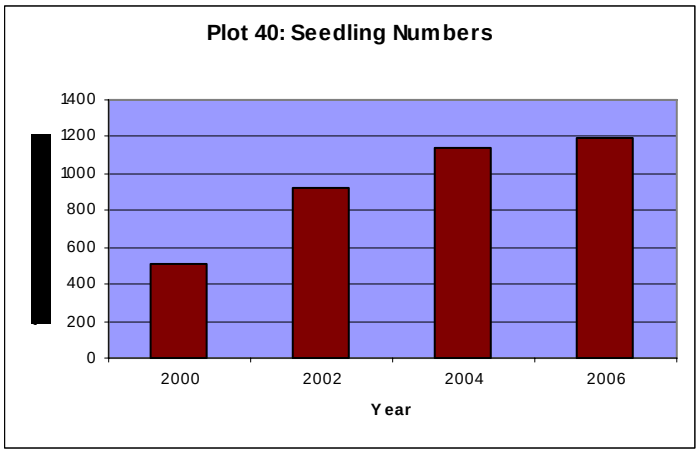



***Figure 3.35: Seedling numbers at plot 40.***

***Plate 37: Seedling plot 40, facing east***

### *Plot 41: Seedling Transect*

**Location: E 555978; N 6357242**

Runs east-west, 20m south of pump 9. Plot established in 2000.

**Salinity Class:**

Slightly saline

**Description:**

Very high densities of *C. obesa* seedlings with variable heights occur throughout much of this transect. Soil salinity varies from slightly saline to very saline at the eastern margin. Seedling numbers have increased from 1469 in 2000 to 2912 in 2002, then declined to 2690 in 2004 and increased to 2719 in 2006/2007. The increase between 2004 and 2006/2007 is likely to be within the range of error in counting large numbers of very small seedlings.

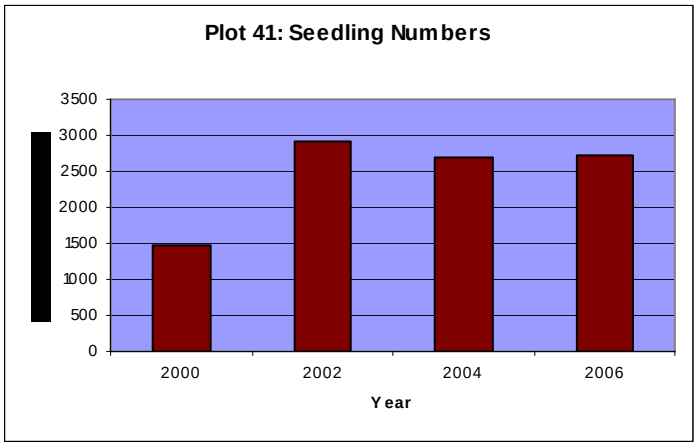



***Figure 3.36: Seedling numbers at plot 41.***

***Plate 38: Seedling plot 41, facing east***

## 3.3 Salinity Data

The validation of EM38 readings with the direct measurement of electrical conductivity of soil samples is first mentioned in the 2002 report, but the method was not elaborated upon, and neither the EC data nor a comparison of the EC and EM38 readings was presented.

As with 2004, in 2006/2007 for each group of plots, soil samples at 25 cm (depth) intervals were collected up to a depth of 2 m where possible. These samples were analysed for EC and compared to the EM38 readings. These were not used to calibrate the EM38 readings as a minimum of 12 sites for each location or major soil type is needed to generate the required linear regression required for calibration (Bennett *et. al*, 1995). Given that plots were located across a number of soil types it was not practical to auger 12 holes to a depth of 2 m for each soil type.

The comparisons of the direct measurements of EC with the EM38 readings are shown in Table 3.4.

***Table 3.4 Comparison of EM38 readings and direct measurements of EC***

| Plot | EM38-horizontal | EM38-vertical | Avg EC for 25cm & 50cm sample | Avg EC all samples | Depth (m) | EM38-h as % of EC | EM38-v as % of EC |
|---|---|---|---|---|---|---|---|
| 3 | 229 | 287 | 61 | 61 | 0.50 | 375 | 470 |
| 4 | 160 | 275 | 94 | 94 | 0.25 | 170 | 293 |
| 5 | 175 | 288 | 65 | 65 | 0.25 | 270 | 443 |
| 6 | 151 | 253 | 112 | 112 | 0.50 | 135 | 226 |
| 7 | 193 | 297 | 250 | 263 | 0.75 | 77 | 113 |
| 8 | 185 | 299 | 156 | 156 | 0.50 | 119 | 191 |
| 9 | 163 | 247 | 205 | 251 | 0.75 | 79 | 98 |
| 10 | 291 | 407 | 31 | 31 | 0.25 | 940 | 1313 |
| 11 | 297 | 411 | 170 | 170 | 0.50 | 174 | 242 |
| 12 | 35 | 65 | 4 | 4 | 0.75 | 874 | 1613 |
| 13 | 19 | 32 | 2 | 3 | 1.00 | 972 | 1057 |
| 15 | 101 | 153 | 105 | 107 | 0.75 | 96 | 143 |
| 16 | 117 | 161 | 71 | 71 | 0.50 | 165 | 227 |
| 17 | 160 | 209 | 77 | 77 | 0.25 | 208 | 271 |
| 18 | 187 | 187 | 103 | 103 | 0.25 | 181 | 182 |
| 19 | 371 | 493 | 299 | 299 | 0.25 | 124 | 165 |
| 20 | 127 | 175 | 28 | 28 | 0.50 | 453 | 624 |
| 21 | 918 | 749 | 513 | 513 | 0.25 | 179 | 146 |
| 22 | 825 | 763 | 506 | 506 | 0.25 | 163 | 151 |
| 23 | 156 | 222 | 179 | 179 | 0.50 | 87 | 124 |
| 24 | 116 | 182 | 162 | 174 | 0.75 | 72 | 105 |
| 25 | 111 | 160 | 47 | 47 | 0.50 | 235 | 339 |
| 26 | 59 | 101 | 2 | 7 | 0.75 | 2942 | 1449 |
| 27 | 78 | 125 | 47 | 47 | 0.25 | 167 | 267 |
| 28 | 191 | 286 | 62 | 62 | 0.25 | 308 | 462 |
| 29 | 270 | 395 | 106 | 106 | 0.25 | 255 | 373 |
| 30 | 3 | 8 | 3 | 2 | 1.25 | 97 | 415 |
| 32 | 132 | 154 | 9 | 22 | 0.75 | 1463 | 700 |
| 33 | 132 | 204 | 184 | 286 | 1.25 | 72 | 71 |
| 34 | 263 | 365 | 89 | 89 | 0.25 | 295 | 410 |
| 35 | 194 | 270 | 225 | 273 | 2.00 | 86 | 99 |
| 36 | 258 | 375 | 82 | 168 | 1.00 | 314 | 223 |
| 37 | 259 | 400 | 109 | 109 | 0.50 | 237 | 367 |
| 38 | 238 | 325 | 150 | 150 | 0.25 | 159 | 217 |
| 42 | 169 | 248 | 26 | 26 | 0.25 | 648 | 955 |
| Average | 209 | 273 | 124 | 133 | 1 | *171 | *240 |

*average excludes extreme values of 10, 12, 13, 26 and 32

# 4.0 Discussion



## 4.1 Methodology

### 4.1.1 Tree Height

Due to the recommendations made in the 2004 report regarding tree heights, trees under 4m only were measured for height, reducing field time and data inaccuracies.

Measuring the growth rates of juvenile trees still provides useful information for managing water levels within Lake Toolibin as the height of seedlings when the lake fills is critical to their survival. It would be reasonable to assume that seedlings totally submerged for a significant time would die; therefore information regarding growth rates will be useful for manipulating water levels within the lake.

A previous recommendation was that the heights of seedlings are to be measured until they reach a nominal height (based on the depth to which the lake fills). Clarification needs to be made about exactly what this height is before they are deemed to be 'mature', tagged and allocated into height classes. Permanently tagging immature trees can be problematic as they can outgrow them which can be damaging to the individual. It is recommended that a method of tagging recently mature trees to minimise damage be devised.

### 4.1.2 Diameter at Breast Height

From the 2004 report it was established that measuring tree diameters required approximately 25% of the field time for this project. In addition to being very time consuming, it is not clear whether this is going to be analysed, and if so for what end. The requirement for this parameter to be regularly measured should be reviewed.

### 4.1.3 Vigour

#### *Vigour Scale*

The vigour scale is appropriate for the project, provided it is only used for analysis in terms of vigour classes (healthy, stressed and dead). The scale was designed specifically for eucalypts and is essentially subjective but it does seem to produce reasonably consistent vigour class assessments by different assessors. However the exact numerical value produced by different assessors using the condition scale is somewhat variable and therefore analysis should not be undertaken using these values within the vigour classes.

It was found that recording the number of dead individuals became problematic over time as some had fallen over, some remained standing and some were no longer able to be found due to decomposition. It is a recommendation that dead species be eliminated from the dataset if they were recorded as dead for the two monitoring periods prior.

### *Vigour trends*

The data from 2006/2007, 2004 and 2002 appears to be directly comparable but assessing long term trends would be somewhat compromised by inconsistencies in data collection over time. This has largely resulted from changes in the position and the number of plots being measured and whether previously dead trees have continued to be included in the datasets for the plots.

Resolving inconsistencies within the dataset is outside the scope of this project and a project in its own right. But it is recommended that there be consistency in the method of recording dead trees.

The analysis of trends provided below is based on the portion of the dataset that includes plots that have been measured up to 2006/2007. Both percentages and number of trees are presented to provide an insight into some of the inconsistencies within the dataset.

## 4.1.4 Salinity Data

The EM38 provided a reasonable indication of the salinity across the study area given the overall agreement between the EM38 readings and the direct EC measurements determined under laboratory conditions, although there were large discrepancies at the three non-saline and slightly saline sites (plots 12, 13 and 26) as seen in **Table 3.1**. These discrepancies are large as percentages but relatively small as actual qualities, and it should be noted that soil factors have a greater influence on EM38 readings were the salinity is low (Bennett *et. al*, 1995). The readings for plots 10 and 32 were taken after a rain event which could have had an impact on the results.

On average the EM38 slightly overestimated the EC levels. The overestimation appears to be greater between the vertical EM38 readings and the direct measurements. However the sample holes were on average less than 1 m due to the hardness of the soil instead of the 2 m required for direct comparison. Therefore this discrepancy should not be interpreted as being precise.

The comparison of vertical and horizontal EM38 readings indicates whether salinity levels are greater at the surface or at depth. In 11 of the 35 sample sites the EM38 readings and the direct EC measures agree in terms of whether salinity is greater at depth or not. However, the fact that the sample holes were on average less than 1 m and in most cases only to 50cm instead of the 2 m required for direct comparison, means that the vertical readings were not validated and some caution should be exercised in assessing the level of agreement between the EM38 readings and the direct measurements.

The comparison of soil samples with the EM38 readings can be a useful exercise but the soil sampling regime should be reviewed given that:

- Obtaining soil samples in this project required 10% of the field time;
- The EM 38 can not be calibrated with soil samples unless a very large number of samples are taken;
- Obtaining soil samples disturbs the sites; and
- On average holes could only be hand augered to less than 1.0 m, where samples need to be taken down to 2.0 m to compare to EM38 vertical readings.

It is a continued recommendation that samples at 25 and 50 cm depths are taken only at the same plots they were collected in 2004 and 2006/2007 for validation of the EM38 horizontal readings. Vertical readings require comparison of samples up to 2 m below the surface and this can be practicably obtained with a hand auger but it is not recommended that samples below 50 cm be collected due to the damage it causes and time constraints.

### 4.1.5 Percentage Cover for Overstorey

In previous years the monitoring brief has stated that percentage cover for each overstorey species be estimated at 100 points across the 20 x 20 m plots (i.e. at 2 m intervals). No data for this was presented in the 2002 report and it was deemed in 2004 that this method was both very time consuming, and less accurate, than making a single estimate of the percentage cover of each overstorey species in each plot. In 2006/2007 an estimate of the overall percentage cover for each species within the whole plot was measured, results are found in Appendix 6.

It is recommended that the monitoring brief be modified to reflect this change in method.

## 4.2 Vegetation Trends

### 4.2.1 Short Term Trends

The data from 2006/2007 and 2004 appears to be directly comparable and this was in large part due to access to the raw 2004 data in the field when collecting the 2006/2007 data. Access to the previous dataset provides the data collectors the opportunity to ensure data is collected within any individual plot consistently over time. It is therefore a continued recommendation that for future monitoring, previous years raw data be made available to the data collectors to ensure data at individual plots is collected consistently.

The short term trends are discussed in Section 4.2.4 Understorey.

### 4.2.2 Long Term Trends

From the 2004 report it was established that assessing the long term trends is somewhat compromised due to inconsistencies in the data collection over time, which has resulted from changes in the position and number of plots being measured and whether previously dead trees have continued to be included in the datasets for the plots.

An assessment of long term trends on the basis of a superficial examination of the data is therefore fraught with difficulties and this is evident in Figures 4.1 to 4.5 which incorporate data for all plots still being measured in 2006/2007.

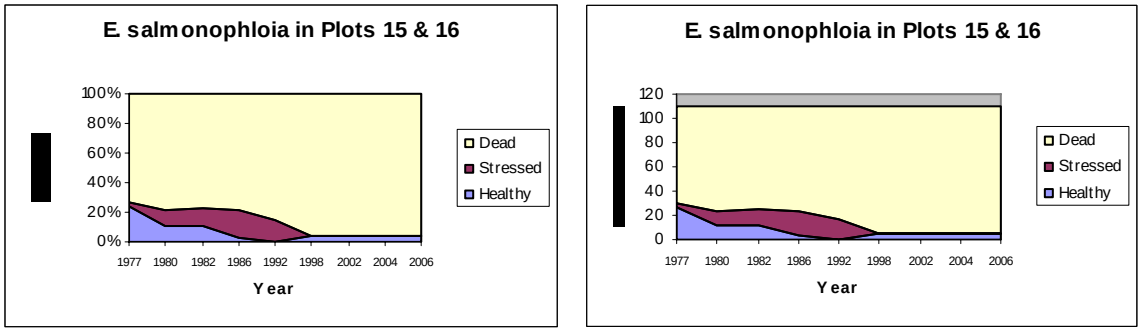



***Figure 4.1: Trend in vigour for all* E. salmonophloia *trees within the study area***

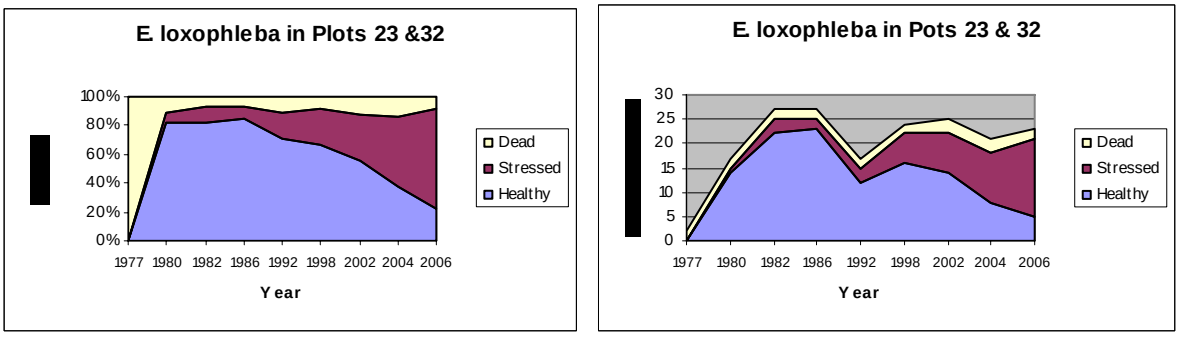



***Figure 4.2: Trend in vigour for all* E. loxophleba *trees within the study area***

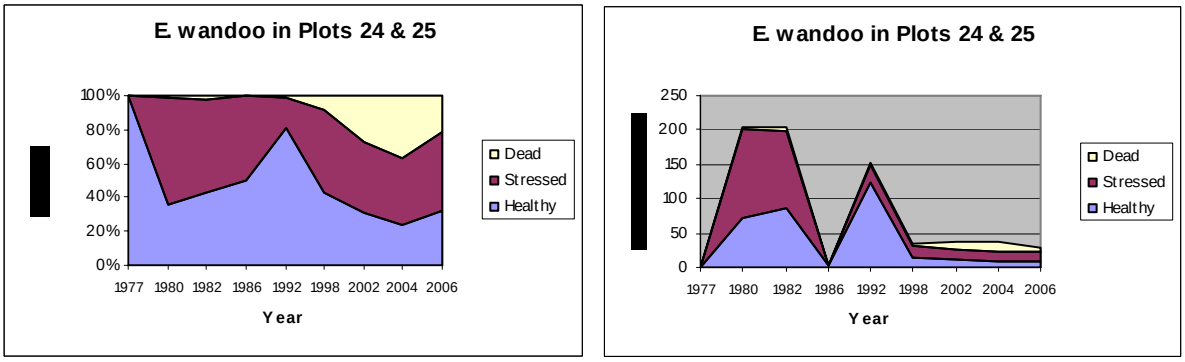



***Figure 4.3: Trend in vigour for all* E. wandoo *trees within the study area***

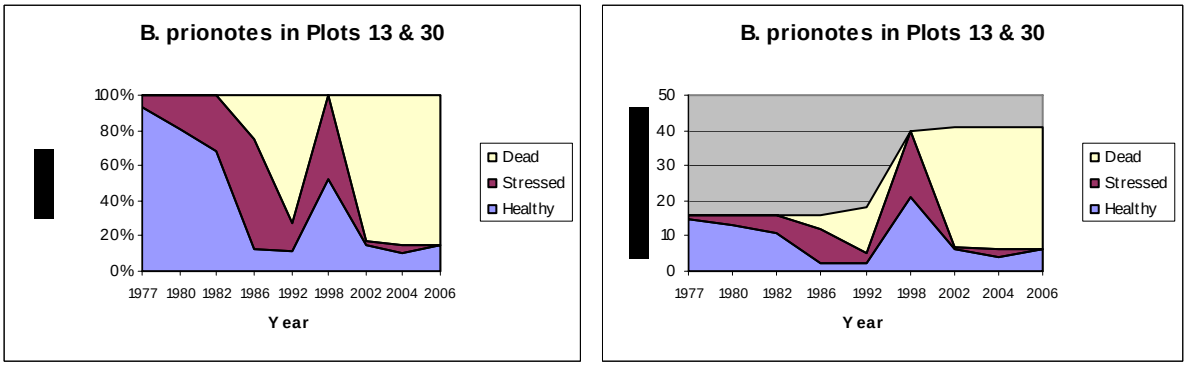



***Figure 4.4: Trend in vigour for all* B. prionotes *trees within the study area***

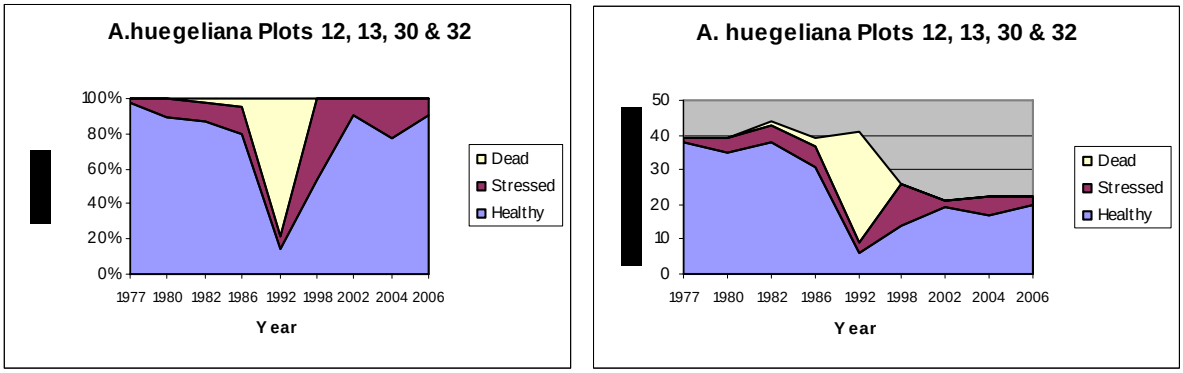



***Figure 4.5: Trend in vigour for all* A. huegeliana *trees within the study area***

The intent of the monitoring program is to measure changes in vegetation over time. Given the difficulties in using the existing dataset it is recommended that the monitoring program be reviewed and long term trends only be measured from a date at which all data is being collected in a consistent manner. This is further discussed in Section 4.2.5 Terrestrial Vegetation.

## 4.2.3 Wetland Vegetation

### *Casuarina Obesa*

The data in Figure 4.6 represents the percentages of *C. obesa* with the first graph showing plots monitored since 1977 and the second graph for the plots established in 2000. Figure 4.7 represents the actual number of *C. obesa* within Lake Toolibin again with one graph showing the plots monitored since 1977 and the second showing the plots established in 2000. The overall percentage and number of healthy C. obesa trees has decreased slightly within Plots 34 to 38, while there was no significant change in vigour for Plots 3 to 33.

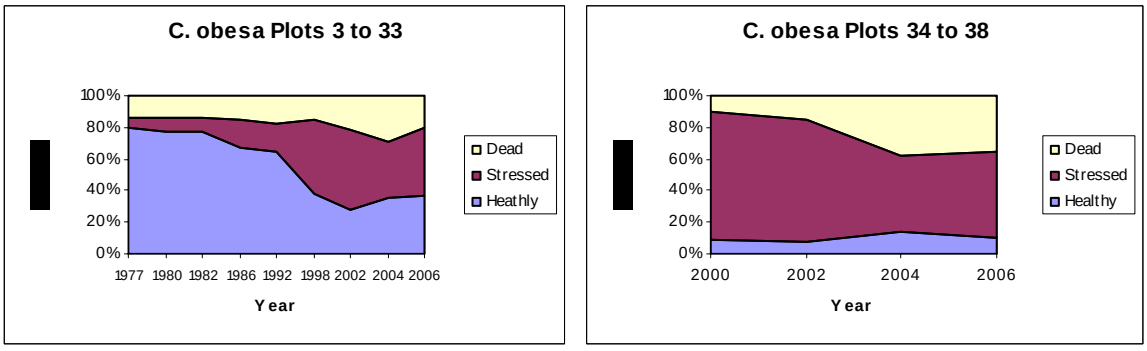



***Figure 4.6: Trend in vigour for all* C. obesa a *trees within the Lake Toolibin monitoring plots***

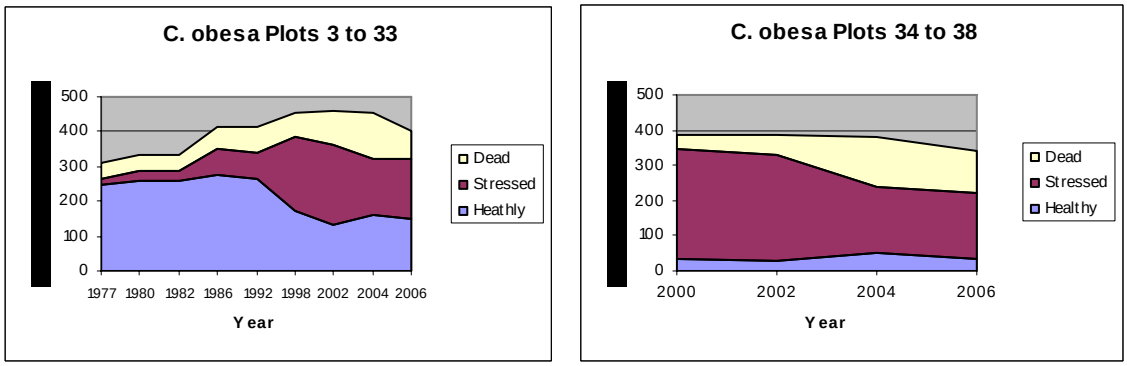



***Figure 4.7: Total Number of* C. obesa *trees within the Lake Toolibin monitoring plots***

The trend of reducing vigour is likely to be the result of rainfall patterns as shown in Figure 4.8. From 2004 to 2006/2007 Toolibin Lake received below average rainfall compare this to the abnormally high rainfall in 2003 which would have accounted for the improved health of species within the 2004 monitoring period.

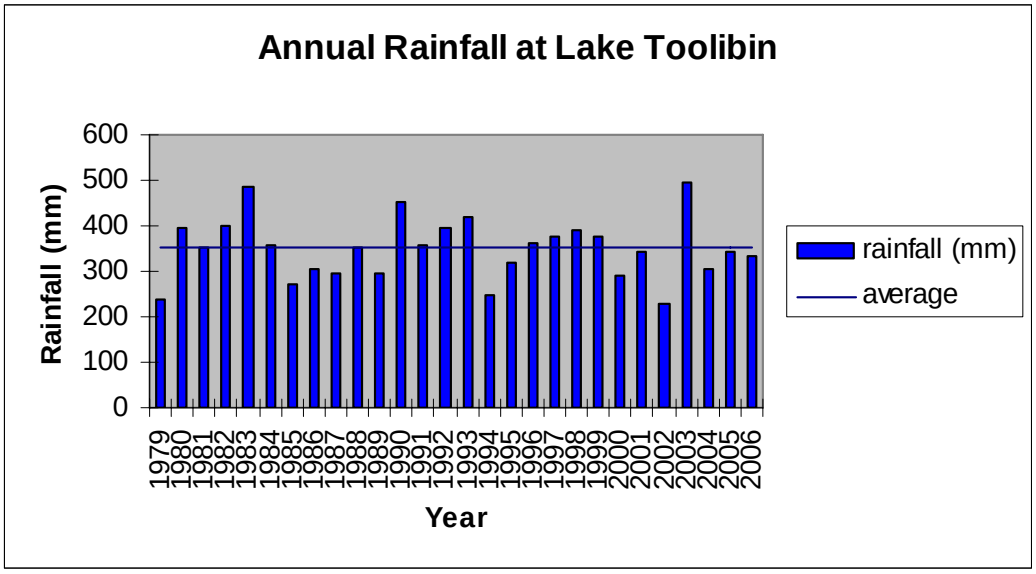



***Figure 4.8: Annual Rainfall for Lake Toolibin 1979 - 2006/2007***

It is likely that a significant portion of the stress recorded in the *C. obesa* trees monitored in 2002 had been induced by three successive years of below average rain and the improvement in species health in 2004 was due to an abnormally high rainfall. Following the higher than average rainfall in 2003 some of the stressed trees recovered. However, it appears that a significant portion of these trees have now died. This trend appears to support investigations reported by Ogden and Froend (2002) at Toolibin Lake that showed both mature trees and seedlings of *C. obesa* and *M. strobophylla* are very dependent on rainfall to surface soils. The above rainfall chart only goes back to 1979, these last 25 years have been noted as being much dryer than the previous 25 years, which averaged closer to 450 mm/year (Lacey 2007).

A significant germination and seedling establishment event was noted in 1998 in the area on the west side of the lake around pump 9. The area of seedling establishment extends from approximately 100m south to 80m north of pump 9 and from the separator wall to 100m to the east.

In April 2000 a plot was established in this area (plot 27) to monitor the condition of the trees and encompassed 118 *C. obesa* seedlings. Three 100 x 5m belt transects were also established through this area and seedling numbers, height and soil salinity recorded in each 5m section.

In 2006/2007 the seedlings in the transects varied in height from 0.03 to 6.4m, and the seedlings in Plot 27 varied from 0.03 m to 3.0 m. The variability in heights suggested germination has continued after the initial recruitment in 1998.

In Plot 27 *C. obesa* seedling numbers have continued to increase (from 117 in 1998 to 891 in 2002, to 1069 in 2004 and to 1072 in 2006/2007). The soil salinity at Plot 27 is slight (mean EM38 horizontal 78 mS/m) and samphires have not been present in the understorey since 1998. This contrasts greatly with the higher salinity levels of nearby plots 33 and 3 (mean EM38 horizontal 132 mS/m and 229 mS/m respectively).

In the three transects, seedling numbers has increased to 4056 in 2006/2007 from 3969 in 2004, showing viable seed is continuing to be dispersed and conditions are favourable for germination and establishment.

The lower soil salinity around pump 9 should favour seedling establishment however there is considerable variability within the area. High seedling densities are found in areas with conductivities between 100 and 200 mS/m.

## *Melaleuca strobophylla*

The mature *Melaleuca strobophylla* population has declined almost continuously since 1977 and this trend has continued over the last two years, as shown in Figure 4.3. Of the original 111 live trees assessed in 1977 only 29 remained in 2002, 18 in 2004 and 10 in 2006/2007. Of the surviving trees in 2006/2007 three were healthy, one more than in 2004, however more were dead compared to 2004..

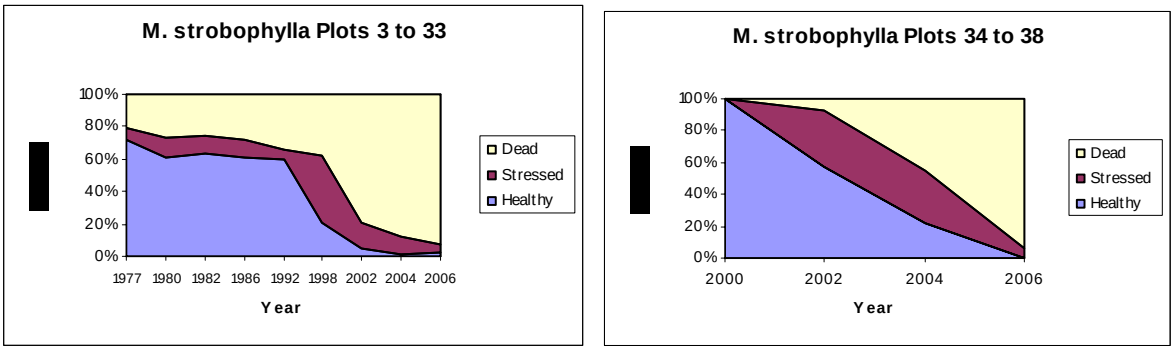



***Figure 4.3: Trend in vigour for all M. strobophylla trees within the Lake Toolibin monitoring plots***

This continued decline is not necessarily caused by continuing increases in salinity as most plots have not shown significant increases in salinity status over the past two years, as shown in Table 4.2.

***Table 4.1 Comparison of salinity status in 2002 and 2004 in Plots***

| Plot | Salinity Class in 2004 | Salinity Class in 2006/2007 | Difference in Em38 – horizontal readings |
|---|---|---|---|
| 12 | Non-saline | Non-saline | -37 |
| 13 | Non-saline | Non-saline | 37 |
| 30 | Non-saline | Non-saline | -33 |
| 26 | Slightly | Slightly | 5 |
| 27 | Slightly | Slightly | -18 |
| 3 | Very | Extremely | 26 |
| 8 | Very | Very | 0 |
| 16 | Very | Moderately | -45 |
| 25 | Very | Moderately | -71 |
| 6 | Very | Very | -32 |
| 7 | Very | Very | 20 |
| 15 | Very | Moderately | -83 |
| 17 | Very | Very | -23 |
| 20 | Very | Moderately | -45 |
| 33 | Extremely | Moderately | -39 |
| 24 | Extremely | Moderately | -98 |
| 23 | Extremely | Very | -53 |
| 4 | Extremely | Very | -97 |
| 5 | Extremely | Very | -90 |
| 9 | Extremely | Very | -79 |
| 10 | Extremely | Extremely | -1 |
| 11 | Extremely | Extremely | -20 |
| 18 | Extremely | Very | -58 |
| 19 | Extremely | Extremely | -21 |
| 28 | Extremely | Very | -58 |
| 29 | Extremely | Extremely | -53 |
| 32 | Very | Moderately | -41 |
| 34 | Extremely | Extremely | -18 |
| 35 | Extremely | Very | -86 |
| 37 | Extremely | Extremely | -44 |
| 38 | Extremely | Extremely | -11 |
| 21 | Extremely | Extremely | 11 |
| 22 | Extremely | Extremely | 6 |
| 36 | Extremely | Extremely | -66 |
| 42 | Extremely | Very | -50 |
| Average | | | -35 |

There has been a decrease in the EM38 horizontal readings in 2006/2007 but it is difficult to state if this is a significant change, given that the EM38 horizontal readings varied from the direct EC measurement by an average of 50%, readings can be affected by soil moisture and temperature, and the accuracy of the zeroing process for the EM38.

It is unclear from the data collected within this project whether the decline in *M. strobophylla* is related to continuing elevated salinity levels, water availability or other factors.

There has been some recruitment of seedlings in areas within the lake but outside the original plots. In 2004, plot 42 was established to monitor one of these stands. The stand of 312 seedlings was entirely contained within the 20 x 20 m plot (which equates to a density in the order of 0.8 plants/$m^2$). The vast majority of these individuals were healthy.

### 4.2.4 Understorey

The understorey plant community within the study area has changed slightly since 2004. *Atriplex semibaccata*, although was still present at the Plots it was previously recorded in was found to be less abundant in 2006/2007 compared to 2004. *Atriplex* is typically short lived and commonly grazed, which could explain the fluctuation. *Maireana brevifolia* was also found to be less abundant, and is also a heavily grazed species.

Two species previously not recorded at any of the Plots were observed in 2006/2007. *Angianthus tomentosus* was observed from Plots, 6, 7, 8, and 10 and *Goodenia viscida* was observed from Plots 7 and 33. *Goodenia viscida* is at the edge of its usual range and found more commonly to the south east between Albany and Esperance (Western Australian Museum, 2007).

The results showed a trend towards a decline in *Halosarcia lepidosperma*. It was found to be absent or nearly absent from Plots 3, 5, 6, 8, 21, 36 and 37 in 2006/2007. Such changes may be reflected in the amount of rainfall between years or the fact that it has been 10 years since the lake was last inundated rather than significant changes in salinity. Discounting grazing pressures it is most likely that changing water regimes is the crucial factor causing this change.

### 4.2.5 Terrestrial Vegetation

The terrestrial tree species of the Toolibin reserves have shown little change since 1998. A slight decline in vigour is apparent for *E. loxophleba* and *E. wandoo* however the remaining *E. salmonophloia* and *Allocasuarina huegeliana* are in good health. The *Eucalyptus* sp seedlings found in Plots 7 and 28 in 2004 had remained healthy and showed signs of growth in 2006/2007. A new healthy Eucalyptus sp seedling was also recorded in Plot 33 at a height of 2.3 metres. Salinity class for Plot 33 had reduced from Extremely saline in 2004 to Moderately saline in 2006/2007. It is a recommendation that these seedlings be identified to species level.

The terrestrial tree species in Plot 30 of the Toolibin reserves have improved slightly in vigour since the last round of monitoring in 2004 and with some evidence of recruitment. The two B. prionotes that were recorded as stressed in 2004 were recorded as healthy in 2006/2007 and 3 more healthy seedlings were observed just outside the plot.

The recommendation by Ogden and Froend (2002) that population dynamics of *B. prionotes* be investigated is made once again in 2006/2007.

# 5.0 Recommendations

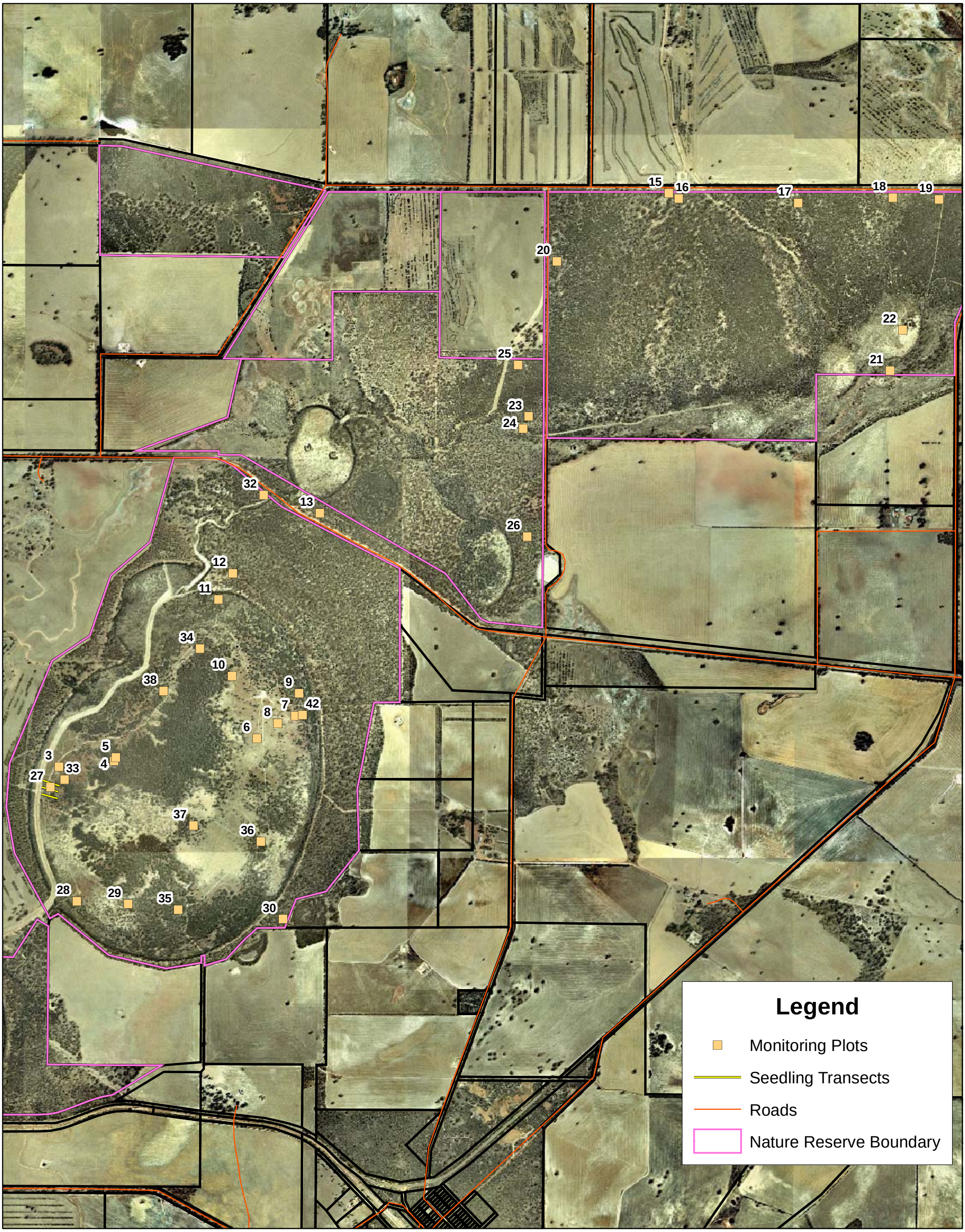
## Vegetation Monitoring of Toolibin Lake and Reserves

It is recommended that:

1. The heights of seedlings are measured until they reach a nominal height (based on the depth to which the lake fills). When they reach this nominal height they are deemed to be 'mature' and then allocated to height classes;
2. Clarify method used to determine the point at which seedlings become 'mature' trees;
3. Establish protocols to tag recently matured trees to minimise damage to still growing individuals;
4. The requirement for diameter at breast height to be frequently measured be reviewed;
5. A single estimate of the percentage cover of each overstorey species in each plot be made;
6. Previous raw data be made available to the data collectors to enable the consistent collection of data at individual plots;
7. The monitoring program reviewed and long term trends only measured from a date at which all data is being collected in a consistent manner;
8. Review the vegetation descriptions for each of the plots (still include original description);
9. Remove all dead trees from data set and only count live individuals;
10. Soil samples to be taken at 25 and 50 cm depths only and at the same plots they were collected in 2004 and 2006/2007 for validation of the EM38 horizontal readings;
11. Identify the *Eucalypt* seedlings found at Plots 7, 28 and 33; and
12. The population dynamics of *B. prionotes* be investigated and in particular the impediments to germination and recruitment of this species.

# 6.0 Maps

**Vegetation Monitoring of Toolibin Lake and Reserves**




ecoscape

# Location of Monitoring Plots

Map 1

0 260 520 1,040 1,560 2,080 Meters

1:20,000

Lake Toolibin Long Term Monitoring

March 2006

Legend

Salinity Classes

- Extremely
- Very
- Moderately
- Slightly
- Non-saline
- Nature Reserve Boundary

ecoscape

# Salinity Levels at Monitoring Plots

Map 2

0 237.5 475 950 1,425 1,900 Meters

1:20,000

Lake Toolibin Long Term Monitoring

March2006

# References

## Vegetation Monitoring of Toolibin Lake and Reserves


Agwest (2002). *Salinity Measures Units and Classes*. Retrieved December 2002, from http://www.agric.wa.gov.au/environment/land/salinity/measurement/salinity_levels_for_revegetation.htm

Bennett, D.L., George, R.J. and Ryder, A.T. (1995). *Soil salinity assessment using the EM38: Field operating instructions and data interpretation*. Miscellaneous Publication 4/95, p9, Department of Agriculture Western Australia, Perth.

Western Australian Herbarium (2007), Department of Environment and Conservation. (http://florabase.calm.wa.gov.au/help/copyright). Accessed on Thursday, 29 March 2007.

Dood, J & Heddle EM (1989) Banksia woodland weeds, in *Journal of the Royal Society of Western Australia*, 71 (4), 91-92.

Froend, R.H., Pettit, N. E. & Ogden, G. (1998). *Vegetation Monitoring of Toolibin Lake and Reserves: November 1998*. Unpublished report prepared for the Department of Conservation and Land Management.

Hunt, N. & Gilkes, B. (1992). *Farm Monitoring Handbook*. University of Western Australia, Perth, Western Australia.

Keighery, GJ (1989) Banksia woodland weeds, in *Journal of the Royal Society of Western Australia*, 71 (4), 111-112.

Lacey, P (2004) *Recovery Catchment Officer*, CALM, Narrogin, Personal Communication

Lacey, P (2007), ed. NJ Randall, Perth, p. Email

Ladd, P.G. (1996). *Ecology/Ecological Principles – Unit Manual*. Murdoch University, Perth, Western Australia.

Mattiske, E. M. (1993) Monitoring of Flora and Vegetation, Toolibin Lake. Unpublished Report prepared for the Dept. Conservation and Land Management.

Ogden, G. N. (1997) Recruitment Requirements of *Casuarina obesa* at Toolibin Lake, Western Australia. BSc Hons Thesis, Edith Cowan University, Perth, Western Australia.

Ogden, GN & Froend RH (2002) *Vegetation Monitoring of Toolibin Lake and Surrounding Reserves, 2002*, unpublished report for the Department of Conservation and Land Management, Narrogin by Edith Cowan University, Perth

# Appendix One: Overstorey Data

## Vegetation Monitoring of Toolibin Lake and Reserves

**Height and crown health were determined for live trees only.**
**Refer to methods section for transect design.**
**Refer to methods for crown health and DBH assessment.**
**Multiple DBH measurements represent multistemmed trees**

**Subplot refers to the section of the plot that trees were located; of relevance when locating trees**
**and when a significant elevational gradient is present.**

**Missing Plots:**
**Plots 1 and 2 - Destroyed during construction of the separator channel**
**Plot 14 - Unable to locate**

| Plot No. | Tag No. | Subplot | *Species* | 2006/2007 DBH (cm) or # | 2006/2007 Ht (m) | 2006/2007 Crown Health |
|---|---|---|---|---|---|---|
| **3** | **182** | A | *C. obesa* | 26.9 | | 13 |
| **3** | | B | *C. obesa* | 2 seedlings | 0.5-2.0 | 2H |
| **3** | **183** | C | *C. obesa* | 16.8 | | 15 |
| **3** | | C | *C. obesa* | 7 seedlings | 0.5-0.75 | 4grazed |
| **3** | **184** | D | *C. obesa* | 31.2 | | 15 |
| **3** | | D | *C. obesa* | 3 seedlings | 0..2-0.7 | 1grazed |
| **3** | | E | *C. obesa* | 11 seedlings | 0.2-0.5 | grazed |
| **4** | | A | *C. obesa* | 1 seedling | 0.3 | 1 grazed |
| **4** | | A | *M. strobophylla* | 2 seedlings | 0.25-0.5 | 1H, 1S |
| **4** | **185** | B | *C. obesa* | 14 | | 10 |
| **4** | **187** | B | *C. obesa* | 12 | | 4 |
| **4** | | B | *C. obesa* | 2 seedlings | 0.3-0.7 | grazed |
| **4** | | B | *M. strobophylla* | 1 seedling | 0.25 | 1H |
| **4** | **186** | C | *C. obesa* | 17 | | 10 |
| **4** | **188** | C | *C. obesa* | RD | | RD |
| **4** | **194** | C | *C. obesa* | 18.8 | | 9 |
| **4** | **197** | C | *C. obesa* | 14,17 | | 13 |
| **4** | **198** | C | *C. obesa* | 0 | | |
| **4** | | C | *M. strobophylla* | 3 seedlings | 0.7-1.7 | 3H |
| **4** | **200** | D | *C. obesa* | 15 | | 5 |
| **4** | **201** | D | *C. obesa* | 0 | | |
| **4** | **202** | D | *C. obesa* | 0 | | |
| **4** | **203** | D | *C. obesa* | 0 | | |
| | | D | *C. obesa* | 1 seedling | 0.7 | H |
| **4** | **205** | E | *C. obesa* | 10.5 | | 13 |
| **4** | | E | *M. strobophylla* | 18 seedlings | 0.25-1.58 | 18H |
| **5** | **209** | A | *C. obesa* | 10.5 | | 4 |
| **5** | **210** | A | *C. obesa* | 21.1 | | 4 |
| **5** | | A | *M. strobophylla* | 12 | | 12 |
| **5** | **212** | B | *M. strobophylla* | 0 | | 0 |
| **5** | **213** | B | *C. obesa* | 0 | | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **5** | **214** | B | *C. obesa* | 6.4, 9.1, 6.6 | | 13 |
| **5** | **215** | B | *C. obesa* | 0 | | 0 |
| **5** | **216** | B | *C. obesa* | 5.1, 5.4, 3.7, 3.2 | | 12 |
| **5** | **217** | B | *C. obesa* | 6 | | 15 |
| **5** | **218** | B | *M. strobophylla* | 7.5 | | 7 |
| **5** | **220** | B | *C. obesa* | 4.9, 4.9 | | 10 |
| **5** | **224** | B | *C. obesa* | 16.2 | | 15 |
| **5** | **225** | B | *C. obesa* | 18.8, 15.3, 18.2 | | 15 |
| **5** | **400** | B | *C. obesa* | 5.4 | | 10 |
| **5** | | B | *M. strobophylla* | 5 seedlings | 0.5-1.7 | |
| **5** | | B | *C. obesa* | 1 seeddling | 0.7 | |
| **5** | **226** | C | *C. obesa* | 5.4 | | 10 |
| **5** | **227** | C | *C. obesa* | 7.5 | | 10 |
| **5** | **228** | C | *C. obesa* | 4.5 | | 10 |
| **5** | **229** | C | *C. obesa* | 8.4 | | 12 |
| **5** | **230** | C | *C. obesa* | 4.6 | | 12 |
| **5** | **231** | C | *C. obesa* | 6.6 | | 10 |
| **5** | **232** | C | *M. strobophylla* | 0 | | |
| **5** | **233** | C | *C. obesa* | 4.3 | | 7 |
| **5** | **234** | C | *M. strobophylla* | 0 | | |
| **5** | **235** | C | *M. strobophylla* | 0 | | |
| **5** | **236** | C | *C. obesa* | 0 | | |
| **5** | **238** | C | *C. obesa* | 3.6 | | 10 |
| **5** | **239** | C | *C. obesa* | 5.5 | | 10 |
| **5** | **242** | C | *C. obesa* | 3.7 | | 9 |
| **5** | **243** | C | *C. obesa* | 4.9 | | 15 |
| **5** | **244** | C | *M. strobophylla* | 0 | | |
| **5** | **245** | C | *C. obesa* | 10.2 | | 14 |
| **5** | **248** | C | *M. strobophylla* | 0 | | |
| **5** | **249** | C | *M. strobophylla* | 0 | | |
| **5** | **250** | C | *C. obesa* | 8 | | 14 |
| **5** | **251** | C | *M. strobophylla* | 0 | | |
| **5** | **252** | C | *C. obesa* | 7.1 | | 10 |
| **5** | **253** | C | *C. obesa* | 3 | | 10 |
| **5** | **254** | C | *M. strobophylla* | 0 | | |
| **5** | **255** | C | *C. obesa* | 6.3 | | 10 |
| **5** | **256** | C | *C. obesa* | 6.2 | | 10 |
| **5** | **257** | C | *C. obesa* | 5.9 | | 12 |
| **5** | **258** | C | *M. strobophylla* | 0 | | |
| **5** | | C | *M. strobophylla* | 3 seedlings | 0.7-1.0 | |
| **5** | **260** | D | *C. obesa* | 6.1, 5.3 | | 11 |
| **5** | **261** | D | *C. obesa* | 4.2 | | 4 |
| **5** | **262** | D | *C. obesa* | 3.3 | | 5 |
| **5** | **263** | D | *C. obesa* | 5.3 | | 7 |
| **5** | **264** | D | *M. strobophylla* | RD | | |
| **5** | **265** | D | *C. obesa* | 7.9 | | 10 |
| **5** | **267** | D | *C. obesa* | 3.5 | | 11 |
| **5** | **268** | D | *C. obesa* | 5.5 | | 9 |
| **5** | **269** | D | *C. obesa* | 4.8 | | 7 |
| **5** | **270** | D | *C. obesa* | 3 | | 3 |
| **5** | **271** | D | *C. obesa* | 4.8 | | 3 |
| **5** | **272** | D | *C. obesa* | 4 | | 4 |
| **5** | **274** | D | *C. obesa* | 0 | | |
| **5** | **275** | D | *M. strobophylla* | 0 | | |
| **5** | **276** | D | *C. obesa* | RD | | |
| **5** | **277** | D | *M. strobophylla* | RD | | |
| **5** | **283** | D | *C. obesa* | 2.5 | | 3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **5** | **284** | D | *C. obesa* | 0 | | |
| **5** | **285** | D | *C. obesa* | 2.5 | | 4 |
| **5** | **286** | D | *C. obesa* | 0 | | |
| **5** | **289** | D | *C. obesa* | 5.3 | | 10 |
| **5** | **290** | D | *C. obesa* | 5.5 | | 10 |
| **5** | **291** | D | *C. obesa* | 7.5, 7.1, 5.8, 5.4, 6.2, 4.2, 6.3 | | 10 |
| **5** | **292** | D | *C. obesa* | 4 | | 10 |
| **5** | **295** | D | *C. obesa* | 4.3 | | 3 |
| **5** | **305** | D | *C. obesa* | 3.8 | | 8 |
| **5** | **306** | D | *C. obesa* | 6 | | 11 |
| **5** | **307** | D | *C. obesa* | 5.7 | | 11 |
| **5** | **309** | D | *C. obesa* | 8.3 | | 12 |
| **5** | **310** | D | *C. obesa* | 5.5, 3.5 | | 11 |
| **5** | **312** | D | *M. strobophylla* | RD | | |
| **5** | **313** | D | *M. strobophylla* | 0 | | |
| **5** | **315** | D | *C. obesa* | 7 | | 3 |
| **5** | **317** | D | *C. obesa* | 5 | | 4 |
| **5** | **318** | D | *M. strobophylla* | 3.6 | | 3 |
| **5** | **320** | D | *C. obesa* | 5.3 | | 6 |
| **5** | **321** | D | *M. strobophylla* | RD | | |
| **5** | **322** | D | *C. obesa* | 4.3 | | 7 |
| **5** | **323** | D | *C. obesa* | 6.4 | | 4 |
| **5** | **324** | D | *C. obesa* | 5.9, 3.5, 2.1 | | 4 |
| **5** | **379** | D | *M. strobophylla* | 2.9 | | 3 |
| **5** | **380** | D | *M. strobophylla* | 0 | | |
| **5** | **381** | D | *C. obesa* | 4.5 | | 7 |
| **5** | **401** | D | *C. obesa?* | 4.5 | | 4 |
| **5** | **327** | E | *C. obesa* | 3.6 | | 3 |
| **5** | **328** | E | *C. obesa* | 4.6, 5 | | 9 |
| **5** | **329** | E | *C. obesa* | 6.2 | | 3 |
| **5** | **330** | E | *C. obesa* | 9.2, 7.4, 6.9 | | 4 |
| **5** | **332** | E | *C. obesa* | 5.8, 5, 5.7 | | 9 |
| **5** | **334** | E | *C. obesa* | 10 | | 10 |
| **5** | **336** | E | *C. obesa* | 0 | | |
| **5** | **383** | E | *C. obesa* | 6.1 | | 7 |
| **5** | **385** | E | *C. obesa* | 4.5 | | 6 |
| **5** | **387** | E | *C. obesa* | 5.1 | | 11 |
| **5** | **388** | E | *C. obesa* | 4 | | 7 |
| **5** | **389** | E | *C. obesa* | 5.4, 3 | | 7 |
| **5** | **390** | E | *C. obesa* | 4.8 | | 9 |
| **5** | **391** | E | *C. obesa* | 4.8, 7.2, 5, 2.5 | | 10 |
| **5** | **392** | E | *C. obesa* | 4.1 | | 3 |
| **5** | **393** | E | *C. obesa* | 4.1 | | 3 |
| **5** | **395** | E | *C. obesa* | 5.1 | | 5 |
| **5** | **396** | E | *C. obesa* | 5.8 | | 9 |
| **5** | **397** | E | *C. obesa* | 5.3 | | 12 |
| **5** | **398** | E | *C. obesa* | 3.5 | | 3 |
| **6** | | A | all dead | | | |
| **6** | | B | all dead | | | |
| **6** | | C | all dead | | | |
| **6** | | D | all dead | | | |
| **6** | | E | all dead | | | |
| | | | | | | |
| **7** | **101** | B | *C. obesa* | 38.4, 23.1, 23.5 | | 19 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **7** | | C | *Eucalyptus sp.* | 2 seedlings | 1.45-3.68 | 2H |
| **7** | | D | *Eucalyptus sp.* | 1 seedling | 1.49 | H |
| | | D | *C.obesa* | 2 seedlings | 1 | 2H |
| **7** | **102** | E | *C. obesa* | 17.6, 13.6, 13 | | 17 |
| **7** | **103** | E | *C. obesa* | 66.1 | | 11 |
| **7** | **104** | E | *C. obesa* | 43.2 | | 13 |
| **8** | | A | all dead | | | |
| **8** | | B | all dead | | | |
| **8** | | C | all dead | | | |
| **8** | | D | all dead | | | |
| **8** | | E | all dead | | | |
| **9** | **105** | A | *C. obesa* | 10 | | 15 |
| **9** | **106** | A | *C.obesa* | 16.5 | | 13 |
| **9** | **107** | A | *C.obesa* | 10.1 | | 13 |
| **9** | **108** | A | *C.obesa* | 10.6 | | 13 |
| **9** | **109** | A | *C.obesa* | 6.9 | | 13 |
| **9** | **110** | A | *C.obesa* | 16.9, 8.5, 10.8 | | 13 |
| **9** | **111** | A | *C.obesa* | 15.4 | | 13 |
| **9** | **112** | A | *C.obesa* | 15.8 | | 13 |
| **9** | **113** | A | *C.obesa* | 17.5 | | 15 |
| **9** | **114** | B | *C.obesa* | 21.2 | | 8 |
| **9** | **115** | C | *C.obesa* | 14.4, 10.1 | | 8 |
| **9** | **116** | C | *C.obesa* | 5.2 | | 8 |
| **9** | **117** | C | *C.obesa* | 7.6 | | 11 |
| **9** | **118** | C | *C.obesa* | 4.2 | | 7 |
| **9** | **119** | C | *C.obesa* | D | | D |
| **9** | **120** | C | *C.obesa* | 15.2 | fallen | 13 |
| **9** | **121** | C | *C.obesa* | 6.6 | | 8 |
| **9** | **122** | C | *C.obesa* | 14 | | 13 |
| **9** | **123** | C | *C.obesa* | 18.5 | | 11 |
| **9** | **124** | C | *C.obesa* | 6.8 | | 11 |
| **9** | **125** | C | *C.obesa* | 14.1 | | 15 |
| **9** | **126** | C | *C.obesa* | 10.1, 6.4, 3.8 | | 13 |
| **9** | **127** | D | *C.obesa* | 11.2 | | 13 |
| **9** | **128** | D | *C.obesa* | 14 | | 13 |
| **9** | **129** | D | *C.obesa* | 12.4 | | 8 |
| **9** | **130** | D | *C.obesa* | 3.2 | | 4 |
| **9** | **131** | D | *C.obesa* | 8.5 | | 11 |
| **9** | **132** | D | *C.obesa* | D | | D |
| **9** | **133** | D | *C.obesa* | D | | D |
| **9** | **134** | D | *C.obesa* | 13.5 | | 13 |
| **9** | **135** | D | *C.obesa* | 5.8 | | 4 |
| **9** | **136** | D | *C.obesa* | 14.3 | | 11 |
| **9** | **137** | D | *C.obesa* | 13, 10.9, 9.5 | | 13 |
| **9** | **138** | D | *C.obesa* | 19.5 | | 8 |
| **9** | **139** | E | *C.obesa* | 13.2 | | 13 |
| **9** | **140** | E | *C.obesa* | 19.9 | | 13 |
| **9** | **141** | E | *C.obesa* | 3.8 | | 7 |
| **9** | **142** | E | *C.obesa* | 5.5, 5.7 | | 7 |
| **9** | **143** | E | *C.obesa* | 6.8 | | 9 |
| **9** | **145** | E | *C.obesa* | 5.3 | | 10 |
| **9** | **146** | E | *C.obesa* | 7 | | 12 |
| **9** | **147** | E | *C.obesa* | 5.3 | | 7 |
| **9** | **148** | E | *C.obesa* | 8.7 | | 13 |
| **9** | **149** | E | *C.obesa* | 5.3 | | 12 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **9** | **150** | E | *C.obesa* | 4.8, 4.4 | | 10 |
| **9** | **151** | E | *C.obesa* | 6 | | 9 |
| **9** | **152** | E | *C.obesa* | 6.3 | | 9 |
| **9** | **153** | E | *C.obesa* | D | | D |
| **9** | **154** | E | *C.obesa* | 12.8, 3.6, 3.4 | | 13 |
| **9** | **155** | E | *C.obesa* | 6.4 | | 6 |
| **9** | **158** | E | *C.obesa* | 12.5 | | 13 |
| **9** | **159** | E | *C.obesa* | 4.7, 4.8 | | 7 |
| **9** | **160** | E | *C.obesa* | 10 | | 11 |
| **9** | **161** | E | *C.obesa* | D | | D |
| **9** | **162** | E | *C.obesa* | D | | D |
| **9** | **163** | E | *C.obesa* | 12 | | 13 |
| **9** | **165** | E | *C.obesa* | 11.8 | | 13 |
| **9** | **166** | E | *C.obesa* | 15.4 | | 13 |
| **9** | **167** | E | *C.obesa* | 7 | | 7 |
| **9** | **168** | E | *C.obesa* | 10.3, 5.7 | | 11 |
| **9** | **169** | E | *C.obesa* | D | | D |
| **9** | **170** | E | *C.obesa* | 8.3 | | 10 |
| **9** | **171** | E | *C.obesa* | 8.6 | | 7 |
| **9** | **172** | E | *C.obesa* | 9.7, 7.5 | | 10 |
| **9** | **173** | E | *C.obesa* | 3.5, 3.7, 1.8 | | 7 |
| **9** | **174** | E | *C.obesa* | 4.2 | | 11 |
| **9** | **175** | E | *C.obesa* | 5.5 | | 11 |
| **9** | **176** | E | *C.obesa* | 10, 6.8 | | 8 |
| **9** | **177** | E | *C.obesa* | 19 | | 11 |
| **9** | **178** | E | *C.obesa* | 10.9 | | 13 |
| **9** | **179** | E | *C.obesa* | 13.9 | | 13 |
| **9** | **180** | E | *C.obesa* | 5.9 | | 4 |
| **9** | **181** | E | *C.obesa* | 10.6 | | 8 |
| **9** | **182** | E | *C.obesa* | 6.5 | | 3 |
| **10** | | A | *x* | | | x |
| **10** | | B | *x* | | | x |
| **10** | | C | *x* | | | x |
| **10** | **60** | D | *C. obesa* | 16.8 | | 11 |
| **10** | **61** | D | *C. obesa* | D | | RD |
| **10** | **62** | D | *M. strobophylla* | 13.4, 5.5, 7.5 | | 11 |
| **10** | **63** | D | *C. obesa* | 11.4 | | 7 |
| **10** | **64** | D | *C. obesa* | D | | D |
| **10** | **65** | D | *C. obesa* | 13 | | 8 |
| **10** | **66** | D | *C. obesa* | D | | RD |
| **10** | **67** | D | *C. obesa* | 14.8 | | 15 |
| **10** | **68** | D | *C. obesa* | 11.3 | | 15 |
| **10** | **69** | D | *C. obesa* | 10.7 | | 15 |
| **10** | **70** | D | *C. obesa* | 11.7 | | 15 |
| **10** | **71** | D | *C. obesa* | 17.5 | | 15 |
| **10** | **72** | E | *C. obesa* | 9.9 | | 11 |
| **10** | **73** | E | *C. obesa* | 8.2 | | 11 |
| **10** | **74** | E | *C. obesa* | D | | D |
| **10** | **76** | E | *M. strobophylla* | D | | D |
| **10** | **77** | E | *C. obesa* | D | | D |
| **10** | **78** | E | *C. obesa* | 7.9 | | 7 |
| **10** | **79** | E | *C. obesa* | 13.7, 10.5, 14.9 | | 7 |
| **10** | **80** | E | *C. obesa* | 17.2 | | 13 |
| **10** | **81** | E | *C. obesa* | D | | RD |
| **10** | **82** | E | *C. obesa* | D | | D |
| **10** | **83** | E | *C. obesa* | D | | D |

| | | | | | | |
|---|---|---|---|---|---|---|
| **10** | **84** | E | *C. obesa* | D | | D |
| **10** | **85** | E | *C. obesa* | 10.4, 3.6 | | 13 |
| **10** | **86** | E | *C. obesa* | 12.9, 12.5 | | 13 |
| **10** | **87** | E | *C. obesa* | 5.5 | | 11 |
| **10** | **88** | E | *C. obesa* | 10.4 | | 15 |
| **10** | **89** | E | *C. obesa* | D | | D |
| **10** | **90** | E | *C. obesa* | 11.1 | | 13 |
| **10** | **91** | E | *C. obesa* | 16.2 | | 15 |
| **11** | **350** | A | *C. obesa* | 16.6, 10.1, 14, 11.1, 15.6, 13.9, 15.7 | | 15 |
| **11** | **351** | A | *C. obesa* | 21.2 | | 15 |
| **11** | **352** | C | *C. obesa* | 23.2 | | 15 |
| **11** | **353** | D | *C. obesa* | 19.9 | | 15 |
| **11** | **354** | E | *C. obesa* | 20.9 | | 15 |
| | | | | | | |
| **12** | **335** | B | *E. loxophleba* | 31.6 | | 11 |
| **12** | **337** | C | *A. acuminata* | 13.4, 13.2, 8.0 | | 19 |
| **12** | **338** | D | *E. loxophleba* | 32.9, 10.9, 5.4, 3.2 | | 15 |
| **12** | **339** | D | *E. loxophleba* | 19 | | 11 |
| **12** | **340** | D | *E. loxophleba* | 43.2, 55.4 | | 15 |
| **12** | **342** | D | *E. loxophleba* | 42.9 | | 17 |
| **12** | **345** | D | *A. acuminata* | 17.4, 16.5 | | 17 |
| **12** | | D | *A. acuminata* | seedling | | |
| **12** | **341** | E | *A. acuminata* | 12.8, 9.4 | | 13 |
| **12** | **343** | E | *E. loxophleba* | 34.5, 36.2 | | 15 |
| **12** | **344** | E | *A. huegeliana* | 10.9 | | 7 |
| **12** | **346** | E | *A. acuminata* | 5.1 | | 15 |
| **12** | **347** | E | *A. acuminata* | 10.2 | | 15 |
| **12** | **348** | E | *A. acuminata* | 8.6 | | 15 |
| **12** | **349** | E | *A. acuminata* | 10 | | 7 |
| | | | | | | |
| **13** | **41** | A | *B. prionotes* | 7.2, 7.3, 5.6, 4.6, 4, 2.1 | | 19 |
| **13** | **42** | A | *A. huegeliana* | 2.9, 1.2, 7.3 | | 15 |
| **13** | **955** | A | *A. huegeliana* | 3.8 | | 15 |
| **13** | | A | *A. huegeliana* | 4 seedlings | 1-4.5 | 2H, 2D |
| **13** | **43** | B | *A. huegeliana* | 4 | | 15 |
| **13** | **44** | B | *A. huegeliana* | 4 | | 15 |
| **13** | **45** | B | *A. huegeliana* | 5.1 | | 15 |
| **13** | **46** | B | *A. huegeliana* | 3.2 | | 15 |
| **13** | **47** | B | *B. prionotes* | 2.5, 4.2, 4.3, 5, 5.1, 2.3, 3 | | 19 |
| **13** | **48** | B | *A. huegeliana* | 6.1 | | 15 |
| **13** | **49** | B | *A. huegeliana* | 10.1 | | 15 |
| **13** | **50** | B | *A. huegeliana* | 27.2 | | 15 |
| **13** | **956** | B | *A. huegeliana* | 4.8 | | 17 |
| **13** | **957** | B | *A. huegeliana* | 3 | | 15 |
| **13** | | B | *J. furcellata* | | 1.95 | 1H, 2D |
| **13** | **51** | C | *B. prionotes* | 10, 9.9, 11.9 | | 13 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **13** | **52** | C | *A. huegeliana* | 19 | | 13 |
| **13** | **53** | C | *A. huegeliana* | 26.3 | | 13 |
| **13** | **54** | C | *A. huegeliana* | 3.2 | | 13 |
| **13** | **958** | C | *B. prionotes* | 3.3, 2.3 | | 15 |
| | | C | *A. huegeliana* | seedling | 1.9 | H |
| **13** | **55** | D | *A. huegeliana* | 3.8 | | 15 |
| **13** | **56** | D | *A. huegeliana* | 8.4 | | 15 |
| **13** | **959** | D | *A. huegeliana* | 3.3 | | 11 |
| **13** | | D | *J. furcellata* | 2 seedlings 1.8, 1.5 | | |
| **13** | | D | *A. huegeliana* | 3 seedlings 1.35, 0.7, 2.17 | | |
| **13** | **57** | E | *B. prionotes* | 10.7, 11.4 | | 13 |
| **13** | **58** | E | *A. huegeliana* | 35.8 | | 13 |
| **13** | **59** | E | *A. huegeliana* | 5.1 | | 13 |
| **13** | | | *J. furcellata* | 8 seedlings | 0.7-2.5 | 7H, 1D |
| | | | | | | |
| **15** | | A | *x* | | | x |
| **15** | **1** | B | *E. salmonophloia* | 30, 33.5 | | 15 |
| **15** | **2** | B | *E. salmonophloia* | 17.7, 13.3 | | 13 |
| **15** | **3** | C | *E. salmonophloia* | 29.9, 34.9 | | 17 |
| **15** | | D | *x* | | | x |
| **15** | | E | *x* | | | x |
| | | | | | | |
| **16** | | A | *x* | | | x |
| **16** | | B | *x* | | | x |
| **16** | **4** | C | *E. salmonophloia* | 31.2, 20.9 | | 13 |
| **16** | **5** | C | *E. salmonophloia* | 30.5, 51.9 | | 13 |
| **16** | | D | *x* | | | x |
| **16** | | E | *x* | | | x |
| | | | | | | |
| **17** | | A | *M. acuminata* | 2 individuals | 2.9-3 | 2H |
| **17** | | B | *M. acuminata* | 3 individuals | 3.6-3.7 | 3H |
| **17** | | C | *M. acuminata* | 5 individuals | 3-4.1 | 5H |
| **17** | | D | *M. acuminata* | 6 individuals | 2.7-4.6 | 5H, 1S |
| **17** | | E | *M. acuminata* | 6 individuals | 1.6-4.9 | 6H |
| | | | | | | |
| **18** | | A | *M. acuminata* | 7 individuals | 2.5-3.1 | 6H, 1D |
| **18** | | B | *M. acuminata* | 8 individuals | 2.3-2.8 | 2H, 6D |
| **18** | | C | *M. acuminata* | 8 individuals | 1-3.1 | 4H, 4D |
| | | | *M. acuminata* | seedling | 0.5 | 1H |
| **18** | | D | *M. acuminata* | 2 individuals | 2 - 2.9 | 2H |
| **18** | | D | *M. acuminata* | 6 seedlings | 0.5 - 0.7 | 5H, 1D |
| **18** | | E | *M. acuminata* | 14 individuals | 2.5-3.5 | 11H, 3D |
| | | | *M. acuminata* | seedling | 0.5 | 1H |
| | | | | | | |
| | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **19** | | A | *M. lateriflora* | 36 individuals | 2.1 - 4.2 | 36H |
| **19** | | B | *M. lateriflora* | 39 individuals | (Ht range for | 37H, 2D |
| **19** | | C | *M. lateriflora* | 39 individuals | whole plot) | 38H, 1D |
| **19** | | D | *M. lateriflora* | 38 individuals | | 37H, 1D |
| **19** | | E | *M. lateriflora* | 46 individuals | | 43H, 3D |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **20** | | A | *M. acuminata* | 13 individuals | 3-4.3 | 12H, 1D |
| **20** | | B | *M. acuminata* | 14 individuals | 2.7-4.3 | 9H, 2S, 3D |
| **20** | | C | *M. acuminata* | 12 individuals | 3.1-3.8 | 11H, 1D |
| **20** | | D | *M. acuminata* | 8 individuals | 3-3.7 | 7H, 1S |
| **20** | | E | *M. acuminata* | 5 individuals | 2.8-3.6 | 5H |
| | | | | | | |
| **21** | | A | *x* | | | all dead |
| **21** | | B | *x* | | | all dead |
| **21** | | C | *x* | | | all dead |
| **21** | | D | *x* | | | all dead |
| **21** | | E | *x* | | | all dead |
| **22** | | A | *x* | | | all dead |
| **22** | | B | *x* | | | all dead |
| **22** | | C | *x* | | | all dead |
| **22** | | D | *x* | | | all dead |
| **22** | | E | *x* | | | all dead |
| **23** | | A | *M. acuminata* | 86 individuals | 1.1-2.5 | 83H, 1S, 1D |
| **23** | | A | *M. lateriflora* | 2 individuals | 2.8-3.2 | 2H |
| **23** | | B | *M. acuminata* | 43 individuals | 1-2.75 | 41H, 2D |
| **23** | | B | *M. lateriflora* | 2 individuals | 2.8-3 | 2H |
| **23** | **27** | C | *E. loxophleba* | 11, 11.1, 8.7 | | 15 |
| **23** | **28** | C | *E. loxophleba* | 10.2, 10.3 | | 11 |
| **23** | **29** | C | *E. loxophleba* | 7.6, 6.4, 7.3 | | 11 |
| **23** | | C | *M. acuminata* | 23 individuals | 1-2.65 | 21H, 1S, 1D |
| **23** | **30** | D | *E. loxophleba* | D | | D |
| **23** | **32** | D | *E. loxophleba* | 6.7 | | 9 |
| **23** | **33** | D | *E. loxophleba* | 5.5 | | 8 |
| **23** | | D | *M. acuminata* | 14 individuals | | 14H |
| **23** | **34** | E | *M. strobophylla* | 5.7, 5.5, 3.3, 3.2, 6, 7, 5.4, 3.8 | | 19 |
| **23** | **35** | E | *E. loxophleba* | RD | | RD |
| **23** | **36** | E | *E. loxophleba* | 6.6 | | 7 |
| **23** | **37** | E | *E. loxophleba* | 11.6, 11.2 | | 9 |
| **23** | **38** | E | *E. loxophleba* | 7.9 | | 9 |
| **23** | **40** | E | *E. loxophleba* | 11 | | 15 |
| **23** | | E | *M. acuminata* | 7individuals | 1.5-2.7 | 7H |
| **23** | | E | *Hakea priessii* | 1 individuals | 1.4 | 1H |
| | | | | | | |
| **24** | **532** | A | *E. wandoo* | RD | | |
| **24** | | A | *M. acuminata* | 20 individuals | 1.5-3 | 19H, 1S |
| **24** | | A | *M. lateriflora* | 71 individuals | 1.7-4.1 | 70H. 1S |

| | | | | | | |
|---|---|---|---|---|---|---|
| **24** | | B | *M. acuminata* | 31 individuals | 1-2.7 | 5H, 26D |
| **24** | | B | *M. lateriflora* | 25 individuals | 1.9-3.75 | 23H, 2S |
| **24** | | C | *M. acuminata* | 29 individuals | 1.2-1.8 | 5H, 24D |
| **24** | | C | *M. lateriflora* | 45 individuals | 2.5-3.2 | 38H, 7D |
| **24** | | D | *M.acuminata* | 15 individual | D | 15D |
| **24** | | D | *M. lateriflora* | 13 individuals | 2.1-3.2 | 10H, 1S, 2D |
| **24** | **533** | E | *E. loxophleba* | 9.5, 7.5, 7.1, 4.8, 6.3, 4 | | 13 |
| **24** | | E | *M. lateriflora* | 16 individuals | 1.1-3.8 | 10H, 3S, 3D |
| | | | | | | |
| **25** | **534** | A | *E. wandoo* | 6.5, 7.3 | | 15 |
| **25** | **535** | A | *E. wandoo* | 5.7, 6.0 | | 15 |
| **25** | **536** | A | *E. wandoo* | 1.5 | 1.95 | 3 |
| **25** | **537** | A | *E. wandoo* | RD | | RD |
| **25** | **538** | A | *E. wandoo* | 6.3 | 3.7 | 13 |
| **25** | | A | *M. acuminata* | 99 individuals | 1-2.5 | 95H, 2S, 2D |
| **25** | **540** | B | *E. wandoo* | RD | | |
| **25** | **542** | B | *E. wandoo* | D | | |
| **25** | **543** | B | *E. wandoo* | 4 | 2.04 | 11 |
| **25** | **545** | B | *E. wandoo* | 3 | 2.7 | 8 |
| **25** | **546** | B | *E. wandoo* | 2.1 | 1.86 | 13 |
| **25** | **547** | B | *E. wandoo* | 3.8 | 2.25 | 7 |
| **25** | **548** | B | *E. wandoo* | 6 | 1.9 | 3 |
| **25** | | B | *E. wandoo* | 2seedlings | 0.2-0.5 | 2S |
| **25** | | B | *M. acuminata* | 63 individuals | 1-2.5 | 59H, 3S, 1D |
| **25** | **544** | C | *E. wandoo* | 5, 4 | | 8 |
| **25** | **549** | C | *E. wandoo* | 5.4, 4.5 | 3.6 | 13 |
| **25** | **550** | C | *E. wandoo* | 2.7 | 3.31 | 5 |
| **25** | **551** | C | *E. wandoo* | 5.8, 4.6, 4.7, 5.8 | | 15 |
| **25** | | C | *M. acuminata* | 25 individuals | | 22H, 2S, 1D |
| **25** | **552** | D | *E. wandoo* | 8.7, 5.8, 6.5 | | 13 |
| **25** | **554** | D | *E. wandoo* | 3 | 2.11 | 3 |
| **25** | **555** | D | *E. wandoo* | 2.1 | 2 | 8 |
| **25** | **556** | D | *E. wandoo* | 4.5 | 2.03 | 8 |
| **25** | **557** | D | *E. wandoo* | 3.6 | 2.54 | 8 |
| **25** | **558** | D | *E. wandoo* | D | | D |
| **25** | | D | *E. wandoo* | D | | D |
| **25** | | D | *M. acuminata* | 54 | 1-2.5 | 53H, 1D |
| **25** | **559** | E | *E. wandoo* | 5.2 | 4.2 | 15 |
| **25** | **560** | E | *E. wandoo* | 5.6, 5.3 | | 15 |
| **25** | **562** | E | *E. wandoo* | 4 | 2.57 | 3 |
| **25** | **563** | E | *E. wandoo* | 3 | 3.31 | 3 |
| **25** | | E | *M. acuminata* | 36 individuals | 1-2.5 | 34H, 1S, 1D |
| | | | | | | |
| **26** | **8** | A | *A. acuminata* | 12, 7.9, 12.1, 3.9, 3.7 | | 15 |
| **26** | **9** | A | *A. acuminata* | 3.3 | 4.2 | 11 |
| **26** | **10** | A | *A. acuminata* | 3.9, 9.7, 4.5, 3.3, 9.1, 7.5, 7.5, 6.5, 8.3, 3.2, 3.9, 6.2, | | 17 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 5.1, 3.8, 7.4, 6.2 | | |
| **26** | **11** | A | *A. acuminata* | 6, 3.6, 3 | | 13 |
| **26** | **12** | A | *A. acuminata* | 12, 13.8 | | 13 |
| **26** | **13** | A | *A. acuminata* | 4.4 | 4.2 | 11 |
| **26** | **14** | A | *C. obesa* | 11, 14.8, 9.7, 8.9, 6, 4, 3.2, 5.6, 16.4, 10, 14.7 | | 19 |
| **26** | **15** | B | *A. acuminata* | | | 11 |
| **26** | **16** | B | *A. acuminata* | 7.4, 9.9, 7.6, 5.5, 2.7, 2.7, 2.7, 3.9, 2.2, 12.5, 11.6, 4.9, 8.6, 7.7, 11.4 | | 15 |
| **26** | **17** | B | *A. acuminata* | RD | | D |
| **26** | **26** | B | *A. acuminata* | 6.3 | | 11 |
| **26** | **18** | C | *A. acuminata* | 4.1 | 3.8 | 15 |
| **26** | **19** | C | *A. acuminata* | 2.4, 5.6, 4.6, 3.8, 2.8, 3.9, 2.5, 3.9 | 4.6 | 17 |
| **26** | **20** | D | *A. acuminata* | 6.5, 6.4, 7.8 | | 7 |
| **26** | **22** | E | *A. acuminata* | 7.2, 11.3, 7, 11, 8.5, 9.3, 5.8, 5.8 | | 15 |
| **26** | **23** | E | *C. obesa* | 29.4 | | 19 |
| **26** | **24** | E | *A. acuminata* | 11.4 | | 9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **27** | **355** | A | *C. obesa* | 29.2 | 10 | 17 |
| **27** | | A | *C. obesa* | 365 seedlings | 0.15-2.93 | H |
| **27** | **356** | B | *C. obesa* | 13.5, 32 | | 19 |
| **27** | | B | *C. obesa* | 279 seedlings | 0.1-2.3 | H |
| **27** | **357** | C | *C. obesa* | 19.6 | | 15 |
| **27** | **358** | C | *C. obesa* | 12.2, 15.3 | | 13 |
| **27** | **359** | C | *C. obesa* | 16.8 | | 15 |
| **27** | **360** | C | *C. obesa* | 11.7 | | 8 |
| **27** | **361** | C | *C. obesa* | 12.4 | | 13 |
| **27** | **362** | C | *C. obesa* | 10.8 | | 13 |
| **27** | | C | *C. obesa* | 118 seedlings | 0.3-2.45 | H |
| **27** | **363** | D | *C. obesa* | 17, 11.9 | | 15 |
| **27** | **364** | D | *C. obesa* | 13.9, 8.2, 6.3, 4.1 | | 15 |
| **27** | | D | *C. obesa* | 135 seedlings | 0.4-2.55 | H |
| **27** | **365** | E | *C. obesa* | 21 | | 15 |
| **27** | **366** | E | *C. obesa* | 15.9 | | 17 |
| **27** | | E | *C. obesa* | 175 seedlings | 0.15-2.83 | H |
| | | | | | | |
| **28** | **367** | A | *C. obesa* | 18.3 | | 11 |
| **28** | **368** | A | *C. obesa* | 24.8 | | 10 |
| **28** | **369** | A | *C. obesa* | 5.4, 4.1, 6, 5.2 | | 9 |
| **28** | **370** | A | *C. obesa* | 5.7, 3.4 | | 7 |
| **28** | **371** | A | *C. obesa* | D | | D |
| **28** | **373** | A | *C. obesa* | RD | | RD |

| | | | | | | |
|---|---|---|---|---|---|---|
| **28** | **374** | A | *C. obesa* | 8.1 | | 11 |
| **28** | **375** | A | *C. obesa* | 13.1 | | 9 |
| **28** | **376** | A | *C. obesa* | 9.9 | | 11 |
| **28** | **377** | A | *C. obesa* | 8.5 | | 11 |
| **28** | **378** | A | *C. obesa* | 10 | | 11 |
| **28** | **400** | A | *C. obesa* | 7.2 | | 9 |
| **28** | **401** | A | *C. obesa* | 11 | | 13 |
| **28** | **403** | B | *C. obesa* | 9.9, 7.5 | | 11 |
| **28** | **404** | B | *C. obesa* | 6.4 | | 7 |
| **28** | **405** | B | *C. obesa* | D | | D |
| **28** | **406** | B | *C. obesa* | 8.2 | | 9 |
| **28** | **407** | B | *C. obesa* | RD | | RD |
| **28** | **408** | B | *C. obesa* | 2.5, 2.4, 2.4 | | 11 |
| **28** | **409** | B | *C. obesa* | 3.9, 4.6 | | 5 |
| **28** | **410** | B | *C. obesa* | D | | D |
| **28** | **411** | B | *C. obesa* | D | | D |
| **28** | **412** | B | *M. strobophylla* | 5.4, 3.9 | | 11 |
| **28** | **415** | B | *C. obesa* | 9.1, 8.7 | | 9 |
| **28** | **416** | B | *C. obesa* | 9.2, 5, 7 | | 11 |
| **28** | **417** | B | *C. obesa* | 6 | | 13 |
| **28** | | B | *Eucalyptus sp.* | 2 seedlings | 0.6-1.41 | |
| **28** | **418** | C | *C. obesa* | 18.5 | | 15 |
| **28** | **419** | C | *C. obesa* | 7.5 | | 15 |
| **28** | **420** | C | *C. obesa* | 9.5 | | 13 |
| **28** | **421** | C | *C. obesa* | 4.2 | | 9 |
| **28** | **422** | C | *C. obesa* | 6.9 | | 9 |
| **28** | **423** | C | *C. obesa* | 6.7 | | 13 |
| **28** | **424** | C | *C. obesa* | 6.8 | | 11 |
| **28** | **426** | C | *C. obesa* | 7 | | 11 |
| **28** | **427** | C | *C. obesa* | 11.7 | | 12 |
| **28** | | C | *M. strobophylla* | 1 seedling | 2.07 | |
| **28** | | C | *Eucalyptus sp.* | 2 seedlings | 1.5-1.97 | |
| **28** | **425** | D | *C. obesa* | 4.7 | | 11 |
| **28** | **429** | D | *C. obesa* | 21.9 | | 11 |
| **28** | **430** | D | *C. obesa* | 7.9, 7.2 | | 13 |
| **28** | **431** | D | *C. obesa* | 8.7 | | 15 |
| **28** | **432** | D | *C. obesa* | 7.4 | | 13 |
| **28** | **434** | D | *C. obesa* | 3.9 | | 13 |
| **28** | **435** | D | *C. obesa* | 6.5 | | 15 |
| **28** | **436** | D | *C. obesa* | 4.5 | | 13 |
| **28** | **437** | D | *C. obesa* | 9.4 | | 11 |
| **28** | **438** | D | *C. obesa* | 3.1 | | 9 |
| **28** | **439** | D | *C. obesa* | RD | | RD |
| **28** | **440** | D | *C. obesa* | 6 | | 13 |
| **28** | **441** | D | *C. obesa* | D | | |
| **28** | **442** | D | *C. obesa* | D | | |
| **28** | **443** | D | *C. obesa* | 3.9 | | 9 |
| **28** | **454** | D | *C. obesa* | RD | | |
| **28** | **455** | D | *C. obesa* | D | | |
| **28** | | D | *Eucalyptus sp.* | 1 seedling | 0.95 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **28** | **444** | E | *C. obesa* | 7.5 | | 12 |
| **28** | **445** | E | *C. obesa* | 12.8 | | 13 |
| **28** | **446** | E | *C. obesa* | 7.4 | | 11 |
| **28** | **447** | E | *C. obesa* | D | | |
| **28** | **448** | E | *C. obesa* | 8.9 | | 9 |
| **28** | **449** | E | *C. obesa* | 4.7 | | 9 |
| **28** | **450** | E | *C. obesa* | 5.2 | | 9 |
| **28** | **451** | E | *C. obesa* | 5.1 | | 7 |
| **28** | **452** | E | *C. obesa* | 5 | | 11 |
| | | | | | | |
| **29** | **456** | A | *C. obesa* | D | | D |
| **29** | **457** | A | *C. obesa* | D | | D |
| **29** | **458** | A | *C. obesa* | 22.9, 18.5 | | 8 |
| **29** | **459** | B | *C. obesa* | 16.8 | | 11 |
| **29** | **460** | B | *C. obesa* | 15 | | 11 |
| **29** | **461** | B | *C. obesa* | D | | D |
| **29** | **462** | B | *C. obesa* | D | | D |
| **29** | **463** | C | *C. obesa* | 22.5 | | 9 |
| **29** | **464** | C | *C. obesa* | 18.1, 16.2, 25.3 | | 9 |
| **29** | **465** | D | *C. obesa* | D | | D |
| **29** | **466** | D | *C. obesa* | D | | D |
| **29** | **467** | D | *C. obesa* | 18.8 | | 9 |
| **29** | **468** | E | *C. obesa* | 12.9 | | 7 |
| **29** | **469** | E | *C. obesa* | 22 | | 9 |
| **29** | **470** | E | *C. obesa* | 14.9 | | 10 |
| **29** | **471** | E | *C. obesa* | 19.3 | | 9 |
| **29** | **472** | E | *C. obesa* | 20.7 | | 9 |
| **29** | **473** | E | *C. obesa* | 19 | | 10 |
| | | | | | | |
| **30** | | A | *B. prionotes* | 1 seedling 5 outside plot | 3 | H |
| **30** | **480** | B | *B. prionotes* | D | | D |
| | | C | *J. furcellata* | 2 seedlings | 0.7-1.5 | H |
| **30** | **503** | D | *B. prionotes* | 4.8 | | 13 |
| **30** | **510** | E | *A. acuminata* | D | | D |
| **30** | **954** | E | *A. huegeliana* | 10.2 | | 21 |
| | | | | | | |
| **32** | **71** | east bank | *C. obesa* | 8.3 | | 15 |
| **32** | **72** | east bank | *C. obesa* | | | D |
| **32** | **73** | east bank | *C. obesa* | | | D |
| **32** | **76** | east bank | *C. obesa* | | | D |
| **32** | **80** | east bank | *C. obesa* | | | D |
| **32** | **82** | east bank | *M. strobophylla* | 4 | 3.5 | 14 |
| **32** | **84** | east bank | *C. obesa* | 14.8, 8.3 | | 13 |
| **32** | **85** | east bank | *C. obesa* | 22.5 | | 13 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **32** | **87** | east bank | *C. obesa* | 21.8 | | 17 |
| **32** | **88** | east bank | *E. loxophelba* | 17.5 | | 9 |
| **32** | **89** | east bank | *E. loxophelba* | 14 | | 9 |
| **32** | **90** | east bank | *C. obesa* | 12.3, 10.6 | | 17 |
| **32** | **91** | east bank | *M. laterflora* | 9.4, 9.1 | | 15 |
| **32** | **92** | east bank | *M. laterflora* | 10.1, 10.5, 7 | | 15 |
| **32** | **97** | east bank | *E. loxophelba* | 7.8 | | 3 |
| **32** | **98** | east bank | *E. loxophelba* | 11.5, 10.4 | | 11 |
| **32** | **100** | east bank | *A. acuminata* | 21.5 | | 11 |
| **32** | **103** | east bank | *E. loxophelba* | 31.9 | | 15 |
| **32** | **104** | east bank | *E. loxophelba* | 34.4 | | 15 |
| **32** | **105** | east bank | *A. acuminata* | 17.2, 23.3 | | 7 |
| **32** | **106** | east bank | *E. loxophelba* | 11.1, 19.1, 11.7 | | 3 |
| **32** | **107** | east bank | *A. acuminata* | 21.5 | | 11 |
| **32** | **109** | east bank | *E. loxophelba* | 49.7, 9.4 | | 8 |
| **32** | **111** | east bank | *C. obesa* | 4.5 | | 15 |
| **32** | **112** | east bank | *C. obesa* | 3.9 | 3.4 | 15 |
| **32** | **113** | east bank | *C. obesa* | 3.9 | | 15 |
| **32** | **114** | east bank | *C. obesa* | 3.1 | 3.3 | 15 |
| **32** | **115** | east bank | *C. obesa* | D | | D |
| **32** | **116** | east bank | *C. obesa* | 2.4 | 2.8 | 15 |
| **32** | **117** | east bank | *C. obesa* | 4.1, 1.8 | 3.5 | 15 |
| **32** | **118** | east bank | *C. obesa* | 2.9 | 3.5 | 15 |
| **32** | **119** | east bank | *C. obesa* | 2.8 | 2.8 | 15 |
| **32** | **120** | east bank | *C.obesa* | 3.8 | 4 | 15 |
| **32** | **121** | east bank | *C.obesa* | 2 | 2 | 6 |
| **32** | **122** | east bank | *C.obesa* | 3.1 | 2.5 | 6 |
| **32** | **123** | east bank | *C.obesa* | 2.5 | 2.5 | 6 |
| **32** | **124** | east bank | *C.obesa* | 3.2 | 3.9 | 15 |
| **32** | **125** | east bank | *C.obesa* | D | | D |

| | | | | | | |
|---|---|---|---|---|---|---|
| **32** | **126** | east bank | *C.obesa* | RD | | RD |
| **32** | **127** | east bank | *M. laterflora* | 9.2 | 2.9 | 21 |
| **32** | **128** | east bank | *M. laterflora* | 8.8 | | 13 |
| **32** | **129** | east bank | *A. acuminata* | 6.5 | | 17 |
| **32** | **130** | east bank | *A. huegeliana* | 7.6 | | 17 |
| **32** | | east bank | *M. laterflora* | D | | D |
| | | east bank | *A. acuminata* | 1 seedling | 1 | |
| **32** | **1** | west bank | *E. loxophleba* | 15.2, 13.4 | | 11 |
| **32** | **5** | west bank | *E. loxophleba* | 31.8, 26, 22.7, 35.5 | | 11 |
| **32** | **7** | west bank | *C. obesa* | 14.2 | | 17 |
| **32** | **8** | west bank | *C. obesa* | 7.6 | | 17 |
| **32** | **9** | west bank | *C. obesa* | 12.6 | | 17 |
| **32** | **10** | west bank | *C. obesa* | 9.6 | | 17 |
| **32** | **12** | west bank | *C. obesa* | 13.8 | | 17 |
| **32** | **22** | west bank | *C. obesa* | 27 | | 17 |
| **32** | **24** | west bank | *C. obesa* | 21.8 | | 17 |
| **32** | **30** | west bank | *C. obesa* | 27.6 | | 17 |
| **32** | **36** | west bank | *E. loxophleba* | 31, 23.5 | | 15 |
| **32** | **42** | west bank | *C. obesa* | 19.1 | | 15 |
| **32** | **46** | west bank | *C. obesa* | 8.2 | | 11 |
| **32** | **47** | west bank | *C. obesa* | 6.8 | | 13 |
| **32** | **50** | west bank | *C. obesa* | 9.9, 11.1 | | 15 |
| **32** | **51** | west bank | *C. obesa* | 9.8 | | 13 |
| **32** | **52** | west bank | *C. obesa* | 8.5 | | 15 |
| **32** | **53** | west bank | *C. obesa* | 9.1 | | 15 |
| **32** | **54** | west bank | *C. obesa* | 12.3 | | 13 |
| **32** | **55** | west bank | *M. strobophylla* | 4.3, 3.1 | 2.8 | 11 |
| **32** | **64** | west bank | *C. obesa* | 11.3 | | 17 |
| **32** | **66** | west bank | *C. obesa* | 17.9 | | 17 |
| **32** | **68** | west bank | *C. obesa* | 10.9 | | 17 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **32** | **69** | west bank | *C. obesa* | 10.1 | | 17 |
| **32** | **70** | west bank | *C. obesa* | 15.1 | | 11 |
| **32** | **133** | west bank | *M. strobophylla* | 3.2, 2, 1.5 | 2.7 | 11 |
| **32** | **134** | west bank | *C. obesa* | 5.2, 7.9 | | 17 |
| **32** | **132** | west bank | *C. obesa* | 4.4 | | 15 |
| **32** | **131** | west bank | *M. strobophylla* | 3.7 | 3.2 | 11 |
| **32** | **110** | east bank | *Hakea preissii* | 7.3 | 2.6 | 13 |
| | | west bank | *M. strobophylla* | 1 seedling | 1.75 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **33** | **222** | fallen | *C. obesa* | epicormic growth | | |
| **33** | **200** | | *C. obesa* | 17.3 | | 7 |
| **33** | **202** | | *C. obesa* | 16, 12.7 | | 15 |
| **33** | **205** | | *C. obesa* | 18.7 | | 13 |
| **33** | **206** | | *C. obesa* | 22.7 | | 13 |
| **33** | **212** | | *C. obesa* | 18.3, 16 | | 8 |
| **33** | **214** | | *C. obesa* | D | | D |
| **33** | **215** | | *C. obesa* | 13.7 | | 9 |
| **33** | **223** | | *C. obesa* | D | | D |
| **33** | **232** | | *C. obesa* | 17.4 | | 8 |
| **33** | **233** | | *C. obesa* | 17.1 | | 13 |
| **33** | **234** | | *C. obesa* | 16, 13.6, 16.1 | | 13 |
| **33** | **235** | | *C. obesa* | 20.9, 16.2 | | 13 |
| **33** | **237** | | *C. obesa* | 18.2 | | 13 |
| **33** | **241** | | *C. obesa* | 9.5 | | 7 |
| **33** | **245** | | *C. obesa* | D | | D |
| **33** | **246** | | *C. obesa* | 13.7 | | 11 |
| **33** | **247** | | *C. obesa* | 22.2 | | 13 |
| **33** | **248** | | *C. obesa* | 10.5, 13.2 | | 13 |
| **33** | **249** | | *C. obesa* | 19.4, 13.6 | | 15 |
| **33** | **250** | | *C. obesa* | 12.3, 14, 17.5 | | 13 |
| **33** | **251** | | *C. obesa* | 13.3 | | 13 |
| **33** | **255** | | *C. obesa* | 16.3 | | 15 |
| **33** | **256** | | *C. obesa* | 14 | | 15 |
| **33** | **997** | | *C. obesa* | 11.4 | | 15 |
| **33** | **996?** | | *C. obesa* | 12.5 | | 13 |
| | | | *Eucalyptus sp* | 1 seedling | 2.3 | H |
| | | | *C. obesa* | 3 seedlings | 0.4-1.5 | 2H, 1 grazed |
| | | | | | | |
| **34** | **470** | A | *C. obesa* | 9.1, 6.2 | | 8 |
| **34** | **471** | A | *C. obesa* | D | | D |
| **34** | **472** | A | *C. obesa* | 8.4 | | 7 |
| **34** | **473** | A | *C. obesa* | D | | D |

| | | | | | | |
|---|---|---|---|---|---|---|
| **34** | **474** | A | *C. obesa* | D | | D |
| **34** | **475** | A | *C. obesa* | D | | D |
| **34** | **476** | B | *C. obesa* | RD | | RD |
| **34** | **477** | B | *C. obesa* | 4.9 | | 7 |
| **34** | **478** | B | *M. strobophylla* | D | | D |
| **34** | **479** | B | *C. obesa* | RD | | RD |
| **34** | **480** | B | *C. obesa* | D | | D |
| **34** | **481** | B | *C. obesa* | D | | D |
| **34** | **482** | B | *C. obesa* | 5.5 | | 7 |
| **34** | **483** | B | *C. obesa* | RD | | RD |
| **34** | **484** | B | *C. obesa* | D | | D |
| **34** | **485** | B | *C. obesa* | 6.6 | | 6 |
| **34** | **486** | B | *C. obesa* | 9.8 | | 8 |
| **34** | **487** | B | *C. obesa* | can't find | | RD |
| **34** | **488** | B | *C. obesa* | D | | D |
| **34** | **489** | B | *C. obesa* | D | | D |
| **34** | **490** | B | *C. obesa* | 7.8 | | 3 |
| **34** | **491** | B | *C. obesa* | D | | D |
| **34** | **492** | B | *M. strobophylla* | D | | D |
| **34** | **493** | B | *C. obesa* | 5.1 | | 3 |
| **34** | **494** | B | *C. obesa* | D | | D |
| **34** | **495** | B | *C. obesa* | 8 | | 13 |
| **34** | **496** | B | *C. obesa* | 7 | | 3 |
| **34** | **497** | B | *C. obesa* | D | | D |
| **34** | **498** | B | *C. obesa* | 12.2 | | 3 |
| **34** | **499** | B | *C. obesa* | D | | D |
| **34** | **501** | B | *C. obesa* | 10 | | 8 |
| **34** | **502** | B | *C. obesa* | D | | D |
| **34** | **503** | B | *C. obesa* | RD | | RD |
| **34** | **504** | B | *C. obesa* | D | | D |
| **34** | **505** | B | *C. obesa* | D | | D |
| **34** | **506** | B | *C. obesa* | 7.7 | | 3 |
| **34** | **507** | B | *C. obesa* | 9 | | 4 |
| **34** | **508** | B | *C. obesa* | 3.6 | | 8 |
| **34** | **509** | B | *C. obesa* | 8.6 | | 8 |
| **34** | **510** | B | *C. obesa* | 7 | | 8 |
| **34** | **511** | B | *C. obesa* | 7, 7, 5 | | 3 |
| **34** | **512** | B | *C. obesa* | D | | D |
| **34** | **513** | B | *C. obesa* | D | | D |
| **34** | **514** | B | *C. obesa* | D | | D |
| **34** | **515** | B | *C. obesa* | D | | D |
| **34** | **516** | B | *C. obesa* | D | | D |
| **34** | **517** | B | *C. obesa* | D | | D |
| **34** | **518** | C | *C. obesa* | 8 | | 3 |
| **34** | **519** | C | *C. obesa* | D | | D |
| **34** | **520** | C | *C. obesa* | D | | D |
| **34** | **521** | C | *C. obesa* | 3, 3.5 | | 3 |
| **34** | **522** | C | *C. obesa* | 5.4 | | 3 |
| **34** | **523** | C | *C. obesa* | 4.2 | | 3 |
| **34** | **524** | C | *C. obesa* | 6.9, 4.2 | | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **34** | **525** | C | *C. obesa* | 3.6, 8.1, 2.8 | | 3 |
| **34** | **526** | C | *C. obesa* | D | | D |
| **34** | **527** | C | *C. obesa* | 1.2 | | 3 |
| **34** | **528** | C | *C. obesa* | D | | D |
| **34** | **529** | C | *C. obesa* | 3.7 | | 3 |
| **34** | **530** | C | *C. obesa* | 3.6 | | 3 |
| **34** | **531** | C | *C. obesa* | 5.6 | | 3 |
| **34** | **532** | C | *C. obesa* | 1.5 | | 3 |
| **34** | **533** | C | *C. obesa* | 14.4 | | 11 |
| **34** | **534** | C | *C. obesa* | 6.9 | | 7 |
| **34** | **535** | C | *C. obesa* | 4.1 | | 3 |
| **34** | **536** | C | *C. obesa* | 5 | | 5 |
| **34** | **538** | C | *C. obesa* | 2.2 | | 3 |
| **34** | **539** | C | *C. obesa* | 4.7 | | 5 |
| **34** | **540** | C | *C. obesa* | 6 | | 11 |
| **34** | **541** | C | *C. obesa* | 3.7 | | 7 |
| **34** | **542** | C | *C. obesa* | D | | RD |
| **34** | **543** | C | *C. obesa* | 6 | | 7 |
| **34** | **544** | C | *C. obesa* | D | | D |
| **34** | **545** | C | *C. obesa* | D | | D |
| **34** | **546** | C | *C. obesa* | D | | D |
| **34** | **547** | C | *C. obesa* | 5 | | 3 |
| **34** | **548** | C | *C. obesa* | D | | RD |
| **34** | **549** | C | *C. obesa* | D | | D |
| **34** | **550** | C | *C. obesa* | D | | D |
| **34** | **551** | C | *C. obesa* | 7 | | 5 |
| **34** | **552** | C | *C. obesa* | D | | D |
| **34** | **553** | C | *C. obesa* | 4.7 | | 5 |
| **34** | **554** | C | *C. obesa* | D | | D |
| **34** | **555** | C | *C. obesa* | D | | D |
| **34** | **559** | D | *C. obesa* | 9.1 | | 11 |
| **34** | **560** | D | *C. obesa* | 3 | | 11 |
| **34** | **562** | D | *C. obesa* | 4.4 | | 7 |
| **34** | **563** | D | *C. obesa* | 5.8 | | 7 |
| **34** | **564** | D | *C. obesa* | D | | D |
| **34** | **565** | D | *C. obesa* | 4.2 | | 5 |
| **34** | **566** | D | *C. obesa* | 8 | | 11 |
| **34** | **567** | D | *C. obesa* | 6 | | 9 |
| **34** | **568** | D | *C. obesa* | 6.4 | | 9 |
| **34** | **569** | D | *C. obesa* | 6.6 | | 4 |
| **34** | **570** | D | *C. obesa* | 3.4 | | 3 |
| **34** | **571** | D | *C. obesa* | 3.8 | | 4 |
| **34** | **572** | D | *C. obesa* | 4.1 | | 4 |
| **34** | **573** | D | *C. obesa* | 5.7 | | 3 |
| **34** | **574** | D | *C. obesa* | 4.9 | | 4 |
| **34** | **575** | D | *C. obesa* | 4.1 | | 5 |
| **34** | **576** | D | *C. obesa* | 5.3 | | 5 |
| **34** | **577** | D | *C. obesa* | 6 | | 3 |
| **34** | **578** | D | *C. obesa* | 5.2 | | 9 |
| **34** | **580** | D | *C. obesa* | 6.1, 5.5 | | 9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **34** | **581** | D | *C. obesa* | 5.3 | | 4 |
| **34** | **583** | D | *C. obesa* | 5.5, 4.6 | | 7 |
| **34** | **584** | D | *C. obesa* | 5 | | 7 |
| **34** | **585** | D | *C. obesa* | D | | D |
| **34** | **587** | D | *C. obesa* | 4 | | 3 |
| **34** | **588** | D | *C. obesa* | 4.8 | | 4 |
| **34** | **589** | D | *C. obesa* | 4.2 | | 9 |
| **34** | **590** | D | *C. obesa* | 4.3 | | 3 |
| **34** | **591** | D | *C. obesa* | 3.2 | | 4 |
| **34** | **592** | D | *C. obesa* | 11 | | 5 |
| **34** | **593** | D | *C. obesa* | 10.5 | | 11 |
| **34** | **594** | D | *C. obesa* | D | | D |
| **34** | **595** | D | *C. obesa* | RD | | RD |
| **34** | **596** | D | *C. obesa* | D | | D |
| **34** | **597** | D | *C. obesa* | D | | D |
| **34** | **598** | D | *C. obesa* | 6.7 | | 3 |
| **34** | **599** | D | *C. obesa* | D | | D |
| **34** | **600** | D | *C. obesa* | D | | D |
| **34** | **601** | D | *C. obesa* | D | | D |
| **34** | **602** | D | *C. obesa* | 8.3 | | 7 |
| **34** | **603** | D | *C. obesa* | D | | D |
| **34** | **604** | D | *C. obesa* | D | | D |
| **34** | **605** | D | *C. obesa* | 5.5 | | 3 |
| **34** | **606** | D | *C. obesa* | 9.5 | | 11 |
| **34** | **609** | E | *C. obesa* | 6.5 | | 9 |
| **34** | **610** | E | *C. obesa* | 4.5 | | 7 |
| **34** | **611** | E | *C. obesa* | D | | D |
| **34** | **612** | E | *C. obesa* | can't find | | RD |
| **34** | **613** | E | *C. obesa* | 7.2, 7.1 | | 7 |
| **34** | **614** | E | *C. obesa* | 7.1 | | 7 |
| **34** | **615** | E | *C. obesa* | 4.5 | | 4 |
| **34** | **616** | E | *C. obesa* | 5.4 | | 7 |
| **34** | **617** | E | *C. obesa* | 4.9 | | 3 |
| **34** | **618** | E | *C. obesa* | can't find | | RD |
| **34** | **619** | E | *C. obesa* | D | | D |
| **34** | **620** | E | *C. obesa* | 3.9 | | 5 |
| **34** | **621** | E | *C. obesa* | 3.9 | | 3 |
| **34** | **622** | E | *C. obesa* | 4.5 | | 4 |
| **34** | **623** | E | *C. obesa* | 4 | | 7 |
| **34** | **624** | E | *C. obesa* | 3.7 | | 5 |
| **34** | **625** | E | *C. obesa* | 5.8 | | 3 |
| **34** | **626** | E | *C. obesa* | 3.2 | | 3 |
| **34** | **627** | E | *C. obesa* | 5.5 | | 5 |
| **34** | **628** | E | *C. obesa* | 4.3 | | 6 |
| **34** | **629** | E | *C. obesa* | 5.9 | | 6 |
| **34** | **630** | E | *C. obesa* | 5.3 | | 9 |
| **34** | **631** | E | *C. obesa* | 5.2 | | 10 |
| **34** | **632** | E | *C. obesa* | 3.9 | | 8 |
| **34** | **633** | E | *C. obesa* | D | | D |
| **34** | **634** | E | *C. obesa* | 4 | | 8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **34** | **635** | E | *C. obesa* | 4.7 | | 3 |
| **34** | **636** | E | *C. obesa* | 3.8 | | 3 |
| **34** | **637** | E | *C. obesa* | 5.9 | | 3 |
| **34** | **638** | E | *C. obesa* | 5.5 | | 4 |
| **34** | **640** | E | *C. obesa* | 5 | | 7 |
| **34** | **641** | E | *C. obesa* | 2.6 | | 3 |
| **34** | **642** | E | *C. obesa* | 7.8 | | 11 |
| **34** | **643** | E | *C. obesa* | 4.3 | | 7 |
| **34** | **644** | E | *C. obesa* | 4.3 | | 6 |
| **34** | **645** | E | *C. obesa* | 4 | | 6 |
| **34** | **646** | E | *C. obesa* | 6.7 | | 11 |
| **34** | **648** | E | *C. obesa* | 4.6 | | 8 |
| **34** | **649** | E | *C. obesa* | 3.9 | | 5 |
| **34** | **651** | E | *C. obesa* | 3.8 | | 7 |
| **34** | **652** | E | *C. obesa* | 4.3 | | 3 |
| **34** | **653** | E | *C. obesa* | 3.2 | | 5 |
| **34** | **654** | E | *C. obesa* | 4 | | 3 |
| **34** | **655** | E | *C. obesa* | D | | D |
| **34** | **656** | E | *C. obesa* | D | | D |
| **34** | **657** | E | *C. obesa* | 9.8 | | 7 |
| **34** | **658** | E | *C. obesa* | D | | D |
| **34** | **659** | E | *C. obesa* | 4.4 | | 4 |
| | | | | | | |
| **35** | **273** | A | *C.obesa* | 7 | | 6 |
| **35** | **274** | A | *C.obesa* | 24.3 | | 10 |
| **35** | **275** | A | *C.obesa* | 13, 18.5 | | 13 |
| **35** | **276** | A | *C.obesa* | 16.3 | | 10 |
| **35** | **277** | B | *C.obesa* | 25.8 | | 13 |
| **35** | **278** | B | *C.obesa* | 29.3 | | 15 |
| **35** | **279** | B | *C.obesa* | D | | |
| **35** | **280** | B | *C.obesa* | 22.2 | | 7 |
| **35** | **281** | B | *C.obesa* | 15.3 | | 7 |
| **35** | **282** | C | *C.obesa* | 19.2 | | 11 |
| **35** | **283** | C | *C.obesa* | 20.1 | | 11 |
| **35** | **284** | C | *C.obesa* | 17.4 | | 13 |
| **35** | **285** | C | *C.obesa* | 23.9, 17.5 | | 13 |
| **35** | **286** | C | *C.obesa* | 18.4 | | 13 |
| **35** | **299** | C | *C.obesa* | 10.3 | | 9 |
| **35** | **287** | D | *C.obesa* | 32.8 | | 13 |
| **35** | **288** | D | *C.obesa* | 26.5 | | 11 |
| **35** | **289** | D | *C.obesa* | 17.7 | | 11 |
| **35** | **290** | D | *C.obesa* | 19.8 | | 10 |
| **35** | **292** | D | *C.obesa* | 26.7 | | 11 |
| **35** | **293** | D | *C.obesa* | 16.3 | | 11 |
| **35** | **294** | D | *C.obesa* | 39.6 | | 13 |
| **35** | **295** | D | *C.obesa* | 16.6 | | 11 |
| **35** | **300** | D | *C.obesa* | 20.5 | | 11 |
| **35** | **296** | E | *C.obesa* | 23.4 | | 13 |
| **35** | **297** | E | *C.obesa* | 30 | | 12 |
| **35** | **298** | E | *C.obesa* | 18.9 | | 9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **36** | **337** | A | *M. strobophylla* | D | | D |
| **36** | **338** | A | *C. obesa* | D | | D |
| **36** | **339** | A | *C. obesa* | D | | D |
| **36** | **340** | A | *C. obesa* | D | | D |
| **36** | **341** | A | *M. strobophylla* | D | | D |
| **36** | **342** | A | *M. strobophylla* | D | | D |
| **36** | **345** | A | *C. obesa* | D | | D |
| **36** | **346** | B | *C.obesa* | D | | D |
| **36** | **347** | B | *C.obesa* | 14.3 | | 13 |
| **36** | **348** | B | *C.obesa* | D | | D |
| **36** | **349** | B | *C.obesa* | D | | D |
| **36** | **350** | B | *C.obesa* | 12.7 | | 12 |
| **36** | **352** | C | *C. obesa* | D | | |
| **36** | **355** | C | *M. strobophylla* | can't find | | |
| **36** | **358** | C | *C. obesa* | D | | |
| **36** | **359** | C | *C. obesa* | D | | |
| **36** | **361** | C | *C. obesa* | 6.7 | | 4 |
| **36** | **362** | C | *C. obesa* | 8.2 | | 9 |
| **36** | **363** | C | *C. obesa* | D | | |
| **36** | **365** | C | *C. obesa* | D | | |
| **36** | **366** | C | *C. obesa* | D | | |
| **36** | **367** | C | *C. obesa* | 4.5 | | 5 |
| **36** | **368** | C | *C. obesa* | 6.7 | | 5 |
| **36** | **369** | C | *C. obesa* | 6.7 | | 5 |
| **36** | **370** | C | *C. obesa* | 5.9 | | 5 |
| **36** | **371** | C | *C. obesa* | 5.2 | | 5 |
| **36** | **372** | C | *M. strobophylla* | 4.5 | | 5 |
| **36** | **373** | C | *M. strobophylla* | D | | |
| **36** | **374** | C | *M. strobophylla* | D | | |
| **36** | **375** | C | *M. strobophylla* | 5.8, 4.2 | | 9 |
| **36** | **376** | C | *C. obesa* | 6.7 | | 3 |
| **36** | **377** | C | *C. obesa* | D | | |
| **36** | **379** | C | *C. obesa* | D | | |
| **36** | **380** | C | *C. obesa* | can't find | | |
| **36** | **382** | C | *M. strobophylla* | D | | |
| **36** | **383** | C | *C. obesa* | 6.6 | | 3 |
| **36** | **384** | C | *C. obesa* | D | | |
| **36** | **388** | C | *C. obesa* | D | | |
| **36** | **389** | C | *C. obesa* | D | | |
| **36** | **390** | C | *M. strobophylla* | RD | | RD |
| **36** | **391** | C | *C. obesa* | D | | |
| **36** | **392** | C | *C. obesa* | 6.8 | | 6 |
| **36** | **393** | C | *C. obesa* | 5.5, 10.8 | | 3 |
| **36** | **395** | C | *C. obesa* | 9.6 | | 9 |
| **36** | **396** | C | *M. strobophylla* | 8.7 | | 9 |
| **36** | **397** | C | *C. obesa* | 12.1 | | 7 |
| **36** | **398** | C | *C. obesa* | D | | |
| **36** | **399** | C | *C. obesa* | 7.2 | | 5 |
| **36** | **400** | C | *C. obesa* | 12.4 | | 7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **36** | **401** | C | *C. obesa* | 10.3, 8.7 | | 7 |
| **36** | **409** | C | *C. obesa* | 7.2 | | 7 |
| **36** | **404** | D | *C. obesa* | 5.9 | | 3 |
| **36** | **405** | D | *C. obesa* | 9.8 | | 3 |
| **36** | **407** | D | *C. obesa* | D | | |
| **36** | **408** | D | *C. obesa* | 7.2 | | 7 |
| **36** | **411** | D | *C. obesa* | D | | |
| **36** | **412** | D | *M. strobophylla* | D | | |
| **36** | **413** | D | *C. obesa* | D | | |
| **36** | **414** | D | *C. obesa* | D | | |
| **36** | **415** | D | *C. obesa* | 4.7 | | 4 |
| **36** | **417** | D | *C. obesa* | 10.7 | | 9 |
| **36** | **418** | D | *M. strobophylla* | D | | |
| **36** | **419** | D | *C. obesa* | 7 | | 5 |
| **36** | **420** | D | *C. obesa* | 6.7 | | 10 |
| **36** | **421** | D | *C. obesa* | D | | |
| **36** | **422** | D | *C. obesa* | D | | |
| **36** | **423** | D | *M. strobophylla* | D | | |
| **36** | **424** | D | *C. obesa* | 11.7 | | 11 |
| **36** | **425** | D | *C. obesa* | D | | |
| **36** | **426** | D | *C. obesa* | 13 | | 11 |
| **36** | **427** | D | *C. obesa* | D | | |
| **36** | **428** | D | *C. obesa* | 10.9 | | 7 |
| **36** | **429** | E | *M. strobophylla* | D | | |
| **36** | **430** | E | *C. obesa* | D | | |
| **36** | **431** | E | *M. strobophylla* | D | | |
| **36** | **432** | E | *M. strobophylla* | D | | |
| **36** | **433** | E | *C. obesa* | D | | |
| **36** | **434** | E | *M. strobophylla* | D | | |
| **36** | **435** | E | *M. strobophylla* | D | | |
| **36** | **436** | E | *C. obesa* | 11.9 | | 11 |
| **36** | **437** | E | *C. obesa* | D | | |
| **36** | **438** | E | *C. obesa* | 8.5 | | 5 |
| **36** | **439** | E | *M. strobophylla* | D | | |
| **36** | **440** | D | *C. obesa??* | 3 | | 3 |
| **36** | **441** | D | *C. obesa??* | 4.2 | | 4 |
| **36** | **442** | D | *C. obesa??* | 4.2 | | 3 |
| | | | | | | |
| **37** | **301** | A | *C. obesa* | D | | |
| **37** | **302** | A | *C. obesa* | D | | |
| **37** | **303** | A | *C. obesa* | 11.6 | | 3 |
| **37** | **304** | A | *C. obesa* | 11.9 | | 10 |
| **37** | **305** | A | *C. obesa* | D | | |
| **37** | **306** | A | *C. obesa* | 13.4 | | 11 |
| **37** | **307** | A | *C. obesa* | 9.2 | | 11 |
| **37** | **308** | A | *C. obesa* | D | | |
| **37** | **309** | A | *C. obesa* | D | | |
| **37** | **310** | A | *C. obesa* | 8.5 | | 5 |
| **37** | **311** | A | *C. obesa* | 18.1 | | 6 |
| **37** | **312** | A | *C. obesa* | 14.4 | | 7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **37** | **313** | A | *C. obesa* | 11.2 | | 10 |
| **37** | **314** | A | *C. obesa* | 15.2 | | 12 |
| **37** | **315** | A | *C. obesa* | 24.2 | | 11 |
| **37** | **316** | B | *C. obesa* | 16.7, 8.9, 14.2, 20.2 | | 13 |
| **37** | **317** | C | *C. obesa* | D | | |
| **37** | **318** | C | *C. obesa* | RD | | RD |
| **37** | **319** | C | *C. obesa* | RD | | RD |
| **37** | **320** | C | *C. obesa* | D | | |
| **37** | **321** | C | *C. obesa* | RD | | RD |
| **37** | **322** | C | *C. obesa* | 14.9, 10.2 | | 9 |
| **37** | **323** | C | *C. obesa* | D | | |
| **37** | **324** | C | *C. obesa* | D | | |
| **37** | **325** | C | *C. obesa* | 12.8 | | 7 |
| **37** | **326** | C | *C. obesa* | 20.6 | | 5 |
| **37** | **327** | D | *C. obesa* | 18.3 | | 7 |
| **37** | **328** | D | *C. obesa* | 10.7, 6.1 | | 9 |
| **37** | **329** | D | *C. obesa* | 9.2 | | 10 |
| **37** | **330** | D | *C. obesa* | 13.7 | | 9 |
| **37** | **331** | D | *C. obesa* | 3.7, 10.3 | | 4 |
| **37** | **332** | D | *C. obesa* | D | | |
| **37** | **333** | D | *C. obesa* | 13.2 | | 6 |
| **37** | **334** | D | *C. obesa* | 18 | | 11 |
| **37** | **335** | E | *C. obesa* | 20.4 | | 7 |
| **37** | **336** | E | *C. obesa* | 19.6, 16.8 | | 13 |
| | | | | | | |
| **38** | **440** | A | *C. obesa* | 11.7 | | 15 |
| **38** | **441** | A | *C. obesa* | 16.7 | | 13 |
| **38** | **442** | A | *C. obesa* | 18.5 | | 15 |
| **38** | **443** | A | *C. obesa* | 13.8 | | 13 |
| **38** | **444** | A | *C. obesa* | 13.6 | | 13 |
| **38** | **445** | A | *C. obesa* | 7 | | 15 |
| **38** | **446** | A | *C. obesa* | 6 | | 8 |
| **38** | **447** | B | *C. obesa* | 16.3 | | 15 |
| **38** | **448** | B | *C. obesa* | 10.6, 8.2, 7.7 | | 15 |
| **38** | **449** | B | *C. obesa* | 12.7 | | 15 |
| **38** | **450** | B | *C. obesa* | 13.3 | | 9 |
| **38** | **451** | B | *C. obesa* | 9 | | 11 |
| **38** | **452** | B | *C. obesa* | 12.9 | | 11 |
| **38** | **453** | B | *C. obesa* | 11.3 | | 11 |
| **38** | **454** | B | *C. obesa* | 14.6, 8.5 | | 13 |
| **38** | **455** | C | *C. obesa* | 11 | | 15 |
| **38** | **456** | C | *C. obesa* | 11.9, 13 | | 13 |
| **38** | **457** | C | *C. obesa* | 13.7 | | 13 |
| **38** | **458** | C | *C. obesa* | 14.8 | | 13 |
| **38** | **459** | C | *C. obesa* | 7.6 | | 11 |
| **38** | **460** | D | *C. obesa* | 17.3, 21.6 | | 19 |
| **38** | **461** | D | *C. obesa* | 8.4 | | 13 |
| **38** | **462** | D | *C. obesa* | 18 | | 7 |
| **38** | **463** | D | *C. obesa* | RD | | RD |

| | | | | | | |
|---|---|---|---|---|---|---|
| **38** | **464** | D | *C. obesa* | 17.8 | | 7 |
| **38** | **465** | D | *C. obesa* | 12.1 | | 13 |
| **38** | **466** | D | *C. obesa* | D | | D |
| **38** | **467** | E | *C. obesa* | D | | D |
| **38** | **468** | E | *C. obesa* | RD | | RD |
| | | | | | | |

# Appendix Two: Vigour Trends

## Vegetation Monitoring of Toolibin Lake and Reserves

Lists the change in vigour of the structurally dominant species in each plot.
1977-1992 data collected by Mattiske Consulting (taken from Mattiske Consulting, 1993).

| Plot 1 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | | | 27 | | | 7 |
| 1980 | | | 27 | | | 7 |
| 1982 | | | 27 | | | 7 |
| 1986 | | | 27 | | | 7 |
| 1992 | | | 27 | | | 7 |
| 1998 | Not sampled | | | | | |
| 2004 | Not sampled | | | | | |
| 2006/2007 | Not sampled | | | | | |

| Plot 2 | C. obesa | | | E.rudis | | | A. huegeliana | | |
|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D |
| 1977 | 11 | | | 1 | | 1 | 3 | | 2 |
| 1980 | 10 | 1 | 1 | | 1 | 1 | 1 | 2 | 2 |
| 1982 | 10 | 1 | 1 | | 1 | 1 | 1 | 2 | 2 |
| 1986 | 8 | 2 | 2 | | | 2 | 1 | 1 | 3 |
| 1992 | 8 | 2 | 2 | | | 2 | 1 | | 4 |
| 1998 | Not sampled | | | | | | | | |
| 2004 | Not sampled | | | | | | | | |
| 2006/2007 | Not sampled | | | | | | | | |

| Plot 3 | C. obesa | | |
|---|---|---|---|
| | H | S | D |
| 1977 | | 12 | 6 |
| 1980 | 4 | 8 | 6 |
| 1982 | 4 | 8 | 6 |
| 1986 | 1 | 2 | 15 |
| 1992 | 1 | 2 | 15 |
| 1998 | 1 | 2 | 15 |
| 2002 | 1 | 2 | 15 |
| 2004 | 3 | 0 | 15 |
| 2006/2007 | 3 | 0 | 0 |

| Plot 4 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 18 | | 3 | 9 | 9 | 2 |
| 1980 | 12 | 6 | 3 | 3 | 7 | 4 |
| 1982 | 12 | 6 | 3 | 3 | 7 | 4 |
| 1986 | 9 | 8 | 4 | | 10 | 4 |
| 1992 | 9 | 6 | 6 | | 5 | 9 |
| 1998 | 2 | 13 | 6 | | 6 | 8 |
| 2002 | 0 | 12 | 9 | | | 14 |
| 2004 | 2 | 6 | 13 | | | 14 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2006/2007 | 2 | 5 | 5 | | | |

| Plot 5 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 106 | 2 | 3 | 83 | 1 | 12 |
| 1980 | 123 | 6 | 4 | 77 | 3 | 17 |
| 1982 | 123 | 6 | 4 | 77 | 3 | 17 |
| 1986 | 119 | 11 | 3 | 78 | 3 | 16 |
| 1992 | 119 | 11 | 3 | 78 | 3 | 16 |
| 1998 | 47 | 43 | 3 | 25 | 35 | 7 |
| 2002 | 25 | 57 | 12 | 7 | 13 | 47 |
| 2004 | 29 | 50 | 17 | 1 | 10 | 57 |
| 2006/2007 | 13 | 64 | 9 | 1 | 2 | 17 |

| Plot 6 | E. rudis | | |
|---|---|---|---|
| | H | S | D |
| 1977 | | 1 | 1 |
| 1980 | | | 2 |
| 1982 | | | 2 |
| 1986 | | | 2 |
| 1992 | | | 2 |
| 1998 | | | 2 |
| 2002 | | | 2 |
| 2004 | | | 2 |
| 2006/2007 | | | |

| Plot 7 | C. obesa | | | E. rudis | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 4 | | | | | |
| 1980 | 4 | | | 1 | | |
| 1982 | 4 | | | 1 | | |
| 1986 | 2 | 1 | 1 | | | 1 |
| 1992 | 1 | 2 | 1 | | | 1 |
| 1998 | 4 | | | | | 1 |
| 2002 | 4 | | | | | 1 |
| 2004 | 3 | 1 | | | | 1 |
| 2006/2007 | 3 | 1 | | | | |

| Plot 8 | | | |
|---|---|---|---|
| | H | S | D |
| 1977 | no trees on this plot | | |
| 1980 | | | |
| 1982 | | | |
| 1986 | | | |
| 1992 | | | |
| 1998 | | | |
| 2002 | | | |
| 2004 | | | |
| 2006/2007 | | | |

| Plot 9 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 85 | 4 | 2 | | 2 | 12 |
| 1980 | 80 | 9 | 2 | | 2 | 12 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1982 | 80 | 9 | 2 | | 2 | 12 |
| 1986 | 67 | 15 | 7 | | 1 | 13 |
| 1992 | 67 | 14 | 8 | | 1 | 13 |
| 1998 | 29 | 48 | | | | 11 |
| 2002 | 21 | 52 | 4 | | | 11 |
| 2004 | 33 | 34 | 11 | | | |
| 2006/2007 | 29 | 38 | 7 | no plants | | |

| Plot 10 | C. obesa | | | M. strobophylla | | | E. rudis | | |
|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D |
| 1977 | 30 | | | 2 | | | | 1 | 1 |
| 1980 | 30 | | | 2 | | | | | 2 |
| 1982 | 30 | | | 2 | | | | | 2 |
| 1986 | 29 | | 1 | 2 | | | | | 2 |
| 1992 | 28 | 1 | 1 | 2 | | | | | 2 |
| 1998 | 12 | 18 | | 1 | 1 | | | | 2 |
| 2002 | 8 | 21 | 1 | | 2 | | | | |
| 2004 | 12 | 9 | 7 | 0 | 1 | 1 | | | |
| 2006/2007 | 11 | 8 | 10 | | 1 | 1 | | | |

| Plot 11 | C. obesa | | | M. strobophylla | | | E. rudis | | |
|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D |
| 1977 | 5 | | 2 | 6 | | 1 | | 1 | 14 |
| 1980 | 5 | | 2 | | 6 | 1 | | 1 | 14 |
| 1982 | 5 | | 2 | | 5 | 2 | | 1 | 14 |
| 1986 | 5 | | 2 | | 1 | 6 | | | 15 |
| 1992 | 2 | 3 | 2 | | | 7 | | | 15 |
| 1998 | 5 | | 2 | | | 7 | | | 15 |
| 2002 | 5 | | 2 | | | 7 | | | 15 |
| 2004 | 5 | | 2 | | | 7 | | | |
| 2006/2007 | 5 | | | | | | | | |

| Plot 12 | E. loxophleba | | | A. acuminata | | | A. huegeliana | | |
|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D |
| 1977 | 6 | | | 5 | | 4 | 1 | | |
| 1980 | 6 | 1 | | 5 | | 4 | 1 | | |
| 1982 | 6 | 1 | | 6 | | 4 | 1 | | |
| 1986 | 6 | 1 | | 5 | 1 | 4 | 1 | | |
| 1992 | 6 | 2 | | 4 | 3 | 5 | 1 | | |
| 1998 | 5 | 1 | | 5 | 2 | 5 | | 1 | |
| 2002 | 5 | 1 | | 5 | 2 | 5 | | 1 | |
| 2004 | 6 | | | 7 | | 5 | 1 | | |
| 2006/2007 | 4 | 2 | | 6 | 1 | | | 1 | |

| Plot 13 | A. huegeliana | | | B. prionotes | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 37 | 1 | | 15 | 1 | |
| 1980 | 34 | 4 | | 13 | 3 | |
| 1982 | 37 | 5 | 1 | 11 | 5 | |
| 1986 | 30 | 6 | 2 | 2 | 10 | 4 |
| 1992 | 5 | 3 | 32 | 2 | 3 | 13 |
| 1998 | 14 | 11 | | 4 | | |
| 2002 | 18 | 1 | | 5 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2004 | 14 | 5 | | 3 | 2 | |
| 2006/2007 | 21 | 2 | | 5 | | |

| Plot 14 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 11 | 4 | 7 | 1 | | |
| 1980 | 3 | 12 | 8 | 1 | | |
| 1982 | 3 | 12 | 7 | 1 | | |
| 1986 | 2 | 12 | 7 | 1 | | |
| 1992 | 3 | 10 | 9 | 1 | | |
| 1998 | Not sampled | | | | | |
| 2002 | Not sampled | | | | | |
| 2004 | Not sampled | | | | | |
| 2006/2007 | Not sampled | | | | | |

| Plot 15 | E. wandoo | | | E. salmonophloia | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 1 | | | 5 | 1 | 5 |
| 1980 | 1 | | | 3 | 3 | 5 |
| 1982 | 1 | | | 4 | 2 | 5 |
| 1986 | | 1 | | | 6 | 5 |
| 1992 | | 1 | | | 5 | 6 |
| 1998 | | | 1 | 3 | | 8 |
| 2002 | | | 1 | 3 | | 8 |
| 2004 | | | 1 | 3 | | 8 |
| 2006/2007 | | | | 3 | | |

| Plot 16 | E. salmonophloia | | |
|---|---|---|---|
| | H | S | D |
| 1977 | 4 | | |
| 1980 | 1 | 3 | |
| 1982 | 1 | 3 | |
| 1986 | 1 | 2 | 1 |
| 1992 | | 2 | 2 |
| 1998 | 2 | | 2 |
| 2002 | 2 | | 2 |
| 2004 | 2 | | 2 |
| 2006/2007 | 2 | | |

| Plot 17 | E. salmonophloia | | | M. acuminata | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 4 | 2 | 3 | 21 | | |
| 1980 | | 5 | 4 | 22 | 2 | 1 |
| 1982 | 1 | 4 | 4 | 26 | | |
| 1986 | | 4 | 5 | 26 | | |
| 1992 | | 2 | 7 | 26 | | |
| 1998 | | | 9 | 21 | | 5 |
| 2002 | | | 9 | 20 | 1 | 2 |
| 2004 | | | 9 | 20 | 2 | 2 |
| 2006/2007 | | | | 21 | 1 | |

| Plot 18 | E. loxophleba | | | E. salmonophloia | | | M. acuminata | | |
|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D |
| 1977 | | | 2 | | | 22 | | | |
| 1980 | | | 2 | | | 22 | | | |
| 1982 | | | 2 | | | 22 | | | |
| 1986 | | | 2 | | | 22 | | | |
| 1992 | | | 2 | | | 22 | | | |
| 1998 | | | 2 | | | 22 | | | |
| 2002 | | | 2 | | | 22 | 25 | | 5 |
| 2004 | | | 2 | | | | 35 | 3 | 11 |
| 2006/2007 | | | | | | | 32 | | 15 |

| Plot 19 | M. lateriflora | | | M. acuminata | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 143 | | 6 | | | |
| 1980 | 62 | 46 | 179 | | | |
| 1982 | 131 | 25 | 120 | | | |
| 1986 | 124 | 30 | 122 | | | |
| 1992 | 40 | 86 | 148 | | | |
| 1998 | 140 | | 136 | 1 | | |
| 2002 | 131 | 28 | 118 | | | |
| 2004 | 198 | | | | | |
| 2006/2007 | 191 | | 7 | | | |

| Plot 20 | E. salmonophloia | | | M. acuminata | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | 13 | 1 | 50 | 54 | | |
| 1980 | 8 | 1 | 55 | 43 | 7 | 4 |
| 1982 | 6 | 4 | 54 | 48 | 2 | 4 |
| 1986 | 2 | 9 | 53 | 45 | 2 | 7 |
| 1992 | | 7 | 57 | 35 | 22 | 1 |
| 1998 | | | 64 | 31 | | 27 |
| 2002 | | | 64 | 44 | 3 | 18 |
| 2004 | | | | 46 | 1 | 23 |
| 2006/2007 | | | | 44 | 3 | 5 |

| Plot 21 | C. obesa | | | M. strobophylla | | | E. rudis | | | M. lateriflora | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D | H | S | D |
| 1977 | | | 24 | | | 8 | | | 8 | | | 2 |
| 1980 | | | 24 | | | 8 | | | 8 | | | 2 |
| 1982 | | | 24 | | | 8 | | | 8 | | | 2 |
| 1986 | | | 24 | | | 8 | | | 8 | | | 2 |
| 1992 | | | 24 | | | 8 | | | 8 | | | 2 |
| 1998 | | | 24 | | | 8 | | | 8 | | | |
| 2002 | | | 24 | | | 8 | | | 8 | | | |
| 2004 | all dead | | | | | | | | | | | |
| 2006/2007 | all dead | | | | | | | | | | | |

| Plot 22 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | | | 4 | | 1 | 5 |
| 1980 | | | 4 | | | 6 |
| 1982 | | 1 | 3 | | | 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1986 | | | 4 | | | 6 |
| 1992 | | | 4 | | | 6 |
| 1998 | | | 4 | | | 6 |
| 2002 | | | 4 | | | 6 |
| 2004 | all dead | | | | | |
| 2006/2007 | all dead | | | | | |

| Plot 23 | E. loxophleba | | | E. wandoo | | | M. lateriflora | | | M. acuminata | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D | H | S | D |
| 1977 | | | | | | | | | | | | |
| 1980 | 14 | 1 | | 3 | | | 6 | | | 180 | | |
| 1982 | 14 | 1 | | 3 | | | 9 | | | 319 | | |
| 1986 | 15 | | | 2 | 1 | | 9 | | | 221 | 1 | 97 |
| 1992 | 12 | 3 | | 2 | 1 | | 10 | | | 179 | 1 | 136 |
| 1998 | 10 | 2 | | 1 | | 2 | 6 | | | 161 | 2 | |
| 2002 | 7 | 4 | 1 | | | 3 | 6 | | | 139 | 9 | 2 |
| 2004 | 4 | 6 | 1 | | | 3 | 4 | | | 173 | | 2 |
| 2006/2007 | 2 | 7 | 2 | | | | 4 | | | 166 | 2 | 4 |

| Plot 24 | M. lateriflora | | | M. acuminata | | | E. wandoo | | | E. loxophleba | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D | H | S | D |
| 1977 | | | | | | | | | | | | |
| 1980 | 188 | | 16 | 1 | | | | | | | | |
| 1982 | 209 | | 16 | 1 | | | | | | | | |
| 1986 | 204 | | 5 | 2 | | | | | | | | |
| 1992 | 202 | 1 | 9 | 2 | | | | | | | | |
| 1998 | 367 | 13 | 24 | 33 | 36 | 30 | | | | | | |
| 2002 | 141 | 31 | 25 | 28 | 17 | 32 | 1 | | | 1 | | |
| 2004 | 162 | | 8 | 35 | | 60 | | 1 | | 1 | | |
| 2006/2007 | 151 | 7 | 12 | 29 | 1 | 65 | | | 1 | 1 | | |

| Plot 25 | E. wandoo | | | E. sp | | | M. lateriflora | | | M. acuminata | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D | H | S | D |
| 1977 | | | | | | | | | | | | |
| 1980 | 69 | 128 | 2 | 69 | 128 | 2 | | | | 109 | | 153 |
| 1982 | 82 | 113 | 4 | 82 | 113 | 4 | | | | 261 | | |
| 1992 | 121 | 24 | 2 | | | | 86 | | | 293 | | 10 |
| 1998 | 14 | 17 | | | | | 86 | | | 293 | | 10 |
| 2002 | 10 | 15 | 6 | | | | | | | 192 | 19 | 10 |
| 2004 | 9 | 14 | 10 | | | | | | | 270 | 8 | 19 |
| 2006/2007 | 9 | 13 | 5 | | | | | | | 263 | 8 | 6 |

| Plot 26 | A. acuminata | | | C. obesa | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | | | | | | |
| 1980 | 11 | 1 | 4 | 2 | | |
| 1982 | 10 | 4 | 3 | 2 | | |
| 1986 | 9 | 2 | 6 | 2 | | |
| 1992 | 11 | 5 | 6 | 2 | | |
| 1998 | 13 | 3 | 6 | 2 | | |
| 2002 | 14 | 3 | 6 | 2 | | |
| 2004 | 10 | 5 | 6 | 2 | | |
| 2006/2007 | 8 | 6 | 1 | 2 | | |

| Plot 27 | C. obesa | | |
|---|---|---|---|
| | H | S | D |
| 1977 | | | |
| 1980 | | | |
| 1982 | | | |
| 1986 | | | |
| 1992 | | | |
| 1998 | 12 | 0 | 0 |
| 2002 | 11 | 1 | 0 |
| 2004 | 12 | 0 | 0 |
| 2006/2007 | 11 | 1 | 0 |

| Plot 28 | C. obesa | | | M. strobophylla | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 1977 | | | | | | |
| 1980 | | | | | | |
| 1982 | | | | | | |
| 1986 | | | | | | |
| 1992 | | | | | | |
| 1998 | 26 | 40 | | 1 | | |
| 2002 | 28 | 30 | 9 | | 1 | |
| 2004 | 21 | 31 | 16 | | 1 | |
| 2006/2007 | 18 | 33 | 9 | | 1 | |

| Plot 29 | C. obesa | | |
|---|---|---|---|
| | H | S | D |
| 1977 | | | |
| 1980 | | | |
| 1982 | | | |
| 1986 | | | |
| 1992 | | | |
| 1998 | 5 | 13 | |
| 2002 | | 18 | |
| 2004 | | 12 | 6 |
| 2006/2007 | | 12 | 6 |

| Plot 30 | B. prionotes | | | A. acuminata | | | A. huegeliana | | |
|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D |
| 1977 | | | | | | | | | |
| 1980 | | | | | | | | | |
| 1982 | | | | | | | | | |
| 1986 | | | | | | | | | |
| 1992 | | | | | | | | | |
| 1998 | 17 | 19 | | 1 | | | | | |
| 2002 | 1 | 1 | 34 | | 1 | | 1 | | |
| 2004 | 1 | | 35 | | | 1 | 1 | | |
| 2006/2007 | 1 | | 35 | | | 1 | 1 | | |

| Plot 31 | B. prionotes | | | A. huegeliana | | | J. furcellata | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D | H | S | D |
| 1977 | | | | | | | | | | | | |
| 1980 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1982 | | | | | | | | | | | | |
| 1986 | | | | | | | | | | | | |
| 1992 | | | | | | | | | | | | |
| 1998 | 10 | 4 | 1 | 4 | | 1 | 4 | | | | | |
| 2002 | 5 | 7 | 3 | 5 | | 1 | 8 | 4 | 3 | | | |
| 2004 | NOT SAMPLED | | | | | | | | | | | |
| 2006/2007 | NOT SAMPLED | | | | | | | | | | | |

| **Plot 32** | **C. obesa** | | | **M. strobophylla** | | | **E. loxophleba** | | | **E. rudis** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | S | D | H | S | D | H | S | D | H | S | D |
| 1983 | 35 | 11 | 1 | 5 | 1 | | 8 | 2 | | | | 3 |
| 1988 | 31 | 12 | 4 | 4 | 1 | 1 | 8 | 2 | | | | 3 |
| 1998 | 28 | 12 | 7 | 2 | 3 | 1 | 6 | 4 | | | | 3 |
| 2002 | 24 | 17 | 8 | | 4 | 1 | 7 | 4 | | | | 3 |
| 2004 | 32 | 5 | 12 | | 4 | 1 | 4 | 4 | | | | 3 |
| 2006/2007 | 34 | 5 | 7 | 1 | 3 | 1 | 3 | 8 | | | | |

| **Plot 33** | **C. obesa** | | |
|---|---|---|---|
| | H | S | D |
| 1983 | 10 | 23 | |
| 1988 | 6 | 24 | 3 |
| 1998 | 3 | 21 | 9 |
| 2002 | 4 | 20 | 9 |
| 2004 | 10 | 13 | 12 |
| 2006/2007 | 16 | 7 | 3 |

| **Plot 34** | **C. obesa** | | | **M. strobophylla** | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 2000 | 6 | 173 | 22 | | 13 | 17 |
| 2002 | 5 | 169 | 27 | | 2 | 28 |
| 2004 | 8 | 116 | 77 | | | 30 |
| 2006/2007 | 1 | 113 | 87 | | | |

| **Plot 35** | **C. obesa** | | | | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 2000 | 10 | 18 | 8 | | | |
| 2002 | 11 | 16 | 9 | | | |
| 2004 | 16 | 10 | 10 | | | |
| 2006/2007 | 10 | 16 | 10 | | | |

| **Plot 36** | **C. obesa** | | | **M. strobophylla** | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 2000 | 2 | 71 | 11 | 2 | 24 | 13 |
| 2002 | 3 | 60 | 23 | | 20 | 18 |
| 2004 | 9 | 26 | 54 | | 5 | 33 |
| 2006/2007 | 2 | 32 | 55 | | 4 | 34 |

| **Plot 37** | **C. obesa** | | | **E. rudis** | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 2000 | 5 | 31 | | | | 2 |
| 2002 | 4 | 32 | | | | 2 |
| 2004 | 5 | 20 | 11 | | | 2 |
| 2006/2007 | 3 | 20 | 13 | | | |

| **Plot 38** | **C. obesa** | | | | | |
|---|---|---|---|---|---|---|
| | H | S | D | H | S | D |
| 2000 | 9 | 20 | | | | |
| 2002 | 5 | 24 | | | | |
| 2004 | 14 | 13 | 2 | | | |
| 2006/2007 | 17 | 8 | 4 | | | |

# Appendix Three: Understorey Data

**Vegetation Monitoring of Toolibin Lake and Reserves**

| | Species | 2006/2007 Number | 2006/2007 %Cover | 2006/2007 Ht (m) | Comments |
|---|---|---|---|---|---|
| **Plot 3** | | | | | |
| A | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | All Dead |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| B | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| C | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| D | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| E | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| | ***Casuarina obesa*** | 1 | 1 | 0.5 | |
| | ***Atriplex semibaccata*** | 1 | 1 | 0.1 | New |
| **Plot 4** | | | | | |
| A | ***Atriplex semibaccata*** | 1 | 2 | 0.2 | |
| | ***Halosarcia lepidosperma*** | 5 | 45 | 0.7 | |
| B | ***Halosarcia lepidosperma*** | 1 | 30 | 0.7 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| C | ***Halosarcia lepidosperma*** | 6 | 7 | 0.5 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| D | ***Halosarcia lepidosperma*** | 1 | 5 | 0.5 | |
| E | ***Halosarcia lepidosperma*** | 1 | 5 | 0.5 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | | | | | |
| **Plot 5** | ***plot went from SE to NE*** | | | | |
| A | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| B | ***Halosarcia lepidosperma*** | | 6 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| C | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | |
| | ***Halosarcia indica*** | 0 | 0 | 0 | |
| D | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | | 8 | 0.3 | New |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Halosarcia lepidosperma*** | | 5 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Maireana brevifolia*** | | 2 | 0.3 | |
| **Plot 6** | | | | | |
| A | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Angianthus tomentosus*** | | 5 | 0.2 | New |
| | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| B | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Aniganthus tomentosus*** | | 2 | 0.2 | New |
| C | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |

| | | | | | |
|---|---|---|---|---|---|
| | ***Wilsonia rotundifolia*** | | 10 | 0.2 | |
| | ***Angianthus tomentosus*** | | 2 | 0.2 | |
| D | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Angianthus tomentosus*** | | 5 | 0.25 | New |
| | ***Wilsonia rotundifolia*** | | 10 | 0.2 | |
| E | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| | ***Angianthus tomentosus*** | | 5 | 0.25 | New |
| **Plot 7** | | | | | |
| A | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Aniganthus tomentosus*** | | 25 | 0.1 | New |
| B | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Aniganthus tomentosus*** | | 5 | 0.1 | New |
| | ***Goodenia viscida*** | | 2 | 0.3 | New |
| C | ***Wilsonia rotundifolia*** | | 0 | 0 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Aniganthus tomentosus*** | | 5 | 0.1 | New |
| | ***Goodenia viscida*** | | 2 | 0.3 | New |

| | | | | | |
|---|---|---|---|---|---|
| D | ***Halosarcia lepidosperma*** | 1 | 2 | 0.4 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Aniganthus tomentosus*** | | 1 | 0.1 | New |
| E | ***Halosarcia lepidosperma*** | 4 | 5 | 0.4 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| **Plot 8** | | | | | |
| A | ***Casuarina obesa*** | 1 | 0.5 | 0.3 | grazed |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Aniganthus tomentosus*** | | 10 | 0.1 | New |
| B | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Angianthus tomentosus*** | | 10 | 0.1 | New |
| C | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Aniganthus tomentosus*** | | 15 | 0.2 | New |
| D | ***Wilsonia rotundifolia*** | | 10 | 0.1 | |
| | ***Aniganthus tomentosus*** | | 15 | 0.2 | New |
| E | ***Wilsonia rotundifolia*** | | 5 | 0.1 | |
| | ***Angianthus tomentosus*** | | 15 | 0.2 | New |
| **Plot 9** | | | | | |
| A | ***x*** | 0 | 0 | 0 | |
| B | ***x*** | 0 | 0 | 0 | |

| | | | | | |
|---|---|---|---|---|---|
| C | ***x*** | 0 | 0 | 0 | |
| D | ***x*** | 0 | 0 | 0 | |
| E | ***x*** | 0 | 0 | 0 | |
| **Plot 10** | | | | | |
| A | ***Halosarcia lepidosperma*** | 1 | 1 | 0.3 | |
| | ***Atriplex semibaccata*** | | 5 | 0.1 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Angianthus tomentosus*** | | 10 | 0.25 | New |
| B | ***Halosarcia lepidosperma*** | 1 | 1 | 0.3 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | | 5 | 0.1 | |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Angianthus tomentosus*** | | 10 | 0.25 | New |
| C | ***Halosarcia pergranulata*** | 2 | 7 | 0.4 | |
| | ***Atriplex semibaccata*** | | 2 | 0.1 | |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| D | ***Halosarcia lepidosperma*** | | 25 | 0.5 | |
| | ***Atriplex semibaccata*** | | 3 | 0.1 | |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | |
| E | ***Halosarcia lepidosperma*** | | 5 | 0.5 | |
| | ***Wilsonia rotundifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | | 4 | 0.1 | |
| **Plot 11** | | | | | |
| A | ***Halosarcia lepidosperma*** | 16 | 25 | 0.4 | |
| | ***Atriplex semibaccata*** | 4 | 5 | 0.05 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Halosarcia indica*** | 2 | 2 | 0.4 | |
| B | ***Halosarcia lepidosperma*** | 3 | 5 | 0.7 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia indica*** | 3 | 15 | 0.4 | |
| C | ***Halosarcia lepidosperma*** | 4 | 10 | 0.4 | |
| | ***Halosarcia indica*** | 3 | 5 | 0.5 | |
| D | ***Halosarcia lepidosperma*** | 12 | 20 | 0.4 | |
| | ***Atriplex semibaccata*** | 1 | 1 | 0.1 | |
| | ***Halosarcia indica*** | 0 | 0 | 0 | |
| | ***Melaleuca lateriflora*** | 1 | 2 | 1.5 | New |
| E | ***Halosarcia lepidosperma*** | 5 | 10 | 0.5 | |
| | ***Halosarcia indica*** | 0 | 0 | 0 | |
| | ***Atriplex semibaccata*** | 2 | 2 | 0.1 | New |
| **Plot 12** | | | | | |
| A | ***Atriplex semibaccata*** | 1 | 2 | 0.1 | New |
| B | ***x*** | | | | |
| C | ***Atriplex semibaccata*** | 1 | 2 | 0.1 | New |
| D | ***x*** | | | | |
| E | ***x*** | | | | |
| **Plot 13** | | | | | |
| A | ***x*** | | | | |
| B | ***Jacksonia furcellata*** | 0 | 0 | 0 | Recently Dead |
| | ***Lepidobolus preissianus*** | 24 | 8 | 0.2 | |
| C | ***Melaleuca seriata*** | 1 | 1 | 0.4 | |
| | ***Lepidobolus preissianus*** | 11 | 6 | 0.4 | |
| D | ***Austrostipa elegantissima*** | | 1 | 0.5 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Lepidobolus preissianus*** | | 2 | 0.2 | |
| E | ***Lepidobolus preissianus*** | 0 | 0 | 0 | Recently Dead |
| | ***Austrostipa elegantissima*** | | 8 | 0.3 | |
| | ***Jacksonia furcellata*** | 1 | 1 | 0.7 | |
| | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | Recently Dead |
| **Plot 15** | | | | | |
| A | ***Austrostipa elegantissima*** | 3 | 1 | 0.2 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Daviesia debilior*** | 2 | 1 | 0.2 | |
| | ***Lomandra micrantha*** | 7 | 1 | 0.3 | |
| | ***Gahnia ancistrophylla*** | 2 | 1 | 0.2 | |
| B | ***Gahnia ancistrophylla*** | 11 | 10 | 0.4 | |
| | ***Daviesia debilior*** | 1 | 1 | 0.3 | |
| | ***Austrostipa elegantissima*** | 11 | 2 | 0.3 | |
| | ***Lomandra micrantha*** | 2 | 1 | 0.1 | |
| C | ***Gahnia ancistrophylla*** | 7 | 5 | 0.3 | |
| | ***Austrostipa elegantissima*** | 15 | 2 | 0.3 | |
| | ***Lomandra micrantha*** | 2 | 1 | 0.2 | |
| | ***Daviesia debilior*** | 6 | 5 | 0.4 | |
| D | ***Daviesia debilior*** | 17 | 15 | 0.3 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Austrostipa elegantissima*** | 2 | 1 | 0.3 | |
| | ***Comesperma virgatum*** | 0 | 0 | 0 | Recently Dead |
| | ***Gahnia ancistrophylla*** | 0 | 0 | 0 | Recently Dead |
| E | ***Austrostipa elegantissima*** | 17 | 1 | 0.2 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |

| | | | | | |
|---|---|---|---|---|---|
| | ***Daviesia debilior*** | 9 | 10 | 0.3 | |
| | ***Lomandra micrantha*** | 4 | 1 | 0.2 | |
| **Plot 16** | | | | | |
| A | ***Gahnia trifida*** | 2 | 10 | 1 | |
| | ***Lomandra micrantha*** | 11 | 5 | 0.2 | |
| | ***Dianella revoluta. divaricata*** | 0 | 0 | 0 | |
| | ***Atriplex semibaccata*** | 3 | 1 | 0.1 | |
| | ***Austrostipa sp.*** | 0 | 0 | 0 | |
| B | ***Gahnia trifida*** | 2 | 5 | 0.8 | |
| | ***Lomandra micrantha*** | 8 | 2 | 0.2 | |
| | ***Dodonaea viscosa*** | 1 | 2 | 0.7 | |
| | ***Austrostipa sp.*** | 0 | 0 | 0 | |
| C | ***Gahnia trifida*** | 1 | 10 | 1.3 | |
| | ***Lomandra micrantha*** | 16 | 6 | 0.2 | |
| | ***Dianella revoluta. divaricata*** | 2 | 1 | 0.7 | |
| | ***Austrostipa elegantissima*** | 0 | 0 | 0 | |
| | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| D | ***Lomandra micrantha*** | 5 | 1 | 0.2 | |
| | ***Austrodanthonia caespitosa*** | 0 | 0 | 0 | |
| | ***Atriplex semibaccata*** | 4 | 1 | 0.1 | |
| | ***Gahnia trifida*** | 3 | 1 | 0.2 | New |
| | ***Dianella revoluta. divaricata*** | 1 | 1 | 0.25 | New |
| E | ***Gahnia ancistrophylla*** | 11 | 5 | 0.3 | |
| | ***Lomandra micrantha*** | 3 | 1 | 0.2 | |
| | ***Austrodanthonia caespitosa*** | 2 | 0.5 | 0.2 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Atriplex semibaccata*** | 3 | 1 | 0.1 | |
| **Plot 17** | | | | | |
| A | ***Gahnia ancistrophylla*** | 8 | 6 | 0.3 | |
| B | ***Gahnia ancistrophylla*** | 9 | 6 | 0.3 | |
| | ***Lomandra micrantha*** | 1 | 2 | 0.3 | |
| C | ***Gahnia ancistrophylla*** | 2 | 3 | 0.3 | |
| D | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| E | ***x*** | 0 | 0 | 0 | |
| **Plot 18** | | | | | |
| A | ***Atriplex semibaccata*** | 3 | 2 | 0.1 | |
| B | ***Atriplex semibaccata*** | 4 | 2 | 0.1 | |
| | ***Halosarcia indica*** | 0 | 0 | 0 | |
| | ***Maireana brevifolia*** | 1 | 0.5 | 0.3 | New |
| C | ***Atriplex semibaccata*** | 7 | 2 | 1 | |
| | ***Halosarcia indica*** | 1 | 2 | 0.2 | |
| D | ***Gahnia trifida*** | 1 | 1 | 0.2 | |
| | ***Melaleuca acuminata*** | 0 | 0 | 0 | |
| | ***Atriplex semibaccata*** | 9 | 3 | 0.2 | |
| | ***Halosarcia indica*** | 0 | 0 | 0 | |
| E | ***Atriplex semibaccata*** | 2 | 1 | 0.5 | |
| **Plot 19** | | | | | |
| A | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | 2 | 6 | 0.3 | |
| B | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | 0 | 0 | 0 | Recently Dead |
| C | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |

| | | | | | |
|---|---|---|---|---|---|
| | ***Halosarcia indica*** | 1 | 7 | 0.2 | |
| D | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia indica*** | 1 | 1 | 0.2 | New |
| E | ***Atriplex semibaccata*** | 0 | 0 | 0 | |
| | ***Halosarcia indica*** | 4 | 5 | 0.2 | New |
| **Plot 20** | | | | | |
| A | ***Gahnia trifida*** | 8 | 10 | 0.8 | |
| | ***Austrostipa elegantissima*** | 7 | 1 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Dianella revoluta. divaricata*** | 1 | 1 | 0.9 | |
| B | ***Austrostipa elegantissima*** | | 1 | 0.3 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| C | ***Austrostipa elegantissima*** | 7 | 3 | 0.5 | |
| D | ***Austrostipa elegantissima*** | 10+ | 3 | 0.7 | |
| E | ***Austrostipa elegantissima*** | 5 | 1 | 0.3 | |
| | ***Atriplex semibaccata*** | 2 | 1 | 0.1 | |
| **Plot 21** | | | | | |
| A | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | 75 | 30 | 0.2 | |
| B | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | | 15 | 0.2 | |
| C | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | | 15 | 0.2 | |
| D | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia indica*** | | 20 | 0.2 | |
| E | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |

| | | | | | |
|---|---|---|---|---|---|
| | ***Halosarcia indica*** | | 30 | 0.2 | |
| **Plot 22** | | | | | |
| A | ***Halosarcia indica*** | 75+ | 3 | 0.5 | |
| | ***Halosarcia indica*** | | 8 | 0.15 | |
| B | ***Halosarcia indica*** | | 1 | 0.15 | |
| C | ***Halosarcia indica*** | | 1 | 0.15 | |
| D | ***Halosarcia indica*** | 100+ | 8 | 0.15 | |
| E | ***Halosarcia indica*** | 100+ | 6 | 0.15 | |
| **Plot 23** | | | | | |
| A | ***x*** | | | | |
| B | ***x*** | | | | |
| C | ***x*** | | | | |
| D | ***x*** | | | | |
| E | ***x*** | | | | |
| **Plot 24** | | | | | |
| A | ***Dianella revoluta. divaricata*** | 1 | 1 | 0.5 | |
| | ***Gahnia trifida*** | 1 | 1 | 0.2 | |
| | ***Melaleuca acuminata*** | | | | |
| B | ***Melaleuca acuminata*** | | | | |
| C | ***x*** | | | | |
| D | ***x*** | | | | |
| E | ***x*** | | | | |
| **Plot 25** | | | | | |
| A | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | |
| B | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | |
| C | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Chorizandra enodis*** | 0 | 0 | 0 | |
| D | ***Austrodanthonia caespitosa*** | 0 | 0 | 0 | |
| | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | |
| | ***Cryptandra sp*** | 0 | 0 | 0 | |
| E | ***Lepidosperma tenue*** | 1 | 1 | 0.2 | |
| | ***Ptilotus manglesii*** | 0 | 0 | 0 | |
| | ***Neurachne alopecuroidea*** | 0 | 0 | 0 | |
| | ***Cryptandra sp*** | 0 | 0 | 0 | |
| **Plot 26** | | | | | |
| A | ***x*** | | | | |
| B | ***x*** | | | | |
| C | ***x*** | | | | |
| D | ***x*** | | | | |
| E | ***x*** | | | | |
| **Plot 27** | | | | | |
| A | ***x*** | | | | |
| B | ***x*** | | | | |
| C | ***x*** | | | | |
| D | ***x*** | | | | |
| E | ***x*** | | | | |
| **Plot 28** | | | | | |
| A | ***Maireana brevifolia*** | 2 | 1 | 0.3 | |
| | ***Halosarcia lepidosperma*** | 1 | 2 | 0.5 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| B | ***Halosarcia lepidosperma*** | 5 | 30 | 0.7 | |
| | ***Maireana brevifolia*** | 8 | 3 | 0.5 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Atriplex semibaccata*** | 1 | 1 | 0.1 | |
| | ***Halosarcia indica*** | 1 | 1 | 0.4 | |
| C | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Maireana brevifolia*** | 8 | 2 | 1 | |
| D | ***Halosarcia lepidosperma*** | 2 | 3 | 0.8 | |
| | ***Maireana brevifolia*** | 9 | 3 | 1 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Halosarcia lepidosperma*** | 1 | 5 | 0.7 | |
| | ***Maireana brevifolia*** | 12 | 5 | 1.5 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| **Plot 29** | | | | | |
| A | ***Maireana brevifolia*** | 1 | 1 | 0.3 | |
| B | ***Halosarcia lepidosperma*** | 2 | 2 | 0.4 | |
| | ***Atriplex semibaccata*** | 1 | 1 | 0.1 | New |
| C | ***Halosarcia lepidosperma*** | 4 | 4 | 0.5 | |
| D | ***Halosarcia lepidosperma*** | 1 | 0.5 | 0.2 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| **Plot 30** | | | | | |
| A | ***x*** | | | | |
| B | ***Lomandra rupestris*** | 2 | 5 | 0.4 | |
| C | ***Lomandra rupestris*** | 2 | 5 | 0.6 | |
| D | ***Lomandra rupestris*** | 1 | 2 | 0.4 | |
| E | ***Lomandra rupestris*** | 0 | 0 | 0 | Recently Dead |

| | | | | | |
|---|---|---|---|---|---|
| | ***Austrostipa compressa*** | | 2 | 0.7 | |
| **Plot 31** | | | | | |
| A | ***Lomandra rupestris*** | | | | |
| | ***Neurachne alopecuroidea*** | | | | |
| | ***Austrostipa elegantissima*** | | | | |
| B | ***Lomandra rupestris*** | | | | |
| | ***Neurachne alopecuroidea*** | | | | |
| | ***Dianella revoluta. divaricata*** | | | | |
| C | ***Dianella revoluta. divaricata*** | | | | |
| | ***Lepidobolus preissiana*** | | | | |
| | ***Neurachne alopecuroidea*** | | | | |
| D | ***Lomandra rupestris*** | | | | |
| | ***Neurachne alopecuroidea*** | | | | |
| | ***Austrostipa elegantissima*** | | | | |
| E | ***Lomandra rupestris*** | | | | |
| | ***Neurachne alopecuroidea*** | | | | |
| **Plot 32 (RF1)** | | | | | |
| Whole Plot | ***Halosarcia indica*** | | 15 | 0.3-0.4 | |
| | ***Halosarcia lepidosperma*** | | 30 | 0.4 | |
| | ***Dianella revoluta. divaricata*** | | 1 | 0.3-0.5 | |
| | ***Hakea preissii*** | | 1 | 1.5 | |
| | ***Gahnia trifida*** | | 1 | 0.3 | |
| | ***Lomandra micrantha*** | | 2 | 0.2-0.3 | |
| | ***Carpobrotus sp*** | | 0.5 | 0.1 | New |
| | ***Maireana brevifolia*** | | 0.5 | 0.4 | New |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Plot 33 (RF4)** | | | | | |
| Whole Plot | ***Halosarcia lepidosperma*** | | 5 | 0.5 | |
| | ***Maireana brevifolia*** | 0 | 0 | 0 | Recently Dead |
| | ***Goodenia viscida*** | | 1 | 0.4 | New |
| **Plot 34** | | | | | |
| A | ***Halosarcia lepidosperma*** | 1 | 1 | 0.1 | |
| B | ***Halosarcia lepidosperma*** | | 40 | 0.4 | |
| C | ***Halosarcia lepidosperma*** | | 45 | 0.4 | |
| | ***Halosarcia indica*** | | 2 | 0.5 | |
| D | ***Halosarcia lepidosperma*** | | 15 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Halosarcia lepidosperma*** | | 10 | 0.5 | |
| | ***Atriplex semibaccata*** | | 1 | 0.2 | New |
| **Plot 35** | | | | | |
| A | ***x*** | | | | |
| B | ***Carpobrotus sp.*** | 1 | 0.5 | 0.1 | |
| | ***Halosarcia lepidosperma*** | 1 | 1 | 0.2 | |
| C | ***Carpobrotus sp.*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| | ***Maireana brevifolia*** | 1 | 0.1 | 0.1 | New |
| D | ***Carpobrotus sp.*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Carpobrotus sp.*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia lepidosperma*** | 1 | 0.5 | 0.4 | |
| **Plot 36** | | | | | |
| A | ***Halosarcia lepidosperma*** | | 15 | 0.4 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| B | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | | 1 | 0.1 | New |
| C | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | | 0.5 | 0.15 | |
| D | ***Halosarcia lepidosperma*** | | 2 | 0.2 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | | 3 | 0.4 | |
| | ***Carpobrotus sp.*** | 0 | 0 | 0 | Recently Dead |
| | ***Atriplex semibaccata*** | | 1 | 0.1 | |
| **Plot 37** | | | | | |
| A | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | | 20 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| B | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | | 1 | 0.3 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| C | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | | 5 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| D | ***Halosarcia lepidosperma*** | | 5 | 0.4 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Halosarcia lepidosperma*** | 0 | 0 | 0 | Recently Dead |
| | ***Halosarcia pergranulata*** | | 1 | 0.4 | |

| | | | | | |
|---|---|---|---|---|---|
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| **Plot 38** | | | | | |
| A | ***Halosarcia lepidosperma*** | 1 | 2 | 0.3 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| B | ***Halosarcia lepidosperma*** | 1 | 1 | 0.25 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| C | ***Halosarcia lepidosperma*** | 1 | 1 | 0.3 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| D | ***Halosarcia lepidosperma*** | 0 | 30 | 0.6 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |
| E | ***Halosarcia lepidosperma*** | 2 | 5 | 0.5 | |
| | ***Atriplex semibaccata*** | 0 | 0 | 0 | Recently Dead |

**Plot 3 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 264 | 208 | 317 | 255 | 400 | 316 |
| 4 | 248 | 189 | 298 | 211 | 343 | 261 |
| 8 | 255 | 200 | 241 | 182 | 378 | 319 |
| 12 | 259 | 208 | 218 | 172 | 337 | 284 |
| 16 | 250 | 195 | 258 | 204 | 292 | 251 |
| 20 | 229 | 181 | 282 | 236 | 291 | 248 |

**Plot 4**

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 312 | 212 | 287 | 194 | 283 | 115 |
| 4 | 217 | 116 | 287 | 182 | 288 | 181 |
| 8 | 269 | 178 | 268 | 163 | 264 | 112 |
| 12 | 219 | 116 | 294 | 182 | 260 | 161 |
| 16 | 289 | 113 | 271 | 160 | 246 | 154 |
| 20 | 282 | 166 | 375 | 228 | 240 | 141 |

**Plot 5 - 2006/2007**

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 280 | 185 | 276 | 175 | 253 | 163 |
| 4 | 281 | 159 | 258 | 163 | 295 | 180 |
| 8 | 335 | 197 | 317 | 174 | 271 | 111 |
| 12 | 300 | 231 | 294 | 178 | 257 | 160 |
| 16 | 308 | 197 | 291 | 179 | 257 | 111 |
| 20 | 350 | 231 | 290 | 175 | 275 | 185 |

**Plot 6 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 283 | 174 | 250 | 150 | 266 | 159 |
| 4 | 285 | 173 | 252 | 149 | 248 | 150 |
| 8 | 276 | 168 | 243 | 144 | 237 | 146 |
| 12 | 253 | 149 | 239 | 140 | 250 | 149 |
| 16 | 208 | 125 | 228 | 134 | 255 | 150 |
| 20 | 263 | 152 | 250 | 151 | 269 | 161 |

**Plot 7 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 316 | 220 | 324 | 195 | 288 | 196 |
| 4 | 318 | 218 | 332 | 228 | 286 | 187 |
| 8 | 341 | 230 | 341 | 244 | 306 | 177 |
| 12 | 344 | 233 | 265 | 170 | 261 | 156 |
| 16 | 315 | 193 | 224 | 152 | 239 | 154 |
| 20 | 320 | 196 | 281 | 171 | 245 | 154 |

**Plot 8 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 311 | 197 | 315 | 196 | 289 | 181 |
| 4 | 295 | 179 | 327 | 207 | 310 | 190 |
| 8 | 295 | 179 | 322 | 206 | 307 | 186 |
| 12 | 298 | 189 | 304 | 189 | 286 | 180 |
| 16 | 299 | 183 | 283 | 173 | 280 | 174 |
| 20 | 292 | 181 | 285 | 176 | 279 | 170 |

**Plot 9 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 150 | 131 | 280 | 186 | 236 | 129 |
| 4 | 242 | 154 | 296 | 193 | 241 | 150 |
| 8 | 289 | 188 | 259 | 151 | 255 | 162 |
| 12 | 163 | 169 | 292 | 110 | 269 | 163 |
| 16 | 255 | 150 | 301 | 195 | 291 | 185 |
| 20 | 250 | 174 | 128 | 187 | 253 | 148 |

**Plot 10 - 2006/2007**

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 353 | 253 | 419 | 285 | 399 | 300 |
| 4 | 356 | 254 | 407 | 301 | 405 | 283 |
| 8 | 412 | 293 | 418 | 297 | 441 | 320 |
| 12 | 410 | 292 | 399 | 279 | 441 | 312 |
| 16 | 355 | 271 | 417 | 294 | 434 | 308 |
| 20 | 397 | 290 | 428 | 302 | 437 | 312 |

**Plot 11 - 2006/2007** after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0 | 427 | 303 | 382 | 245 | 323 | 235 |
| 4 | 431 | 309 | 400 | 272 | 338 | 228 |
| 8 | 437 | 322 | 407 | 479 | 372 | 237 |
| 12 | 427 | 285 | 419 | 308 | 397 | 269 |
| 16 | 428 | 310 | 471 | 315 | 411 | 283 |
| 20 | 420 | 292 | 456 | 313 | 451 | 334 |

**Plot 12 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 82 | 46 | 29 | 42 | 52 | 27 |
| 4 | 84 | 42 | 68 | 37 | 48 | 23 |
| 8 | 81 | 43 | 73 | 38 | 46 | 24 |
| 12 | 82 | 45 | 75 | 40 | 42 | 20 |
| 16 | 88 | 44 | 68 | 36 | 39 | 17 |
| 20 | 95 | 53 | 69 | 33 | 40 | 19 |

**Plot 13 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 33 | 19 | 32 | 20 | 31 | 18 |
| 4 | 32 | 20 | 32 | 20 | 30 | 19 |
| 8 | 32 | 19 | 31 | 19 | 31 | 19 |
| 12 | 33 | 20 | 31 | 19 | 30 | 19 |
| 16 | 34 | 21 | 31 | 19 | 30 | 18 |
| 20 | 35 | 22 | 32 | 19 | 31 | 20 |

**Plot 15 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 172 | 131 | 153 | 206 | 178 | |
| 4 | 148 | 106 | 154 | 185 | 135 | |
| 8 | 156 | 102 | 147 | 183 | 130 | |
| 12 | 168 | 116 | 145 | 180 | 132 | |
| 16 | 180 | 130 | 161 | 177 | 130 | |
| 20 | 178 | 126 | 171 | 167 | 120 | |

**Plot 16 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 144 | 103 | 146 | 96 | 161 | 115 |
| 4 | 150 | 112 | 145 | 104 | 183 | 130 |
| 8 | 135 | 83 | 154 | 112 | 176 | 122 |
| 12 | 135 | 92 | 198 | 143 | 174 | 162 |
| 16 | 147 | 109 | 180 | 126 | 175 | 134 |
| 20 | 161 | 118 | 154 | 104 | 188 | 145 |

**Plot 17 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 169 | 120 | 241 | 181 | 172 | 173 |
| 4 | 173 | 119 | 220 | 173 | 240 | 193 |
| 8 | 161 | 106 | 225 | 167 | 190 | 126 |
| 12 | 236 | 172 | 190 | 128 | 171 | 112 |
| 16 | 280 | 252 | 219 | 153 | 218 | 190 |
| 20 | 259 | 263 | 202 | 128 | 192 | 127 |

**Plot 18 - 2006/2007** 100's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 184.8 | 183.4 | 187.7 | 188.5 | 187.9 | 189.3 |
| 4 | 185.3 | 181.5 | 187.6 | 187.7 | 187.8 | 187.8 |
| 8 | 186.3 | 186.9 | 187.9 | 188.1 | 188.2 | 189.1 |
| 12 | 186.8 | 185.8 | 186.9 | 188.4 | 188 | 188.1 |
| 16 | 187 | 185.4 | 186 | 185.2 | 187 | 187.2 |
| 20 | 186.8 | 185.6 | 187 | 186 | 187.7 | 189.2 |

**Plot 19 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 516 | 389 | 528 | 399 | 562 | 490 |
| 4 | 471 | 330 | 555 | 415 | 465 | 315 |
| 8 | 512 | 410 | 507 | 361 | 507 | 349 |
| 12 | 458 | 316 | 467 | 320 | 515 | 408 |
| 16 | 488 | 411 | 460 | 334 | 455 | 356 |
| 20 | 447 | 349 | 457 | 340 | 499 | 394 |

**Plot 20 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 178 | 108 | 177 | 116 | 168 | 132 |
| 4 | 170 | 106 | 163 | 112 | 156 | 114 |
| 8 | 174 | 134 | 165 | 116 | 162 | 110 |
| 12 | 164 | 119 | 178 | 120 | 169 | 121 |
| 16 | 191 | 168 | 170 | 99 | 180 | 142 |
| 20 | 199 | 169 | 194 | 168 | 187 | 130 |

**Plot 21 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |

| (m) | | | | | | |
|---|---|---|---|---|---|---|
| 0 | 538 | 723 | 746 | 946 | 728 | 945 |
| 4 | 621 | 729 | 684 | 876 | 715 | 878 |
| 8 | 639 | 799 | 612 | 772 | 911 | 902 |
| 12 | 701 | 922 | 727 | 731 | 810 | 1011 |
| 16 | 744 | 1053 | 604 | 859 | 796 | 1016 |
| 20 | 1005 | 1251 | 899 | 950 | 1000 | 1159 |

**Plot 22 - 2006/2007** 1000's-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 981 | 867 | 827 | 935 | 750 | 810 |
| 4 | 845 | 860 | 890 | 948 | 663 | 851 |
| 8 | 806 | 833 | 697 | 790 | 733 | 940 |
| 12 | 761 | 811 | 717 | 752 | 696 | 788 |
| 16 | 690 | 692 | 740 | 755 | 655 | 716 |
| 20 | 701 | 728 | 815 | 873 | 775 | 909 |

**Plot 23 - 2006/2007** NB: subplots run E-W instead of N-S, thus reading were taken from NW (0,0) to SW (0,20). Calibration site at (10,0). 1000's

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 213 | 146 | 165 | 111 | 194 | 129 |
| 4 | 209 | 150 | 175 | 121 | 211 | 148 |
| 8 | 232 | 175 | 228 | 160 | 224 | 160 |
| 12 | 249 | 181 | 236 | 165 | 214 | 150 |
| 16 | 249 | 193 | 235 | 187 | 235 | 169 |
| 20 | 278 | 151 | 224 | 147 | 222 | 162 |

**Plot 24 - 2006/2007** NB: tagged on the NE post. 1000's

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 190 | 121 | 167 | 111 | 143 | 87 |
| 4 | 179 | 122 | 190 | 137 | 198 | 111 |
| 8 | 159 | 103 | 201 | 128 | 210 | 140 |
| 12 | 152 | 97 | 205 | 136 | 195 | 128 |
| 16 | 149 | 89 | 224 | 137 | 177 | 115 |
| 20 | 175 | 103 | 202 | 121 | 161 | 105 |

**Plot 25 - 2006/2007** 1000's

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 165 | 103 | 138 | 104 | 146 | 102 |
| 4 | 154 | 100 | 155 | 103 | 164 | 115 |
| 8 | 168 | 118 | 163 | 125 | 165 | 114 |
| 12 | 166 | 110 | 150 | 103 | 163 | 113 |
| 16 | 169 | 120 | 137 | 109 | 152 | 106 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | 180 | 121 | 167 | 108 | 169 | 118 |

**Plot 26 - 2006/2007** NB: x100 range used on EM38

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 90 | 51 | 86 | 49 | 81 | 46 |
| 4 | 96 | 54 | 92 | 53 | 84 | 48 |
| 8 | 95 | 56 | 100 | 58 | 88 | 49 |
| 12 | 98 | 57 | 110 | 63 | 98 | 57 |
| 16 | 120 | 70 | 120 | 72 | 109 | 62 |
| 20 | 126 | 77 | 116 | 70 | 117 | 67 |

**Plot 27 - 2006/2007** 31/1/07 1000's

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 106 | 65 | 134 | 89 | 130 | 79 |
| 4 | 112 | 69 | 131 | 86 | 121 | 75 |
| 8 | 116 | 72 | 132 | 81 | 127 | 75 |
| 12 | 113 | 75 | 146 | 95 | 136 | 86 |
| 16 | 116 | 73 | 139 | 88 | 131 | 81 |
| 20 | 115 | 68 | 130 | 79 | 123 | 73 |

**Plot 28 - 2006/2007** 1/02/2007 1000's

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 245 | 152 | 241 | 146 | 257 | 164 |
| 4 | 272 | 176 | 270 | 182 | 269 | 172 |
| 8 | 288 | 196 | 297 | 183 | 280 | 188 |
| 12 | 278 | 192 | 307 | 217 | 305 | 208 |
| 16 | 300 | 217 | 282 | 182 | 308 | 209 |
| 20 | 309 | 203 | 330 | 233 | 313 | 215 |

**Plot 29 - 2006/2007** 1/02/2007 1000's

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 408 | 282 | 385 | 262 | 404 | 268 |
| 4 | 429 | 289 | 387 | 266 | 384 | 262 |
| 8 | 397 | 276 | 366 | 258 | 376 | 269 |
| 12 | 421 | 294 | 386 | 260 | 393 | 271 |
| 16 | 428 | 305 | 384 | 271 | 394 | 271 |
| 20 | 401 | 269 | 396 | 213 | 378 | 272 |

**Plot 30 - 2006/2007** NB: x100 range used on EM38

| EM38 | Distance Across (m) | | |
|---|---|---|---|
| | 0 | 10 | 20 |

| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
|---|---|---|---|---|---|---|
| 0 | 7.1 | 3.1 | 9 | 2.7 | 14.2 | 6.2 |
| 4 | 6.2 | 2.4 | 8.5 | 2.5 | 12.7 | 4.4 |
| 8 | 4.6 | 1.5 | 8.1 | 1.3 | 12.6 | 4.2 |
| 12 | 4.8 | 1.4 | 7 | 2.4 | 12 | 5.9 |
| 16 | 4.8 | 1.5 | 6.4 | 0.5 | 11.1 | 5.4 |
| 20 | 4.7 | 1 | 5.3 | 0.7 | 10.4 | 5.2 |

**Plot 32 (RF1) - 2006/2007** 100-after rain

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 150.1 | 94.1 | 85.2 | 53.4 | 74.3 | 47.3 |
| 4 | 160.3 | 112.8 | 123.6 | 77.3 | 89.5 | 55.8 |
| 8 | 174.3 | 132.1 | 165.7 | 107.4 | 115.9 | 76.5 |
| 12 | 180.7 | 162.3 | 179.2 | 144.7 | 174.1 | 121.8 |
| 16 | 182.6 | 172 | 182.2 | 163.9 | 184.9 | 163 |
| 20 | 184.8 | 182.5 | 185.2 | 181.6 | 184.8 | 180.1 |
| 24 | 185.7 | 186 | 186.5 | 186.6 | 186.4 | 185.3 |
| 28 | 185.8 | 185.5 | 186.9 | 181.9 | 187 | 188.3 |
| 33 | 183.6 | 179.8 | 184.3 | 180.4 | 186.1 | 188.6 |
| 37 | 184.4 | 180 | 186.1 | 185.9 | 186.8 | 187.1 |
| 41 | 184.7 | 179.6 | 185.4 | 183 | 187.5 | 186.7 |
| 45 | 167.2 | 123.8 | 176.7 | 146 | 185.8 | 183.7 |
| 49 | 145.1 | 101.4 | 154.8 | 106.5 | 179.4 | 150.6 |
| 53 | 120.7 | 78.1 | 129.2 | 86.7 | 178.8 | 149.2 |
| 57 | 99.3 | 63.4 | 96.5 | 62.3 | 119.1 | 128.8 |
| 61 | 87.5 | 55.1 | 88.4 | 57.3 | 95.6 | 62.3 |
| 65 | 90.3 | 54.7 | 85.5 | 54.9 | 88.5 | 57.5 |

**Plot 33 (RF4) - 2006/2007**

NB: (0,0) is at NW post, (40,0) is at NE post; (20,0) is at SW post and (20,40) is at SE post.

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 260 | 195 | 152 | 100 | 157 | 95 |
| 4 | 225 | 161 | 212 | 157 | 161 | 95 |
| 8 | 251 | 159 | 188 | 131 | 152 | 94 |
| 12 | 300 | 221 | 210 | 22 | 135 | 84 |
| 16 | 279 | 200 | 198 | 145 | 153 | 93 |
| 20 | 234 | 157 | 214 | 151 | 189 | 118 |
| 24 | 238 | 175 | 206 | 131 | 203 | 114 |
| 28 | 235 | 157 | 245 | 170 | 302 | 207 |
| 32 | 187 | 120 | 224 | 171 | 283 | 200 |
| 36 | 191 | 128 | 252 | 145 | 312 | 238 |
| 40 | 215 | 142 | 280 | 201 | 274 | 213 |

**Plot 34 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0 | 405 | 282 | 268 | 252 | 401 | 283 |
| 4 | 349 | 266 | 434 | 274 | 402 | 290 |
| 8 | 380 | 271 | 401 | 267 | 287 | 210 |
| 12 | 372 | 280 | 365 | 255 | 357 | 246 |
| 16 | 366 | 271 | 353 | 257 | 344 | 246 |
| 20 | 354 | 261 | 349 | 266 | 379 | 255 |

**Plot 35** 1/02/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 302 | 214 | 292 | 206 | 279 | 200 |
| 4 | 286 | 205 | 261 | 188 | 256 | 184 |
| 8 | 285 | 210 | 247 | 172 | 267 | 190 |
| 12 | 288 | 213 | 241 | 169 | 263 | 183 |
| 16 | 293 | 226 | 244 | 174 | 261 | 187 |
| 20 | 291 | 208 | 242 | 174 | 260 | 181 |

**Plot 36 - 2006/2007** 1/02/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 407 | 275 | 360 | 238 | 447 | 310 |
| 4 | 447 | 297 | 322 | 223 | 395 | 272 |
| 8 | 448 | 298 | 322 | 210 | 256 | 227 |
| 12 | 459 | 341 | 296 | 196 | 346 | 233 |
| 16 | 485 | 337 | 352 | 240 | 321 | 218 |
| 20 | 423 | 276 | 325 | 225 | 342 | 221 |

**Plot 37 - 2006/2007** 1/02/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 386 | 256 | 471 | 309 | 471 | 298 |
| 4 | 441 | 290 | 472 | 340 | 414 | 269 |
| 8 | 501 | 293 | 393 | 246 | 364 | 237 |
| 12 | 391 | 262 | 423 | 275 | 327 | 205 |
| 16 | 383 | 263 | 385 | 250 | 317 | 200 |
| 20 | 366 | 221 | 353 | 225 | 337 | 220 |

**Plot 38 - 2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 401 | 298 | 355 | 252 | 262 | 191 |
| 4 | 402 | 297 | 318 | 247 | 273 | 196 |
| 8 | 325 | 252 | 303 | 225 | 314 | 231 |
| 12 | 321 | 237 | 285 | 215 | 287 | 214 |
| 16 | 348 | 256 | 273 | 194 | 317 | 221 |
| 20 | 324 | 232 | 290 | 213 | 459 | 311 |

**Plot T42 ( seedling plot)2006/2007** 30/01/2007

| EM38 | Distance Across (m) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | | 10 | | 20 | |
| Distance (m) | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| 0 | 220 | 153 | 275 | 197 | 245 | 169 |
| 4 | 206 | 135 | 187 | 125 | 248 | 162 |
| 8 | 212 | 152 | 180 | 117 | 239 | 197 |
| 12 | 269 | 188 | 223 | 148 | 206 | 145 |
| 16 | 306 | 199 | 309 | 205 | 245 | 174 |
| 20 | 279 | 171 | 300 | 190 | 321 | 207 |

| Plot 39 | 2006/2007 | | | |
|---|---|---|---|---|
| Distance (m) | Seedling # | Height (M) | EM38 (V) | EM38 (H) |
| 0-5 | 2 | 2.0-3.0 | 140 | 87 |
| 5-10 | 6 | 1.7-4.0 | 130 | 81 |
| 10-15 | 19 | 1.0-4.0 | 112 | 66 |
| 15-20 | 17 | 0.5-4.5 | 111 | 71 |
| 20-25 | 18 | 1.0-4.0 | 116 | 68 |
| 25-30 | 10 | 0.5-4.0 | 132 | 86 |
| 30-35 | 3 | 0.5-1.5 | 145 | 84 |
| 35-40 | 18 | 1.0-3.0 | 143 | 87 |
| 40-45 | 30 | 0.3-3.0 | 159 | 96 |
| 45-50 | 6 | 0.5-2.5 | 210 | 127 |
| 50-55 | 0 | 0 | 149 | 88 |
| 55-60 | 0 | 0 | 148 | 89 |
| 60-65 | 1 | 0.5 | 143 | 87 |
| 65-70 | 0 | 0 | 123 | 67 |
| 70-75 | 1 | 1 | 123 | 73 |
| 75-80 | 2 | 0.5-1.0 | 157 | 103 |
| 80-85 | 8 | 0.5-2.5 | 172 | 104 |
| 85-90 | 2 | 0.5 | 176 | 130 |
| 90-95 | 0 | 0 | 138 | 85 |
| 95-100 | 2 | 0.5 | 130 | 84 |

| Plot 40 | 2006/2007 | | | |
|---|---|---|---|---|
| Distance (m) | Seedling # | Height (M) | EM38 (V) | EM38 (H) |
| 0-5 | 50 | 1.0-3.5 | 177 | 125 |
| 5-10 | 96 | 0.5-5.3 | 133 | 84 |
| 10-15 | 210 | 0.3-6.4 | 134 | 82 |
| 15-20 | 62 | 0.2-2.5 | 126 | 76 |
| 20-25 | 25 | 0.2-2.1 | 126 | 84 |
| 25-30 | 120 | 0.2-2.0 | 117 | 71 |
| 30-35 | 37 | 0.3-1.6 | 121 | 78 |
| 35-40 | 16 | 0.2-0.7 | 123 | 76 |
| 40-45 | 16 | 0.1-1.0 | 133 | 83 |
| 45-50 | 12 | 0.1-0.5 | 145 | 89 |
| 50-55 | 22 | 0.2-1.1 | 137 | 86 |
| 55-60 | 3 | 0.1-0.7 | 131 | 82 |
| 60-65 | 111 | 0.2-2.8 | 122 | 77 |
| 65-70 | 102 | 0.2-3.6 | 104 | 64 |
| 70-75 | 60 | 0.5-4.0 | 93 | 57 |
| 75-80 | 80 | 0.5-4.0 | 107 | 67 |
| 80-85 | 60 | 0.5-3.1 | 115 | 73 |
| 85-90 | 47 | 0.8-2.8 | 131 | 88 |
| 90-95 | 34 | 0.1-2.2 | 169 | 110 |
| 95-100 | 29 | 0.5-2.3 | 184 | 125 |

| **Plot 41** | **2006/2007** | | | |
|---|---|---|---|---|
| **Distance (m)** | **Seedling #** | **Height (M)** | **EM38 (V)** | **EM38 (H)** |
| 0-5 | 8 | 1.5-3.0 | 118 | 75 |
| 5-10 | 16 | 0.5-5.7 | 91 | 60 |
| 10-15 | 33 | 0.5-5.0 | 110 | 73 |
| 15-20 | 32 | 0.75-5.2 | 96 | 58 |
| 20-25 | 40 | 0.7-4.2 | 100 | 59 |
| 25-30 | 80 | 0.5-4.5 | 108 | 67 |
| 30-35 | 75 | 0.5-3.75 | 107 | 59 |
| 35-40 | 105 | 0.5-3.7 | 101 | 56 |
| 40-45 | 210 | 0.3-3.0 | 105 | 65 |
| 45-50 | 120 | 0.4-3.2 | 109 | 68 |
| 50-55 | 175 | 0.5-3.0 | 129 | 77 |
| 55-60 | 290 | 0.5-3.0 | 137 | 85 |
| 60-65 | 410 | 0.4-2.75 | 131 | 82 |
| 65-70 | 425 | 0.3-2.5 | 148 | 90 |
| 70-75 | 300 | 0.3-2.0 | 180 | 113 |
| 75-80 | 237 | 0.5-1.75 | 166 | 102 |
| 80-85 | 100 | 0.4-2.25 | 160 | 99 |
| 85-90 | 40 | 0.5-1.5 | 176 | 104 |
| 90-95 | 14 | 0.7-1.75 | 208 | 121 |
| 95-100 | 9 | 0.5-2.0 | 294 | 197 |

# Appendix Six: Percentage Cover

**Vegetation Monitoring of Toolibin Lake and Reserves**

| Plot | *C obesa* | *M strobophylla* | *B prionotes* | *A huegeliana* | *E loxophleba* | *M lateriflora* | *M acuminata* | *A acuminata* | *J furcellata* | *E salmonophloia* | *E wandoo* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3** | 2 | | | | | | | | | | |
| **4** | 10 | 0 | | | | | | | | | |
| **5** | 20 | 1 | | | | | | | | | |
| **6** | | | | | | | | | | | |
| **7** | 15 | | | | | | | | | | |
| **8** | | | | | | | | | | | |
| **9** | 50 | 0 | | | | | | | | | |
| **10** | 10 | 2 | | | | | | | | | |
| **11** | 10 | | | | | | | | | | |
| **12** | | | | 1 | 30 | | | 15 | | | |
| **13** | | | 1 | 5 | | | | | 1 | | |
| **15** | | | | | | | | | | 5 | 5 |
| **16** | | | | | | | | | | 5 | 5 |
| **17** | | | | | | | 20 | | | | |
| **18** | | | | | | | 15 | | | | |
| **19** | | | | | | 45 | | | | | |
| **20** | | | | | | | 25 | | | | |
| **21** | 0 | 0 | | | | | | | | | |
| **22** | 0 | 0 | | | | | | | | | |
| **23** | | 1 | | | 3 | 10 | 40 | | | | |
| **24** | | | | | 1 | 40 | 30 | | | | 1 |
| **25** | | | | | | | 60 | | | | 2 |
| **26** | 1 | | | | | | | 15 | | | |
| **27** | 5 | | | | | | | | | | |
| **28** | 20 | | | | | | | | | | |
| **29** | 6 | | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **30** | | | 1 | 1 | | | | | | | |
| **32** | 7 | 1 | | 1 | 5 | 1 | | 1 | | | |
| **33** | 5 | | | | | | | | | | |
| **34** | 30 | | | | | | | | | | |
| **35** | 30 | | | | | | | | | | |
| **36** | | 1 | | | | | | | | | |
| **37** | 7 | | | | | | | | | | |
| **38** | 20 | | | | | | | | | | |