

Broadcast Australia

Broadcast Australia (formerly the National Transmission Authority) contains areas of secondary grassland derived from Box-Gum woodland, and potentially Lowland Natural temperate Grassland at lower elevations within the site. Both plots surveyed on site are within the secondary grassland. The overall site condition is considered stable, with a slight increase in the mean floristic value, native species richness, and indicator species since 2009. Kangaroo densities have increased to 1.73 kangaroos per ha., up from 1.44 in 2009.

Trends in overall site condition between 2009 and 2012 are as follows:

Mean floristic value score: **+4 (+15%)**

25% increase to 25% decline (stable) in condition

Native species richness: **-3.5**

Exotic species richness: **+1**

Indicator spp. level 1: **-0.5**

Indicator spp. level 2: **-2.5**



Changes in key floristic indicators are shown in Table 9, with all indicators suggesting a stable system.

Table 9: Mean condition of Broadcast Australia from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009	1.44	31.5	27	12	2	12.5
2012	1.73	27.5	23.5	13	1.5	10

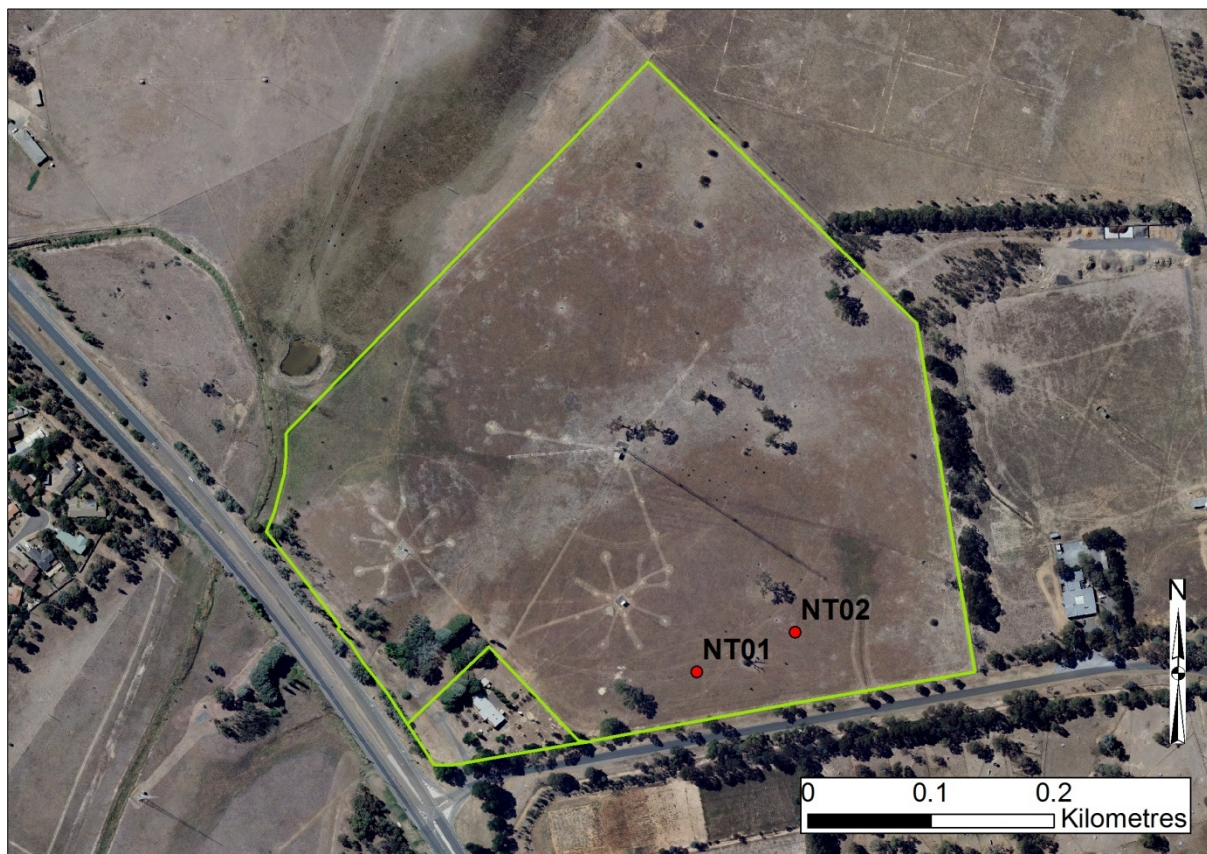


Figure 12: Map and plot locations: Broadcast Australia.

Plot NT01: Secondary grassland

2009



Floristic value score: 36
Native species richness: 29
Exotic species richness: 10
Indicator spp. level 1: 2
Indicator spp. level 2: 14

2012



Floristic value score: 27
Native species richness: 23
Exotic species richness: 11
Indicator spp. level 1: 1
Indicator spp. level 2: 10

Changes between 2009 – 2012

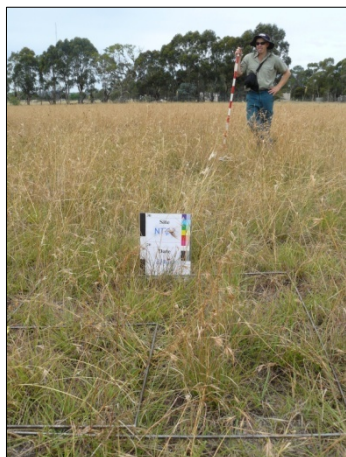
Floristic value score: -9 (-25%)
Native species richness: -6
Exotic species richness: +1
Indicator spp. level 1: -1
Indicator spp. level 2: -4



25 – 50% decline in condition

Plot NT02: Secondary grassland

2009



Floristic value score: 27
Native species richness: 25
Exotic species richness: 14
Indicator spp. level 1: 2
Indicator spp. level 2: 11

2012



Floristic value score: 28
Native species richness: 24
Exotic species richness: 15
Indicator spp. level 1: 2
Indicator spp. level 2: 10

Changes between 2009 – 2012

Floristic value score: +1 (+4%)
Native species richness: -1
Exotic species richness: +1
Indicator spp. level 1: stable
Indicator spp. level 2: -1



25% increase to 25% decline
(stable) in condition

Callum Brae NR

Callum Brae NR is characterised by Yellow Box – Blakely's Red Gum woodland, primarily dominated by *Eucalyptus blakelyi*, *E. melliodora*, and occasionally *E. polyanthemos*, *E. rossii* and *E. dives* with a grassy understorey. The overall site condition has increased significantly, with an increase in the mean floristic value, native species richness, and indicator species since 2009. Kangaroo densities have decreased to one kangaroo per ha., down from 2.05 in 2009.

Trends in overall site condition between 2009 and 2012 are as follows:

Mean floristic value score: **+11.3 (+64%)**

50 – 100% increase in condition

Native species richness: **+9**

Exotic species richness: **+3.7**

Indicator spp. level 1: **+1**

Indicator spp. level 2: **+3.4**



Changes in key floristic indicators are shown in Table 10, with all indicators suggesting an increase in condition. Exotic species richness has also increased, however this may be insignificant considering recent favourable conditions for exotic species.

Table 10: Mean condition of Callum Brae NR from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009	2.05	17.7	20.7	16	2	6.3
2012	1.00	29.0	29.7	19.7	3	9.7

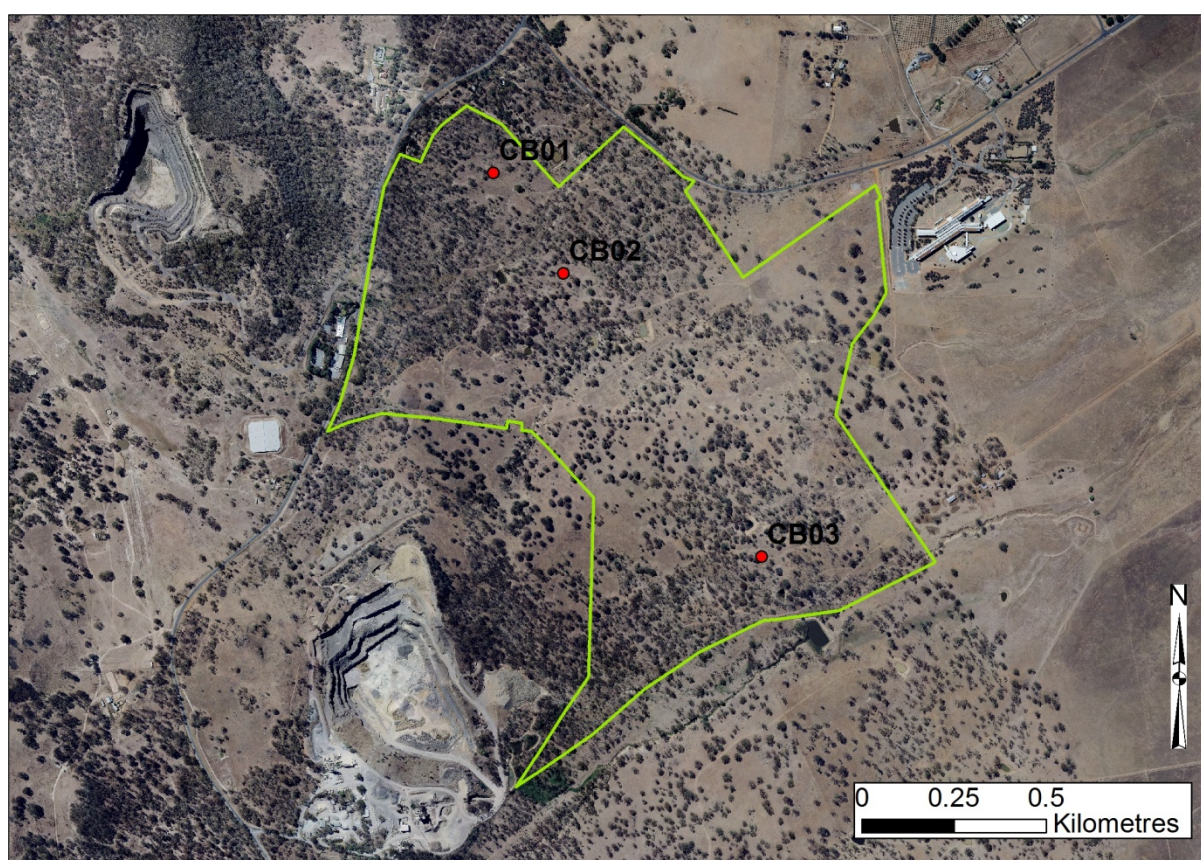


Figure 13: Map and plot locations: Callum Brae NR.

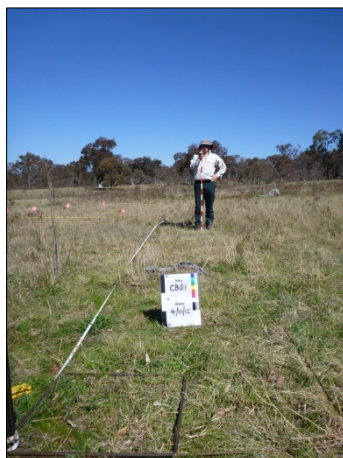
Plot CB01: Box-Gum woodland

2009



Floristic value score: 15
Native species richness: 19
Exotic species richness: 20
Indicator spp. level 1: 2
Indicator spp. level 2: 5

2012



Floristic value score: 23
Native species richness: 23
Exotic species richness: 16
Indicator spp. level 1: 3
Indicator spp. level 2: 7

Changes between 2009 – 2012

Floristic value score: +8 (+53%)
Native species richness: +4
Exotic species richness: -4
Indicator spp. level 1: +1
Indicator spp. level 2: +2



50 – 100% increase in condition

Plot CB02: Box-Gum woodland

2009



Floristic value score: 16
Native species richness: 23
Exotic species richness: 13
Indicator spp. level 1: 2
Indicator spp. level 2: 6

2012



Floristic value score: 35
Native species richness: 34
Exotic species richness: 20
Indicator spp. level 1: 3
Indicator spp. level 2: 12

Changes between 2009 – 2012

Floristic value score: +19
(+119%)
Native species richness: +11
Exotic species richness: +7
Indicator spp. level 1: +1
Indicator spp. level 2: +6



≥100% increase in condition

Plot CB03: Box-Gum woodland

2009



Floristic value score: 22
Native species richness: 20
Exotic species richness: 15
Indicator spp. level 1: 2
Indicator spp. level 2: 8

2012



Floristic value score: 29
Native species richness: 32
Exotic species richness: 23
Indicator spp. level 1: 3
Indicator spp. level 2: 10

Changes between 2009 – 2012

Floristic value score: +7 (+32%)
Native species richness: +12
Exotic species richness: +8
Indicator spp. level 1: +4
Indicator spp. level 2: +2



25 – 50% increase in condition

Campbell Park

Campbell Park is characterised by areas of lowland Natural temperate Grassland, an intermediate zone of secondary grassland, and Yellow Box – Blakely's Red Gum woodland above the cold air drainage lines. Data was collected at this site in 2012 only, so vegetation condition trends are not able to be predicted at this stage.

Key floristic indicators for 2012 are shown in Table 11.

Table 11: Mean condition of Campbell Park from 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2012	1.53	20.7	23.7	15	3	9.7

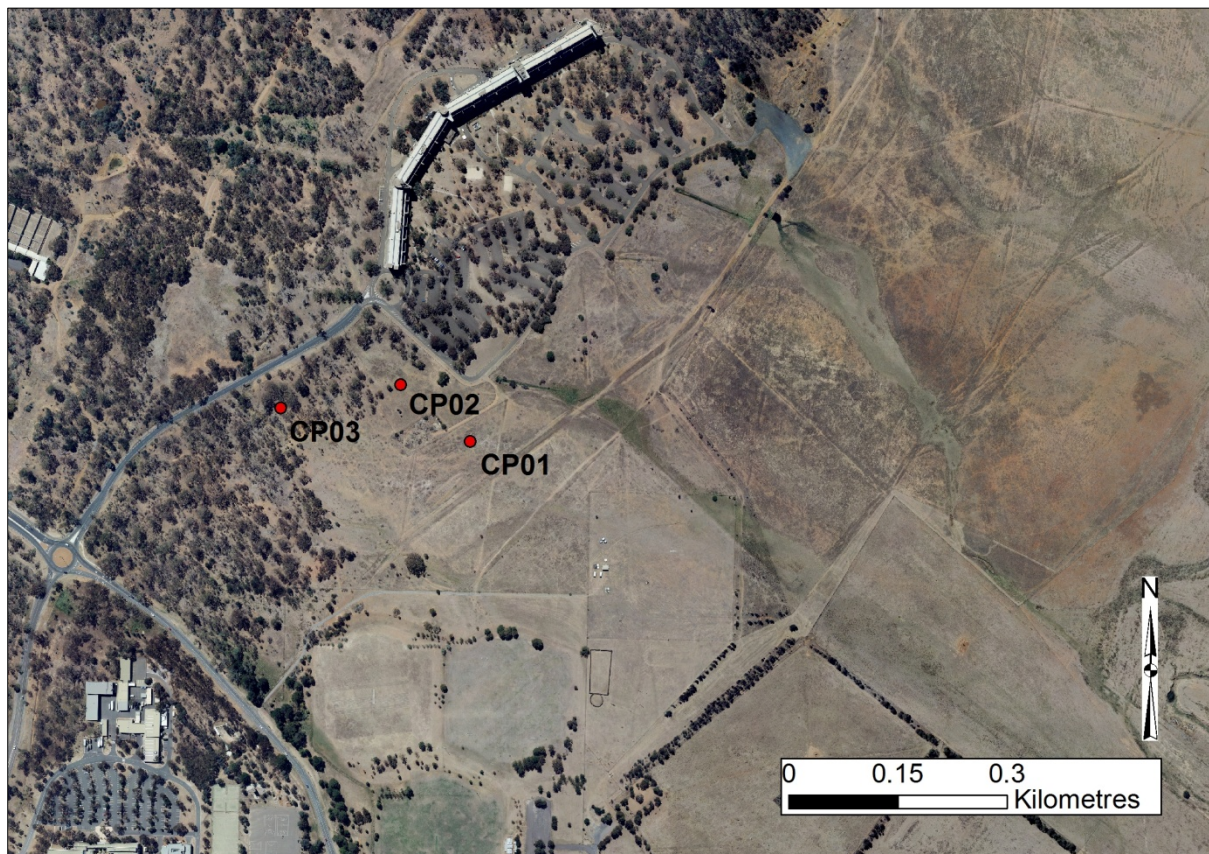


Figure 14: Map and plot locations: Campbell Park.

Plot CP01: <i>Austrostipa</i> – <i>Rytidosperma</i> grassland	Plot CP02: <i>Austrostipa</i> – <i>Rytidosperma</i> grassland	Plot CP03: Box-Gum woodland
2012  <i>Floristic value score: 17</i> <i>Native species richness: 17</i> <i>Exotic species richness: 18</i> <i>Indicator spp. level 1: 2</i> <i>Indicator spp. level 2: 5</i>	2012  <i>Floristic value score: 29</i> <i>Native species richness: 28</i> <i>Exotic species richness: 14</i> <i>Indicator spp. level 1: 3</i> <i>Indicator spp. level 2: 10</i>	2012  <i>Floristic value score: 16</i> <i>Native species richness: 26</i> <i>Exotic species richness: 13</i> <i>Indicator spp. level 1: 3</i> <i>Indicator spp. level 2: 5</i>

Crace NR

Crace NR is characterised by Lowland Natural Temperate Grassland, containing a mosaic of *Austrostipa* – *Rytidosperma* grassland and *Themeda* grassland. The overall site condition remains stable, with a slight increase in the mean floristic value, native species richness, and indicator species since 2009. Kangaroo densities have decreased to 0.70 kangaroo per ha., down from 1.40 in 2009.

Trends in overall site condition between 2009 and 2012 are as follows:

Mean floristic value score: **+2.5 (+8%)**

25% increase to 25% decline (stable) in condition

Native species richness: **+5.5**

Exotic species richness: **+4.5**

Indicator spp. level 1: **+0.5**

Indicator spp. level 2: **+3.4**



Changes in key floristic indicators are shown in Table 12, with all indicators suggesting an increase in condition. Exotic species richness has also increased, however this may be insignificant considering recent favourable conditions for exotic species.

Table 12: Mean condition of Crace NR from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009	1.40	33	29	11.5	3	13.5
2012	0.70	30.5	23.5	7	2.5	10

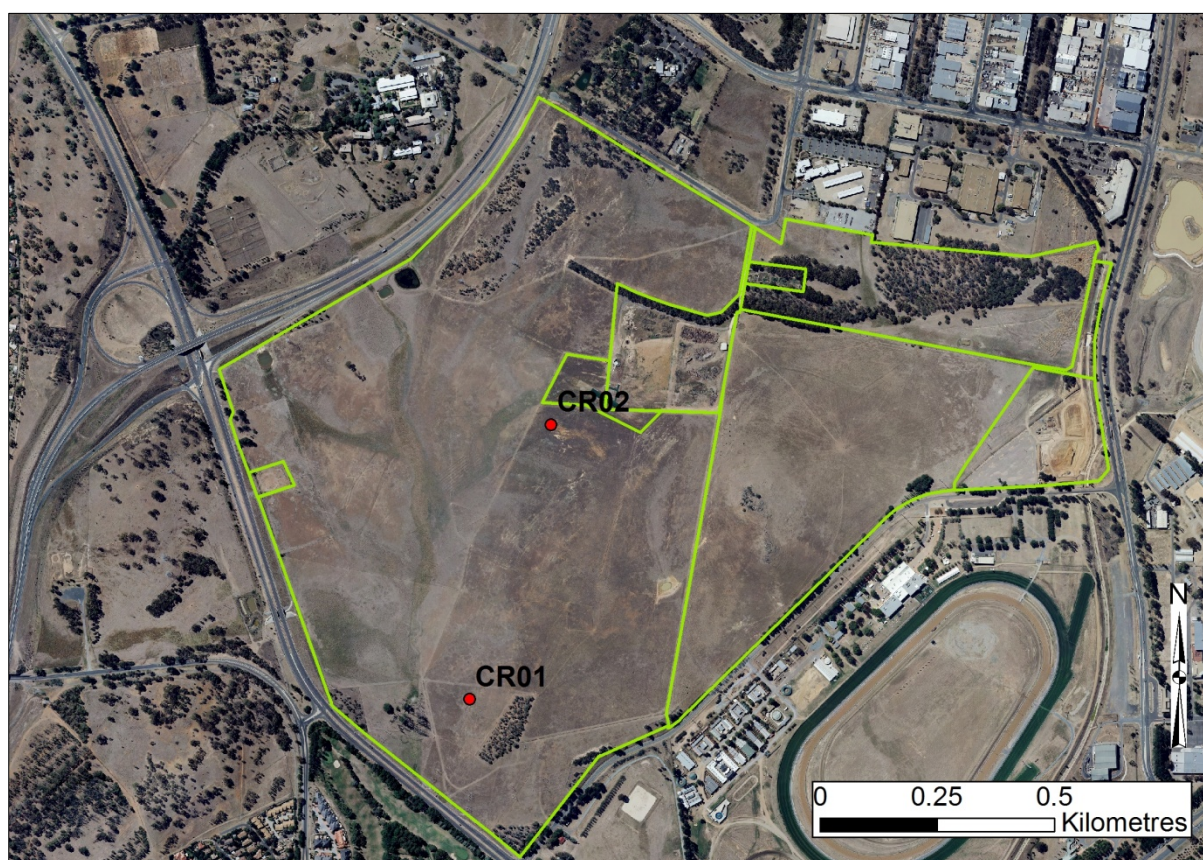


Figure 15: Map and plot locations: Crace NR.

Plot CR01: *Themeda* grassland

2009



Floristic value score: 27
Native species richness: 20
Exotic species richness: 6
Indicator spp. level 1: 2
Indicator spp. level 2: 9

2012



Floristic value score: 26
Native species richness: 28
Exotic species richness: 15
Indicator spp. level 1: 3
Indicator spp. level 2: 11

Changes between 2009 – 2012

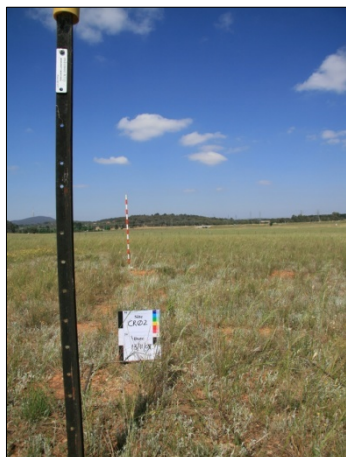
Floristic value score: -1 (-4%)
Native species richness: +8
Exotic species richness: +9
Indicator spp. level 1: +1
Indicator spp. level 2: +2



25% increase to 25% decline
(stable) in condition

Plot CR02: *Austrostipa* – *Rytidosperma* grassland

2009



Floristic value score: 34
Native species richness: 27
Exotic species richness: 8
Indicator spp. level 1: 3
Indicator spp. level 2: 11

2012



Floristic value score: 40
Native species richness: 30
Exotic species richness: 8
Indicator spp. level 1: 3
Indicator spp. level 2: 16

Changes between 2009 – 2012

Floristic value score: +6 (+18%)
Native species richness: +3
Exotic species richness: stable
Indicator spp. level 1: stable
Indicator spp. level 2: +5



25% increase to 25% decline
(stable) in condition

Dunlop NR

Dunlop NR is dominated by Lowland Natural Temperate Grassland, containing a mosaic of *Austrostipa* – *Rytidosperma* grassland and *Themeda* grassland. A small patch of Box-Gum woodland is present in the south of the reserve. The overall site condition is considered stable, with an increase in the mean floristic value, native species richness, and indicator species since 2009. Kangaroo densities have remained stable from 0.60 kangaroos per hectare in 2009 to 0.58 kangaroos per hectare in 2012.

Trends in overall site condition between 2009 and 2012 are as follows:

Mean floristic value score: **+5 (+45%)**

25 – 50% increase in condition

Native species richness: **+5.5**

Exotic species richness: **+6.2**

Indicator spp. level 1: **+1.8**

Indicator spp. level 2: **+1.3**



Changes in key floristic indicators are shown in Table 13, with all indicators suggesting minor improvements in condition. Exotic species richness has increased, however this may be insignificant considering recent favourable conditions for exotic species.

Table 13: Mean condition of Dunlop NR from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009	0.60	11	15.3	11.8	1.5	3.5
2012	0.58	16	20.8	18	3.3	4.8

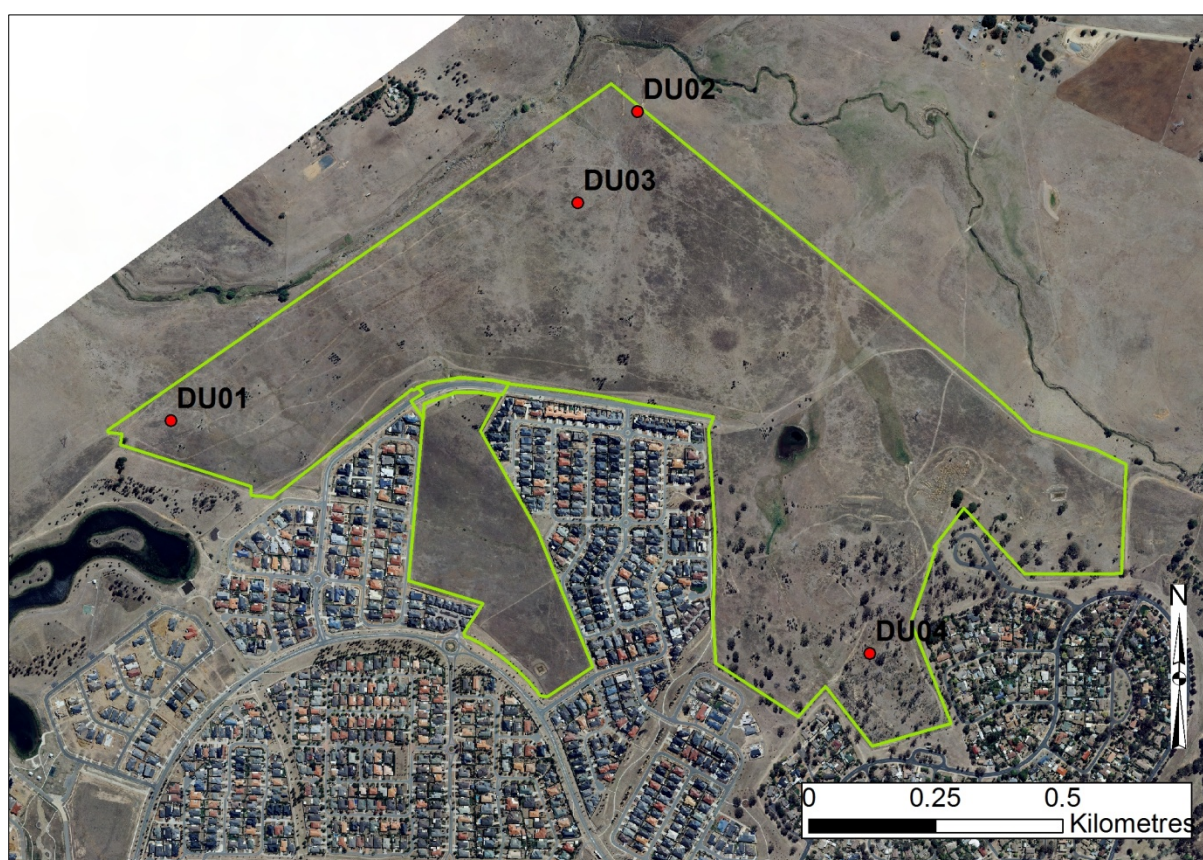


Figure 16: Map and plot locations: Dunlop NR.

Plot DU01: *Austrostipa* – *Rytidosperma* grassland

2009



Floristic value score: 8
Native species richness: 14
Exotic species richness: 12
Indicator spp. level 1: 2
Indicator spp. level 2: 2

2012



Floristic value score: 14
Native species richness: 17
Exotic species richness: 18
Indicator spp. level 1: 3
Indicator spp. level 2: 4

Changes between 2009 – 2012

Floristic value score: +6 (+75%)
Native species richness: +3
Exotic species richness: +6
Indicator spp. level 1: +1
Indicator spp. level 2: +2



50 – 100% increase in condition

Plot DU02: *Themeda* grassland

2009



Floristic value score: 14
Native species richness: 18
Exotic species richness: 11
Indicator spp. level 1: 2
Indicator spp. level 2: 4

2012



Floristic value score: 27
Native species richness: 23
Exotic species richness: 15
Indicator spp. level 1: 3
Indicator spp. level 2: 8

Changes between 2009 – 2012

Floristic value score: +13 (+93%)
Native species richness: +5
Exotic species richness: +4
Indicator spp. level 1: +1
Indicator spp. level 2: +4



50 – 100% increase in condition

Note: Plot DU02 was slightly moved and re-marked due to removal of 2009 monitoring posts.

Plot DU03: *Austrostipa* – *Rytidosperma* grassland

2009



Floristic value score: 10
Native species richness: 11
Exotic species richness: 12
Indicator spp. level 1: 1
Indicator spp. level 2: 3

2012



Floristic value score: 9
Native species richness: 22
Exotic species richness: 20
Indicator spp. level 1: 4
Indicator spp. level 2: 2

Changes between 2009 – 2012

Floristic value score: -1 (-10%)
Native species richness: +11
Exotic species richness: +8
Indicator spp. level 1: +3
Indicator spp. level 2: -1



25% decline to 25% increase
(stable) in condition

Note: Plot DU03 was slightly moved and re-marked due to removal of 2009 monitoring posts.

Plot DU04: Box-Gum woodland

2009



Floristic value score: 12
Native species richness: 18
Exotic species richness: 12
Indicator spp. level 1: 1
Indicator spp. level 2: 5

2012



Floristic value score: 14
Native species richness: 21
Exotic species richness: 19
Indicator spp. level 1: 3
Indicator spp. level 2: 5

Changes between 2009 – 2012

Floristic value score: +2 (+17%)
Native species richness: +3
Exotic species richness: +7
Indicator spp. level 1: +2
Indicator spp. level 2: stable



25% decline to 25% increase
(stable) in condition

Note: Plot DU04 was slightly moved and re-marked due to removal of 2009 monitoring posts.

Googong Foreshores

The western side of Googong Foreshores is characterised by a mosaic of secondary grassland, Box-Gum woodland, Dry shrubby Box woodland and small patches of *Poa labillardierei* dominated Lowland Natural Temperate Grassland. All plots within the Googong Foreshores site are secondary grassland. The overall site condition within these secondary grasslands is considered stable, with a slight decrease increase in the mean floristic value and indicator species, and an increase in native species richness since 2009. Kangaroo densities have increased to 3.40 kangaroos per ha., up from 2.15 in 2009.

Trends in overall site condition between 2009 and 2012 are as follows:

Mean floristic value score: **- 2.4 (-9%)**

25% increase to 25% decline (stable) in condition

Native species richness: **+8.2**

Exotic species richness: **+2.8**

Indicator spp. level 1: **-0.2**

Indicator spp. level 2: **stable**



Changes in key floristic indicators are shown in Table 14, with all indicators suggesting a stable system. Native species richness has increased, however these are primarily common species.

Table 14: Mean condition of Googong Foreshores from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009	2.15	28.2	28.2	12	3.2	9.2
2012	3.40	25.8	36.4	14.8	3	9.2

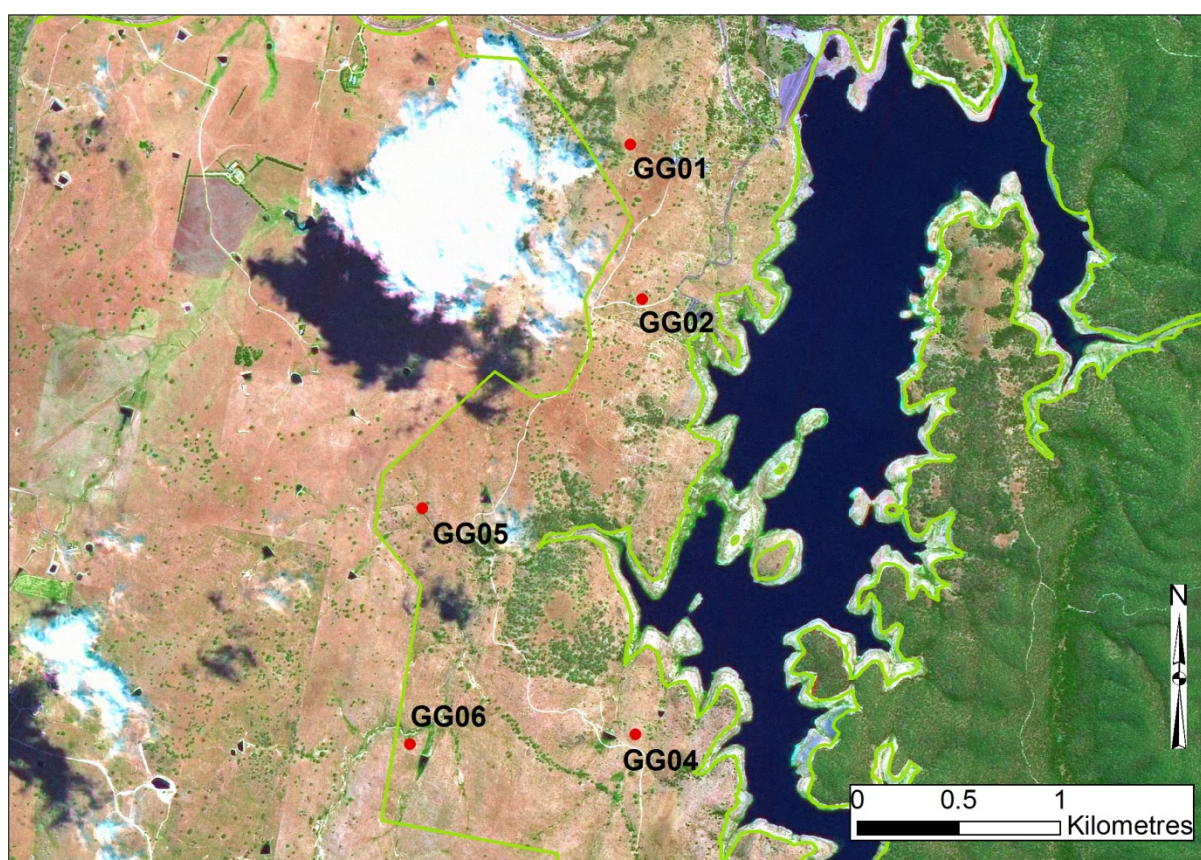


Figure 17: Map and plot locations: Googong Foreshores.

Plot GG01: Secondary grassland

2009



Floristic value score: 13
Native species richness: 29
Exotic species richness: 19
Indicator spp. level 1: 3
Indicator spp. level 2: 4

2012



Floristic value score: 9
Native species richness: 31
Exotic species richness: 18
Indicator spp. level 1: 3
Indicator spp. level 2: 2

Changes between 2009 – 2012

Floristic value score: -4 (-31%)
Native species richness: +2
Exotic species richness: -1
Indicator spp. level 1: stable
Indicator spp. level 2: -2



25 – 50% decline in condition

Plot GG02: Secondary grassland

2009



Floristic value score: 32
Native species richness: 23
Exotic species richness: 9
Indicator spp. level 1: 5
Indicator spp. level 2: 9

2012



Floristic value score: 41
Native species richness: 45
Exotic species richness: 17
Indicator spp. level 1: 3
Indicator spp. level 2: 16

Changes between 2009 – 2012

Floristic value score: +9 (+28%)
Native species richness: +22
Exotic species richness: +8
Indicator spp. level 1: -2
Indicator spp. level 2: +7



25 – 50% increase in condition

Plot GG04: Secondary grassland

2009



Floristic value score: **26**
Native species richness: **25**
Exotic species richness: **7**
Indicator spp. level 1: **2**
Indicator spp. level 2: **8**

2012



Floristic value score: **36**
Native species richness: **35**
Exotic species richness: **11**
Indicator spp. level 1: **3**
Indicator spp. level 2: **13**

Changes between 2009 – 2012

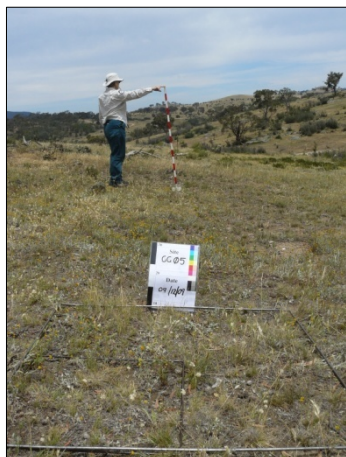
Floristic value score: **+10 (+38%)**
Native species richness: **+10**
Exotic species richness: **+4**
Indicator spp. level 1: **+1**
Indicator spp. level 2: **+5**



25 – 50% increase in condition

Plot GG05: Secondary grassland

2009



Floristic value score: **43**
Native species richness: **36**
Exotic species richness: **10**
Indicator spp. level 1: **3**
Indicator spp. level 2: **16**

2012



Floristic value score: **23**
Native species richness: **36**
Exotic species richness: **13**
Indicator spp. level 1: **4**
Indicator spp. level 2: **9**

Changes between 2009 – 2012

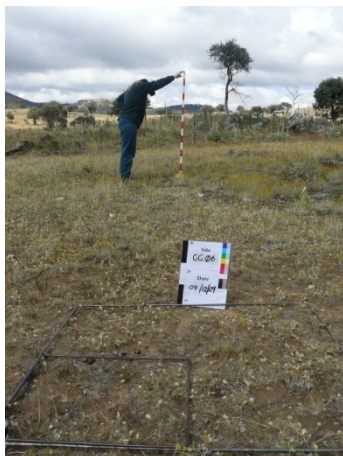
Floristic value score: **-20 (-47%)**
Native species richness: **stable**
Exotic species richness: **+3**
Indicator spp. level 1: **+1**
Indicator spp. level 2: **-7**



25 – 50% decline in condition

Plot GG06: Secondary grassland

2009



Floristic value score: 27
Native species richness: 28
Exotic species richness: 15
Indicator spp. level 1: 3
Indicator spp. level 2: 9

2012



Floristic value score: 20
Native species richness: 26
Exotic species richness: 15
Indicator spp. level 1: 2
Indicator spp. level 2: 6

Changes between 2009 – 2012

Floristic value score: -7 (-26%)
Native species richness: -2
Exotic species richness: stable
Indicator spp. level 1: -1
Indicator spp. level 2: -3



25 – 50% decline in condition

Goorooyaroo NR

Goorooyaroo NR is dominated by Box-Gum woodland, with patches of secondary grassland. The overall site condition has increased, with an increase in the mean floristic value, native species richness, and indicator species since 2009. Kangaroo densities have decreased to 1.03 kangaroos per ha., down from 2.17 in 2009.

Trends in overall site condition between 2009 and 2012 are as follows:

Mean floristic value score: **+9.6 (+40%)**

25 – 50% increase in condition

Native species richness: **+12.8**

Exotic species richness: **+4.4**

Indicator spp. level 1: **+0.6**

Indicator spp. level 2: **+3**



Changes in key floristic indicators are shown in Table 15, with all indicators suggesting an increase in vegetation condition. Exotic species richness has increased, however this may be insignificant considering recent favourable conditions for exotic species.

Table 15: Mean condition of Goorooyaroo NR from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009	2.17	24	23.8	12	1.8	8.8
2012	1.03	33.6	36.6	16.4	2.4	11.8

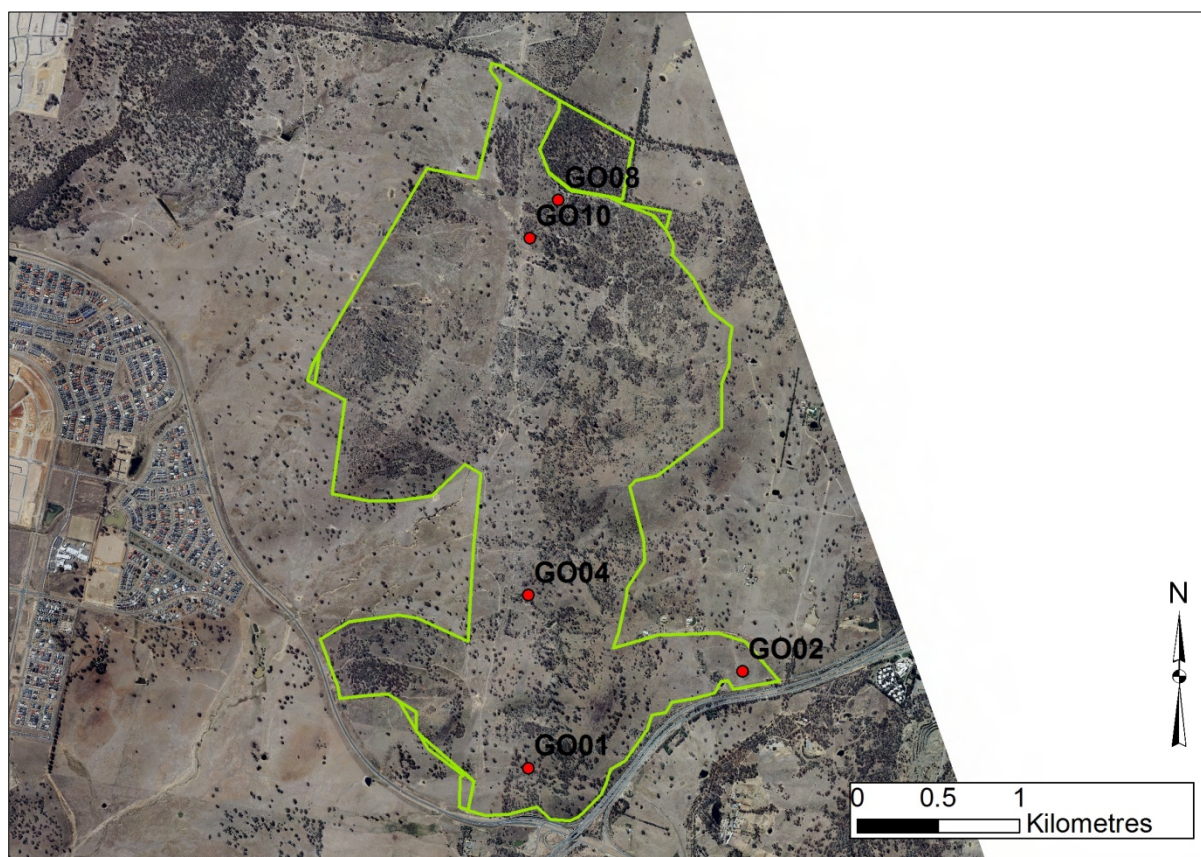


Figure 18: Map and plot locations: Goorooyaroo NR.

Plot GO01: Box-Gum woodland

2009



Floristic value score: 20
Native species richness: 27
Exotic species richness: 17
Indicator spp. level 1: 2
Indicator spp. level 2: 6

2012



Floristic value score: 30
Native species richness: 40
Exotic species richness: 24
Indicator spp. level 1: 2
Indicator spp. level 2: 10

Changes between 2009 – 2012

Floristic value score: +10 (+50%)
Native species richness: +13
Exotic species richness: +7
Indicator spp. level 1: stable
Indicator spp. level 2: +4



50 – 100% increase in condition

Plot GO02: Secondary grassland

2009



Floristic value score: 9
Native species richness: 16
Exotic species richness: 7
Indicator spp. level 1: 0
Indicator spp. level 2: 3

2012



Floristic value score: 17
Native species richness: 30
Exotic species richness: 14
Indicator spp. level 1: 1
Indicator spp. level 2: 6

Changes between 2009 – 2012

Floristic value score: +8 (+89%)
Native species richness: +14
Exotic species richness: +7
Indicator spp. level 1: +1
Indicator spp. level 2: +3



50 – 100% increase in condition

Plot GO04: Box-Gum woodland

2009



Floristic value score: 22
Native species richness: 21
Exotic species richness: 20
Indicator spp. level 1: 1
Indicator spp. level 2: 9

2012



Floristic value score: 42
Native species richness: 36
Exotic species richness: 20
Indicator spp. level 1: 2
Indicator spp. level 2: 14

Changes between 2009 – 2012

Floristic value score: +20 (+91%)
Native species richness: +15
Exotic species richness: stable
Indicator spp. level 1: +1
Indicator spp. level 2: +5



50 – 100% increase in condition

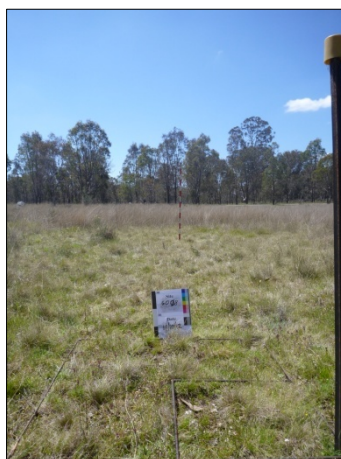
Plot GO08: Box-Gum woodland

2009



Floristic value score: 29
Native species richness: 27
Exotic species richness: 7
Indicator spp. level 1: 3
Indicator spp. level 2: 10

2012



Floristic value score: 44
Native species richness: 36
Exotic species richness: 9
Indicator spp. level 1: 3
Indicator spp. level 2: 15

Changes between 2009 – 2012

Floristic value score: +15 (+52%)
Native species richness: +9
Exotic species richness: +2
Indicator spp. level 1: stable
Indicator spp. level 2: +5



50 – 100% increase in condition

Plot GO10: Box-Gum woodland

2009



Floristic value score: **40**
Native species richness: **28**
Exotic species richness: **9**
Indicator spp. level 1: **3**
Indicator spp. level 2: **16**

2012



Floristic value score: **35**
Native species richness: **41**
Exotic species richness: **15**
Indicator spp. level 1: **4**
Indicator spp. level 2: **14**

Changes between 2009 – 2012

Floristic value score: **-5 (-13%)**
Native species richness: **+13**
Exotic species richness: **+6**
Indicator spp. level 1: **+1**
Indicator spp. level 2: **-2**



25% increase to 25% decline
(stable) in condition

Jerrabomberra East NR

Jerrabomberra East NR is characterised by Lowland Natural Temperate Grassland, primarily dominated by *Austrostipa* – *Rytidosperma* grassland. 15.17 ha of the reserve has been fenced off in a kangaroo grazing exclusion zone which contains one vegetation plot surveyed in this study.

Condition has declined in non-kangaroo enclosure areas, and has been maintained in the kangaroo enclosure area (note: this is based on one plot only for each area). Kangaroo densities are still considered high outside of the enclosure, although these have decreased to 2.69 kangaroos per ha. (zero in the exclusion zone), down from 3.04 in 2009.

For **non-kangaroo enclosure area**, trends in site condition (based on one plot) between 2009 and 2012 are as follows:

Mean floristic value score: **-7 (-33%)**

25 – 50% decline in condition

Native species richness: **-5**

Exotic species richness: **-5**

Indicator spp. level 1: **stable**

Indicator spp. level 2: **-4**



For the **kangaroo enclosure area**, trends in site condition (based on one plot) between 2009 and 2012 are as follows:

Mean floristic value score: **+2 (+14%)**

25% increase to 25% decline (stable) in condition

Native species richness: **+2**

Exotic species richness: **-2**

Indicator spp. level 1: **-1**

Indicator spp. level 2: **+1**



Changes in key floristic indicators are shown in Table 16, with all indicators indicating a stable system. Exotic species richness has increased, however this may be insignificant considering recent favourable conditions for exotic species. The increase in kangaroo densities at this site may be, to some extent, alleviated by conditions favourable to enhancing grassland condition metrics in recent years.

Table 16: Mean condition of Jerrabomberra East from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009 ¹	3.04	21	22	13	2	9
2012 ¹	2.69	24	26	15	2	8
2009 ²	3.04	14	17	10	2	4
2012 ²	0	16	15	16	1	5

¹ for non-grazing exclusion area (plot JE01)

² for grazing exclusion area (plot JE02). Note that as the grazing exclusion trial was set up in October 2009, 2009 information enables "time zero" data comparison.



Figure 19: Map and plot locations: Jerrabomberra East NR.

Plot JE01: *Austrostipa* – *Rytidosperma* grassland

2009  Floristic value score: 21 Native species richness: 22 Exotic species richness: 15 Indicator spp. level 1: 2 Indicator spp. level 2: 8	2012  Floristic value score: 14 Native species richness: 17 Exotic species richness: 10 Indicator spp. level 1: 2 Indicator spp. level 2: 4	Changes between 2009 – 2012 Floristic value score: -7 (-33%) Native species richness: -5 Exotic species richness: -5 Indicator spp. level 1: stable Indicator spp. level 2: -4  25 – 50% decline in condition

Plot JE02: *Austrostipa* – *Rytidosperma* grassland – grazing exclusion

2009



Floristic value score: 14
Native species richness: 17
Exotic species richness: 10
Indicator spp. level 1: 2
Indicator spp. level 2: 4

2012



Floristic value score: 16
Native species richness: 15
Exotic species richness: 16
Indicator spp. level 1: 1
Indicator spp. level 2: 5

Changes between 2009 – 2012

Floristic value score: +2 (+14%)
Native species richness: -1
Exotic species richness: +6
Indicator spp. level 1: -1
Indicator spp. level 2: +1



25% increase to 25% decline
(stable) in condition

Note: This site has had kangaroo grazing exclusion since October 2009.

Jerrabomberra West NR

Jerrabomberra West NR is characterised by Box-Gum woodland, and Lowland Natural Temperate Grassland primarily dominated by *Austrostipa* – *Rytidosperma* spp.. 42.25 ha of the reserve have been fenced off in a kangaroo grazing exclusion zone which contains two vegetation plots surveyed in this study.

For **Box-Gum woodland in general (non-exclosure) area**, trends in site condition (based on two plots) between 2009 and 2012 are as follows:

Mean floristic value score: **+1 (+4%)**

25% increase to 25% decline (stable) in condition

Native species richness: **+6.5**

Exotic species richness: **+3**

Indicator spp. level 1: **stable**

Indicator spp. level 2: **+0.5**



For the **grassland in general (non-exclosure) area**, trends in site condition (based on one plot) between 2009 and 2012 are as follows:

Mean floristic value score: **+10 (+143%)**

≥100% increase in condition

Native species richness: **+1**

Exotic species richness: **+4**

Indicator spp. level 1: **stable**

Indicator spp. level 2: **+2**



For the **grassland within the kangaroo exclosure area**, trends in site condition (based on two plots) between 2009 and 2012 are as follows:

Mean floristic value score: **-11.5 (-33%)**

25 – 50% decline in condition

Native species richness: **-2.5**

Exotic species richness: **-1**

Indicator spp. level 1: **+1**

Indicator spp. level 2: **-4**



Changes in key floristic indicators are shown in Table 17. Areas of Box-Gum woodland appear stable, with a dramatic increase in condition of grasslands without grazing exclusion (note: this is based on one plot only). As indicated by declining 'Floristic value scores', both plots within the grazing exclusion zone have significantly declined in condition. Data and observations within the grazing exclusion zone over time suggest that the increased biomass of *Austrostipa bigeniculata* has reduced inter-tussock spaces, restricting opportunities for establishment of indicator forbs.

Table 17: Mean condition of Jerrabomberra West from 2009 and 2012.

Year	Kangaroo (ha)	FVS	Native Richness	Exotic Richness (genus)	Indicator Level 1	Indicator Level 2
2009 ¹	1.19	25	24.5	11	2	8.5
2012 ¹	0.1	26	31	14	2	9
2009 ²	1.19	7	20	11	2	3
2012 ²	0.1	17	21	15	2	5
2009 ³	1.19	34.5	31	10	2.5	12
2012 ³	0	23	28.5	9	3.5	8

¹ for non-grazing exclusion area, Box-Gum (two plots: JW03 and JW04)

² for non-grazing exclusion area, grassland (plot JW06)

³ for grazing exclusion area (two plots: JW01 and JW02). Note that as the grazing exclusion trial was set up in Spring 2009, 2009 information enables “time zero” data comparison.



Figure 20: Map and plot locations: Jerrabomberra West NR.