

APPENDIX A

Results from field assessment of Maules Creek Coal offset properties Wirradale and Mt Lindesay, targeting sections of vegetation mapped as White Box – Stringbark grassy woodland as shown in Figures 6.4 & 2.2 Vegetation of the Northern Offset Properties.

Two days were spent inspecting the vegetation of the two properties Wirradale and Mt Lindesay on the 7th and 9th of January 2013, as shown on page 6.

The field assessment targeted six areas mapped as White Box – Stringybark grassy woodland occurring at elevations above 930 metres (shown in Figures below). The aim was to verify the communities present in those six areas mapped. The assessment was not restricted to those six areas, all of the vegetation viewable from Mount Lindesay road was also inspected, looking for vegetation that may fit the description of the critically endangered White box – Yellow box – Blakely's Red gum Grassy Woodland and Derived Native Grassland Ecological Community (CEEC) listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

The vegetation at thirty one sites was recorded according to the factors that determine potential CEEC. Those sites were GPS recorded and the results are presented in Table 1 below. Photos of all the sites are presented on the attached DVD.

Overall the dominant vegetation community found in remnants above 930 m elevation was Stringybark open forests. Only one open forest was in a near natural state the others were heavily disturbed from clearing and logging, large hollow trees were rarely encountered.

The assessment found no White box (*Eucalyptus albens*) trees within any of the remnants above 930 metres. The only White box trees identified were on Wirradale at lower elevations in the Maules Creek valley.

However the species of Yellow box (*Eucalyptus melliodora*) and Blakely's Red gum (*Eucalyptus blakelyi*) were found to be common throughout. They rarely occur as dominant species in the canopy layer, and they rarely occur in a woodland community.

Where they were found to occur was in open forests dominated by Silvertop Stringybark (*Eucalyptus laevopinea*) where they were occasional trees in association with the sub dominant Apple box (*Eucalyptus bridgesiana*) and Rough-barked Apple (*Angophora floribunda*).

For those species (Yellow box and Blakely's Red gum) to indicate potential CEEC one or both of them must be dominant overstorey trees, they must be in a woodland community with clearly separated canopies, shrubs can be present or absent, if present they must be

scattered and not forming a continuous layer, and the ground cover vegetation must be greater than 50% cover of tussock grasses.

Less than half of the sites were dominantly grassy, they had either a continuous shrub layer or they had litter dominating the ground cover, both factors rule out the potential CEEC.

Four of the sites were found to fit the potential CEEC, those four were identified as possible CEEC because the determining factors of species composition of the ground layer, 20 or more mature trees per ha, and the presence of “important” species were not considered to conclusively determine the CEEC. They were all small areas of immature trees in areas regenerating woodland from derived grassland.

The findings raise considerable doubts about the vegetation mapping done Cumberland Ecological. Particularly considering how the extent of the White box woodland on the two properties is the essential offset to compensate for the White box woodland to be cleared for Maules Creek coal mine in Leard State Forest. Both the flora and fauna communities on the two properties are very different to that found in Leard State Forest at 300 m altitude.

Leard State Forest CEEC falls into the Keith Class of White Box grassy woodland, Brigalow Belt South and Nandewar – Western Slopes Grassy Woodland. Whereas the dominant vegetation community on the properties between 930 and 1000m was found to be the Keith Class of Stringybark - Blakely's Red Gum - Rough-barked Apple open forest, Nandewar and western New England Tablelands – Northern Tableland Dry Sclerophyll Forests.

There are countless differences between the plants and animals occurring in the two bioregions. The most obvious are the geology, dominant trees and grasses, and bird species present. Leard State Forest recorded over thirty species of woodland birds not likely to occur above 900m on the Nandewar Range, and six species of high altitude trees were recorded on the two properties that would not occur at Leard: Manna Gum (*Eucalyptus viminalis*), Silvertop Stringybark (*Eucalyptus laevopinea*), Orange gum (*Eucalyptus prava*), New England Blackbutt (*Eucalyptus andrewsii*), Apple box (*Eucalyptus bridgesiana*), and Mallee Red gum (*Eucalyptus nandewarica*). The dominant ground cover above 900 m is Snow Grass (*Poa sieberiana*) which rarely occurs in Leard State Forest.

Of all the differences the main difference is the lack of White box at high altitude and the significant difference that makes to nectar production and the food source for nectar feeding birds like the Swift Parrot and Regent Honeyeater. Also it is highly unlikely that the endangered plant *Tylophora linearis* would occur between 900 and 1000m altitude.

The surveys were not exhaustive, but walking through the remnants and looking over other remnants in the locality, it became obvious that the CEEC is not a naturally occurring community at 930 – 1000 m altitude, with 1000 mm rainfall, on the Nandewar range. The basalt soil type favoured grassy ground cover over non basalt soils, but the open forest canopy is dominant throughout all remnants on all soil types at that altitude.

The doubts raised have wide ramifications for the adequacy of the Biodiversity Offset Management Plan, no decision can be made without getting an independent review of the mapping and vegetation types identified as fitting the CEEC. The independent review should be done by botanists familiar with the region's flora, both David Carr, Lachlan Copeland and John Hunter would be very credible.

It is not clear where the 2604 ha of Condition C and 1913 ha of Condition C Box Gum Woodland is located, that must be made apparent and independently reviewed.

The area of 5275 ha on Wirradale declared as high condition remnant habitat for Swift Parrot, Regent Honeyeater, and Corben's Long-eared Bat is misleading, as both the nectar-feeding parrot and honeyeater would not value immature Stringybark open forests and cypress dominated woodlands on the lower slopes as high habitat value. The 5275 ha is considered at best marginal for the three species, an opinion shared by ornithologist Dr Stephen Debus and bat expert Dr Harry Parnaby.

Corben's Long-eared bat is at its altitudinal limit at 900 metres. It is not likely to occur in the Stringybark open forests. No surveys for the bat have been done to indicate it does occur above 900m, many bat surveys have been done in Mt Kaputar NP and none have been recorded. The records for the Horton Valley are the highest elevation recorded by the author.

Offset Management and Long-term Security

Over the 21-year life of the mine the management of these properties will achieve very little habitat change that could be attributed to management. The past landholders have been controlling weeds and feral animals, and the Native Vegetation Act has and will prevent clearing. Grazing is proposed to continue using similar management as that practiced by many farmers following holistic grazing principles.

National Parks are unlikely to want the properties as they have learnt that ex grazing properties are very problematic and costly to manage as compared to undisturbed remnants. They are not funded to manage what they have.

Voluntary Conservation Agreements are only as good as the plan and the landholders desire to implement the plan. There is no monitoring or auditing of Voluntary Conservation Agreements. When the properties are put on the market in twenty-one years it will be grazing interests that could afford to purchase such large areas. The conservation gains of twenty-one years could be lost in the first severe period of drought.

Table 1 below details the vegetation and structure recorded at the waypoints shown in the maps. Numerous photos of each waypoint are provided on the attach CD. It is suggested that the table be printed out so it can be viewed at the same time as the photos.

Vegetation mapping of offset properties prepared by Cumberland Ecology as provided in Maules Creek Coal Project Ecological Impact Assessment July 2011, note extent of Box Gum Grassy woodland

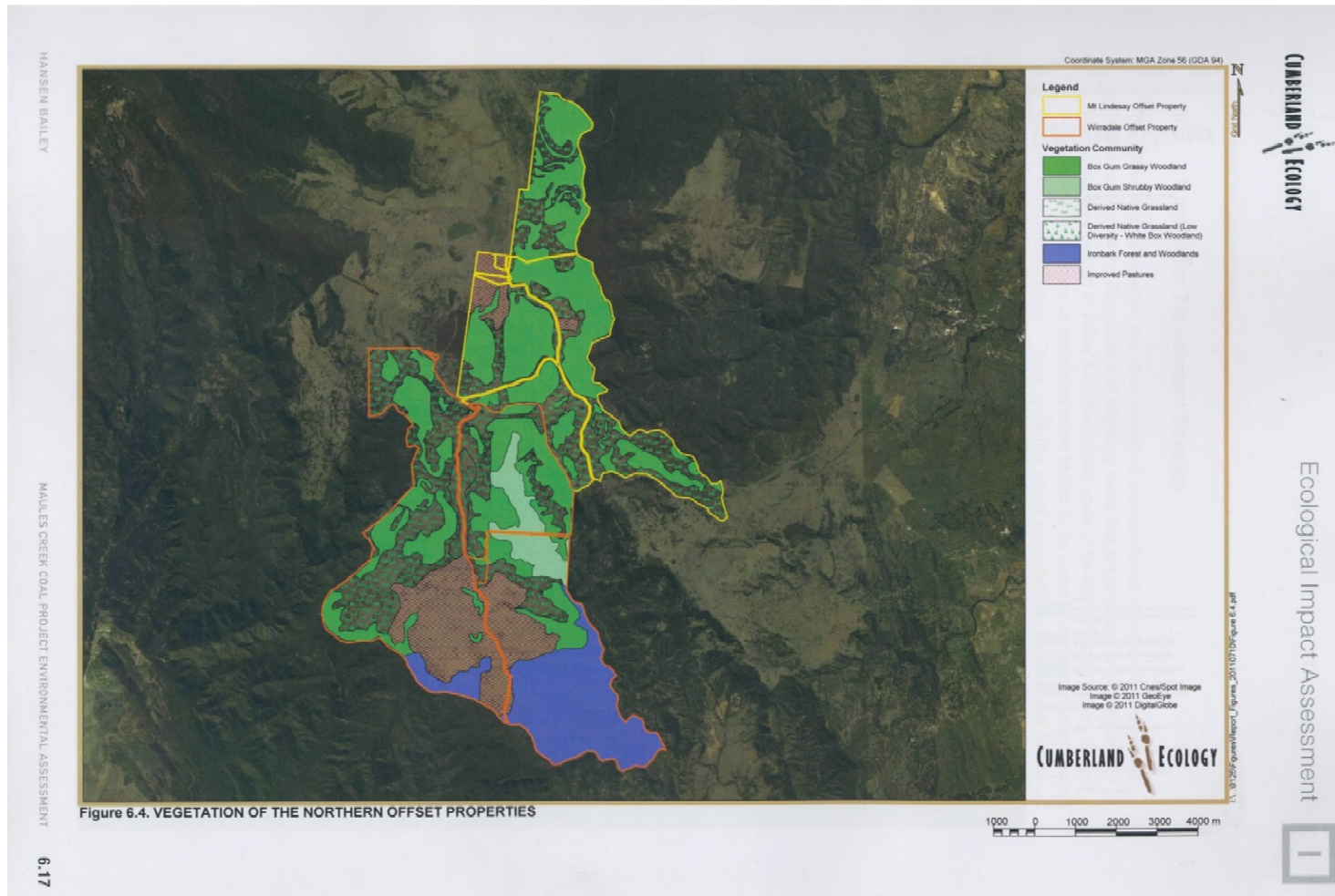
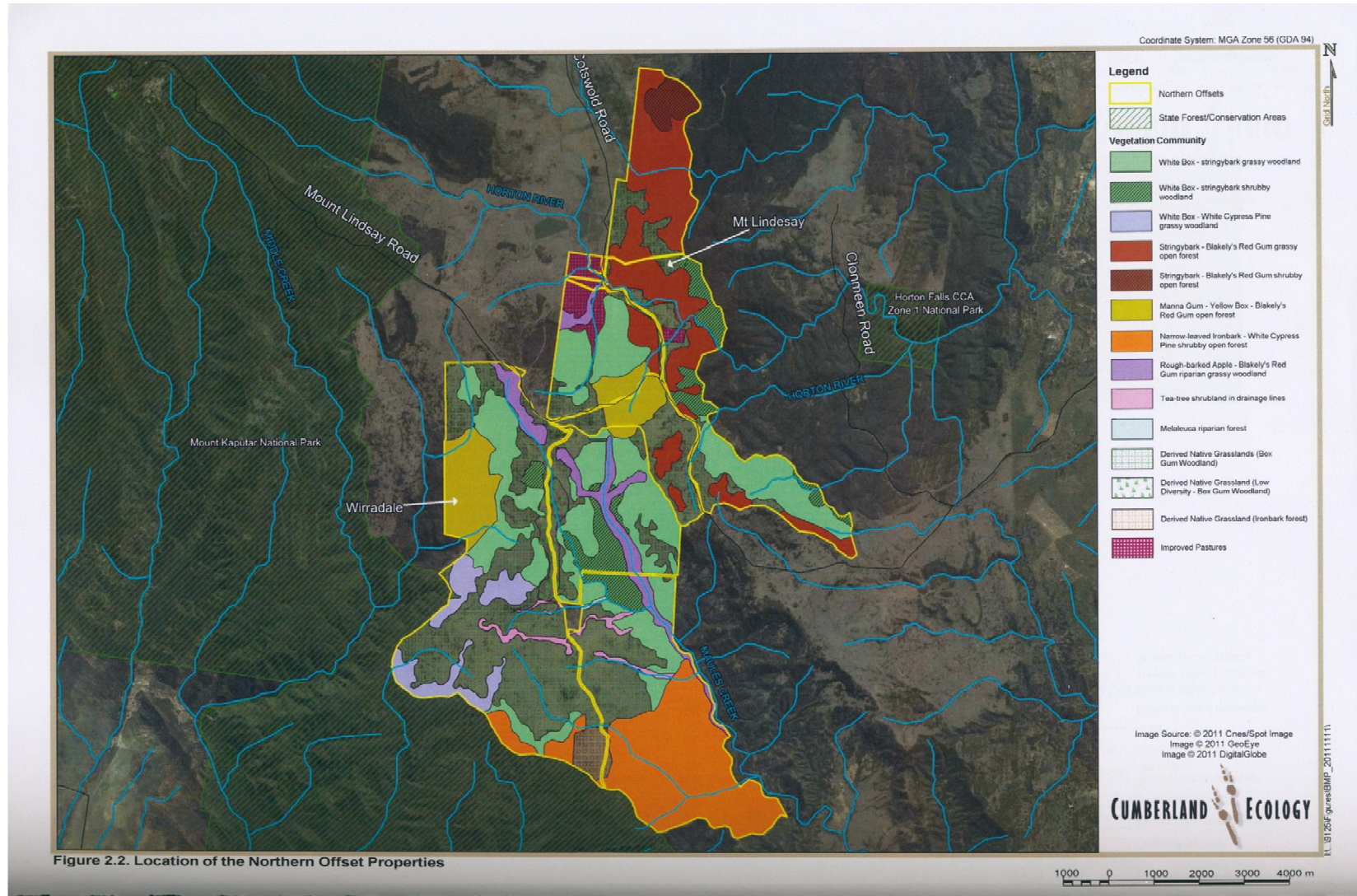


Figure 6.4. VEGETATION OF THE NORTHERN OFFSET PROPERTIES

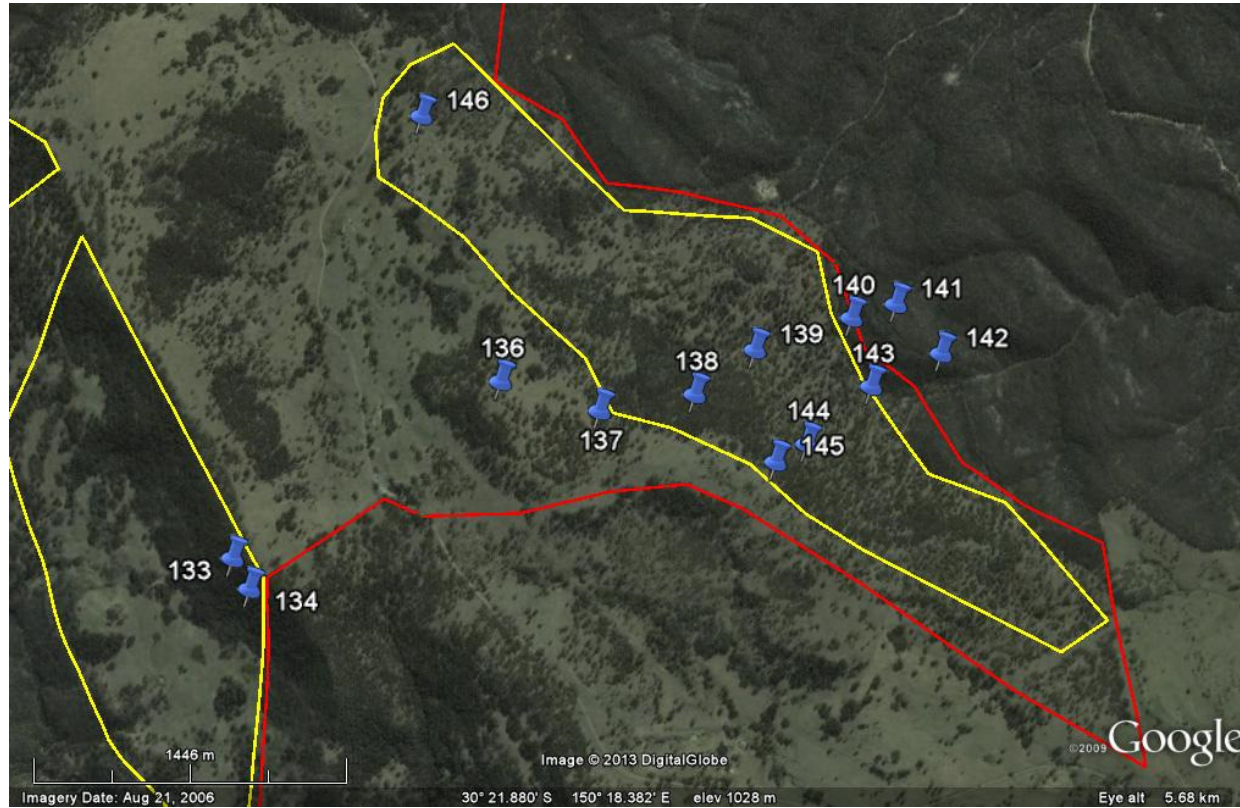
The vegetation map of Wirradale and Mt Lindesay prepared by Cumberland Ecology for Appendix E Final Draft Biodiversity Offset Management Plan December 2011, note extent of White Box - Stringybark grassy woodland



The areas 1, 2, 3, 4, & 5 of mapped White box – Stringybark grassy woodland targeted in the field assessment.



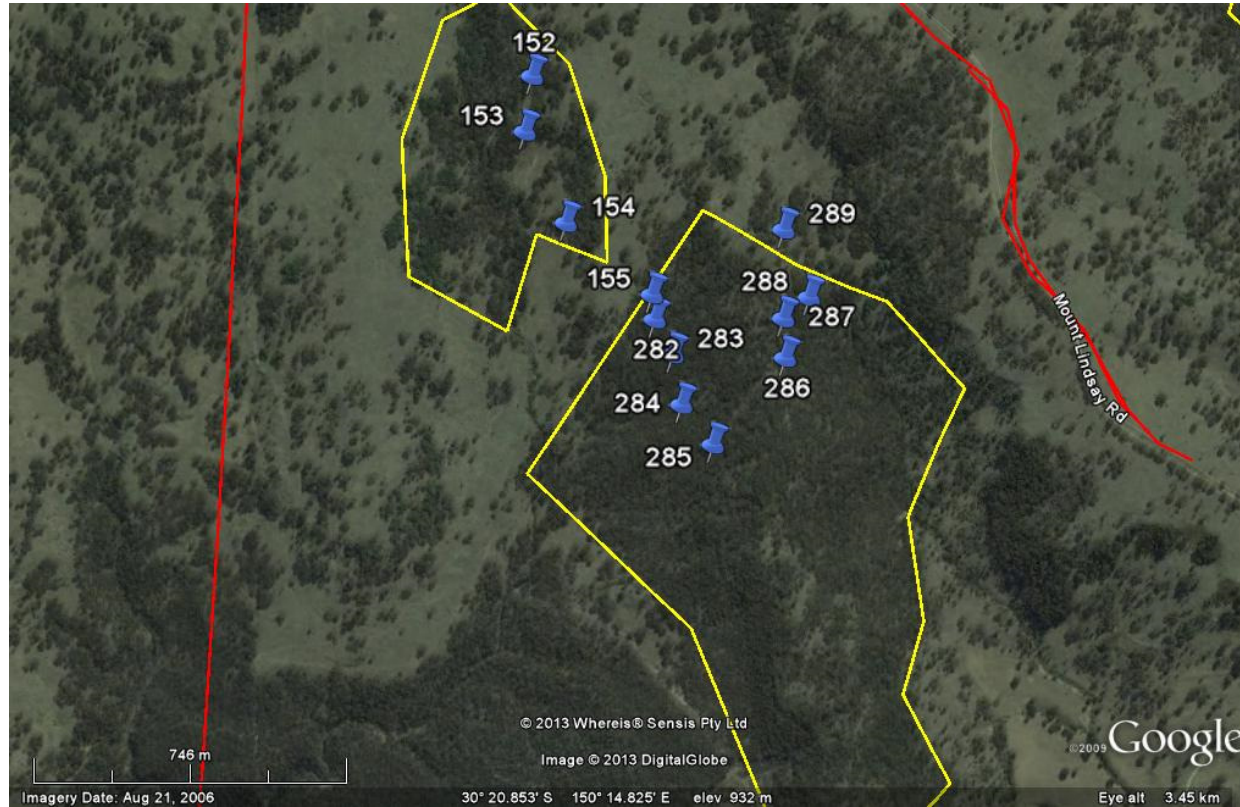
The waypoint locations in Areas 1 and 2 where the vegetation was recorded, as detailed on the table below



The waypoint locations in Area 3 where the vegetation was recorded, as detailed on the table below



The waypoint locations in Area 4 where the vegetation was recorded, as detailed on the table below



The waypoint locations in Areas 1, 2 and 5 where the vegetation was recorded, as detailed on the table below



Table 1 details the vegetation and structure recorded at the waypoints shown in the previous maps, photos of each waypoint are provided on the attach CD

Waypoint	Property	Zone Easting Northing	Altitude	Tree spacing	Age structure	Dominant age class dbh	Dominant tree species	Sub dominant tree species	Shrub cover	Shrub height	Ground cover Grass/Litter	Geology	CEEC
133	Wirradale	56 J 239412 6637041	1045 m	Open forest	mixed	mature	Stringybark	Rough-barked Apple, Apple box	Patchy and continuous	< 2m tall	30 / 70	Basalt, steep, rocky	No
134	Wirradale	56 J 239480 6636907	1018 m	Open forest	mixed	mature	Stringybark	Rough-barked Apple, Apple box	Patchy and continuous	< 2m tall	30 / 70	Basalt, steep, rocky	No
View of valley from WP 134	Wirradale	Maules Creek Valley north aspect		Woodland valley floor & open forest slopes	mixed	regrowth Cypress	Cypress slopes, White box valley floor and rim	Stringybark, Narrow-leaf Ironbark	Patchy and continuous	< 2m tall	15 / 85	Unlikely to be basalt, steep rocky slopes	Possible small section in valley floor and rim
136	Mt Lindesay	56 J 240543 6637824	1026 m	Scattered	immature	< 30 cm	Blakely's Redgum	Stringybark, Yellow box, Apple box	Scattered	< 2m tall	80 / 20	Basalt	woodland sections
137	Mt Lindesay	56 J 240972 6637709	1021 m	Open forest	immature	< 50 cm	Stringybark	Blakely's Red gum	Sparse	< 1 m tall	70 / 30	Basalt	No
138	Mt Lindesay	56 J 241381 6637789	993 m	Open forest	mixed	< 50 cm	Stringybark	Rough-barked Apple, Yellow Box	Sparse	< 1 m tall	20 / 80	Basalt rocky	No
139	Mt Lindesay	56 J 241641 6637989	970 m	Woodland	immature	< 40 cm	Blakely's Redgum	Yellow box, Stringybark, Apple box	Scattered	< 1m tall	70 / 30	Basalt	Yes

Waypoint	Property	Zone Easting Northing	Altitude	Tree spacing	Age structure	Dominant age class dbh	Dominant tree species	Sub dominant tree species	Shrub cover	Shrub height	Ground cover Grass/Litter	Geology	CEEC
140	Mt Lindesay	56 J 242059 6638137	966 m	low open forest	immature	< 20 cm	Stringybark	Apple box, Orange gum, Blakely's Red gum.	Continuous	< 3 m tall	30 / 70	Granite	No
141	Unknown	56 J 242249 6638201	973 m	low open forest	immature	< 20 cm	Stringybark	Orange gum, Tumble down Red gum, White Cypress	Continuous	< 3 m tall	30 / 70	Granite	No
142	Unknown	56 J 242457 6637994	967 m	low open forest	immature	< 20 cm	Stringybark	Orange gum, Tumble down Red gum, White Cypress	Continuous	< 3 m tall	30 / 70	Granite	No
143	Mt Lindesay	56 J 242155 6637843	948 m	Woodland	mixed	< 40 cm	Apple Box	Stringybark, Rough-barked Apple, Blakely's Red gum	Scattered	< 2 m tall	80 / 20	Basalt	No
144	Mt Lindesay	56 J 241873 6637587	987 m	Woodland	immature	< 40 cm	Apple Box	Stringybark, Rough-barked Apple, Yellow box	Scattered	< 1 m tall	80 / 20	Basalt	No
145	Mt Lindesay	56 J 241736 6637507	1015 m	Open forest	immature	< 30 cm	Stringybark	Apple box	Sparse	< 1 m tall	20 / 80	Basalt	No

Waypoint	Property	Zone Easting Northing	Altitude	Tree spacing	Age structure	Dominant age class dbh	Dominant tree species	Sub dominant tree species	Shrub cover	Shrub height	Ground cover Grass/Litter	Geology	CEEC
146	Mt Lindesay	56 J 240156 6638979	929 m	Derived grassland & tree regrowth	immature	< 30 cm	Yellow box	Blakely's Red gum, Stringybark	Sparse	< 1 m tall	80 / 20	Unknown? Not basalt	possibly woodland sections
147	Mt Lindesay	56 J 237764 6640217	934 m	Open forest	mixed	< 30 cm	Stringybark	Blackbutt, Apple box, Rough-barked Apple, Yellow Box	Scattered	< 1 m tall	15 / 85	Unknown? Not basalt	No
148	Mt Lindesay	56 J 237553 6640502	939 m	Open forest	mixed	< 40 cm	Stringybark	Blackbutt, Apple box, Rough-barked Apple, Yellow Box	Scattered	< 1 m tall	15 / 85	Unknown? Not basalt	No
149	Mt Lindesay	56 J 237860 6640501	942 m	Open forest	immature	< 30 cm	Stringybark	Apple box, Rough-barked Apple, Orange gum, Blakely's Red gum,	low heath	< 0.5 m tall	15 / 85	Unknown? Not basalt	No
150	Mt Lindesay	56 J 237880 6640364	930 m	low open forest	immature	< 30 cm	Stringybark	Yellow box, Apple box, Blakely's Red gum	low heath	< 0.5 m tall	40 / 60	Unknown? Not basalt	No
151	Mt Lindesay	56 J 237487 6639944	936 m	Open forest	immature	< 40 cm	Stringybark	Yellow box, Apple box, Blakely's Red gum	Patchy and continuous	< 1.5 m tall	45 / 55	Unknown? Not basalt	No

Waypoint	Property	Zone Easting Northing	Altitude	Tree spacing	Age structure	Dominant age class dbh	Dominant tree species	Sub dominant tree species	Shrub cover	Shrub height	Ground cover Grass/Litter	Geology	CEEC
152	Wirradale	56 J 235118 6640242	941 m	Open forest	mixed	< 30 cm	Apple Box	Manna Gum & Stringybark	Scattered & Patchy	< 2m tall	50 / 50	Basalt	No
153	Wirradale	56 J 235103 6640116	933 m	Open forest	immature	< 40 cm	Manna Gum		Patchy	< 2m tall	50 / 50	Basalt	No
154	Wirradale	56 J 235203 6639909	932 m	Thick regrowth	juvenile	5 - 15 cm	Rough-barked Apple	Apple box, Yellow box Manna gum	Scattered	< 2m tall	60 / 40	Basalt	Possible small sections
155	Wirradale	56 J 235406 6639746	949 m	Open forest	mixed	< 25 cm	Stringybark	Yellow box, Apple box, Blakely's Red gum	Scattered & Patchy	< 2m tall	50 / 50	Basalt	No
282	Wirradale	56 J 235414 6639690	949 m	Open forest	immature	< 30 cm	Stringybark	Yellow box	Continuous	< 2m tall	50 / 50	Basalt	No
283	Wirradale	56 J 235457 6639611	943 m	Open forest	immature	< 30 cm	Stringybark	Yellow box, Rough-barked Apple	Continuous	< 2m tall	50 / 50	Basalt	No
284	Wirradale	56 J 235481 6639496	934 m	Open forest	immature	< 40 cm	Stringybark	Blakely's Red gum	Continuous	< 2.5 m	60 / 40	Basalt	No
285	Wirradale	56 J 235555 6639406	946 m	Open forest	immature	< 40 cm	Stringybark	Yellow box, Blakely's Red gum	Continuous	< 2.5 m	10 grass / 90 litter	Basalt	No
286	Wirradale	56 J 235716 6639609	957 m	Open forest	immature	< 30 cm	Yellow box	Stringybark	Continuous	< 3m	40 / 60	Basalt	No
287	Wirradale	56 J 235709	954 m	Open forest	mixed	< 30 cm	Apple Box	Stringybark	Scattered & Patchy	< 2m tall	70 / 30	Basalt	No

Waypoint	Property	Zone Easting Northing	Altitude	Tree spacing	Age structure	Dominant age class dbh	Dominant tree species	Sub dominant tree species	Shrub cover	Shrub height	Ground cover Grass/Litter	Geology	CEEC
		6639699											
288	Wirradale	56 J 235768 6639749	952 m	Woodland	mixed	< 40 cm	Apple Box	Stringybark	Scattered & Patchy	< 2m tall	70 / 30	Basalt	No
289	Wirradale	56 J 235704 6639901	969 m	Woodland	immature	< 30 cm	Apple Box	Stringybark, Rough-barked Apple	Scattered	< 2m tall	80 / 20	Basalt	No
290	Mt Lindesay	56 J 237961 6638943	962 m	Open forest	immature	< 30 cm	Stringybark		Scattered	< 2m tall	70 / 30	Basalt	No
291	Mt Lindesay	56 J 238113 6638750	953 m	Woodland/derived grassland	immature	< 30 cm	Stringybark	Rough-barked Apple	Scattered	< 2m tall	70 / 30	Basalt	No