C/- Philip Spark
22 Garden Street
Tamworth 2340
PHONE/FAX O2-67642245
Mobile 0427642245
Email pdspark@activ8.net.au

25th April 2013

Submission ; Review of Shenhua Environmental Imapact Statement

Our concerns are listed after each of the following points of contention (in italics) as taken from the EIS.

1. **SALT DISCHARGE**

- "Runoff water will only be released from the site if the quality is acceptable and ***during a rainfall event that exceeds the design capacity of the sediment dam".***

Experience shows that such events do happen, and happen more regularly now due to climate change. The recent overflow of storage dams in the Pilliga and the impact that had on the forest prove that point.

Below is an extract from Soil Futures Consulting which highlights the risk of the mine dramatically increasing the salt load in the Murray – Darling Basin. Both levels of government have spent many millions of dollars to prevent further release of salt out of the Liverpool Plains, to allow this discharge would make a mockery of all the efforts to contain the problem and protect the land and rivers from salinity.

3.1 Salinity, salt loading and surface waters

The EIS states that the mine will be producing 23,980 tons per year at year 30, and an additional 276 – 1117 tons per year of annual salt output from seepage sites in rehabilitated areas. Although this water may be released to surface waters via runoff during and after heavy rain periods without significantly increasing the salinity of surface waters, the concept of salt loading of surface waters has not been discussed.

While EC readings are one way to assess water salinity of streams, they do not take into account the physical quantity of salts being transported by the river or the *salt load*.

The salt load of the Mooki River in 2011 was reported at 14700 Tons/year (Mah and Timms, 2012), also that Native Dog Gully is the only surface drainage salinity hotspot in the Mooki Catchment. Given that at some stage, salts produced by the mining will have to be released to the surface water environment; this presents a serious issue for downstream water users in the Murray Darling Basin.

If the total salt production from seepages (taking the lower figure of 276 tons) and the rest of the mine water for one year were to be release by overland flow in one event or within the space of one year, then this would be equivalent to a 38 956 ton loading of the Mooki River system. This would represent a 265% increase in the salt load of the Mooki River as at 2011. Conserving salts on site for several years prior to a release would no doubt increase this figure substantially.

Although the waters in such a high flow event may not be saline due to dilution factors, the physical amount of salt entering the Murray Darling Basin, through the Mooki River would be much larger than pre mining. These salts would concentrate by evaporation as they flow down the system as well as when the water is used in irrigation. This potential impact does not seem to have been considered as a long term offsite impact of the mine.

2. FINAL VOID

- *A final void will remain in the Western Mining Area and will cover an area of approx. 100 hectares. It will have a maximum depth of 80 metres below the natural ground surface…. The analysis found that partial backfilling of the void would incur a total additional cost of $42 Million, whilst complete backfilling would incur an additional cost of $438 Million… Therefore, in recognition of the further potential coal resources and the ability of the Western Mining Area void highwall to provide access to these resources, the cost / benefit analysis found that the retention of a safe and stable final void in the Western Mining Area was the most appropriate outcome.*
  "The process of backfilling the void would also extend the duration of noise and air quality impacts"

These statements go to show that profits to China are the priority and not the Australian landscape into perpetuity. Shenhua obviously have intentions of starting small, and once established get further approvals to extend the mine. This approach to getting a leg in the door is common practice. No void is acceptable, if the supposed economic benefit cannot remediate the entire area then the whole operation is not viable. How can that be efficient land use?

Why should consideration of noise and air quality impacts be so important replacing the soil, when it does not matter in the excavation of it. It is just an excuse to pocket more profits.

3. ECONOMIC BENEFIT

"The Project will provide net production benefits to Australia of $1,310 M and will:

Wrong

No mine is working for the interests of Australia, they are working for parent companies and shareholders who are mostly overseas, in this case the Chinese government.

- *Maximise the recovery of a high quality, thermal coal resource for which there is an increasing global demand;*

Wrong

World demand for coal is decreasing, both China and India are setting caps for reduction of use of coal as from 2015.

Alternative and renewable sources of energy are fast becoming more economically viable, in 5 – 10 years coal will be completely out dated, so why develop more mines that cause further Climate Change.

- *Create approximately 1,015 direct and indirect jobs on a regional basis (Gunnedah, Liverpool Plains, Tamworth, Narrabri and Upper Hunter LGAs), in areas with a relatively high unemployment rate;*

Wrong

The existing mines have just put off over forty workers and contractors due to falling prices, and more are expected. Mines offer very low job security. Local economies are much better off to have a truly sustainable income from agriculture than boom bust enterprises like coal mining.

Prices are set to continue to fall, which will further impact job security.

Mines are creating employment problems not fixing them, ask the local agricultural businesses who have lost their mechanics, and farmers who have lost their operators.

Mine towns post mining never recover properly, they show the signs of neglect and disuse like is evident at Barraba. Decisions must take a long term perspective about community well-being.

- *Create approximately 3,260 (direct and indirect) jobs in NSW;*

Wrong

Job creation is insignificant, and the flow on jobs claimed are not extra jobs at all, because the loss of jobs in other industries like tourism is not factored into the equation.

- *Continue and extend financial support to the region, NSW and Australia with taxation and royalty benefits of $1.31 billion over the project life; and*

Wrong

Mines pay the lowest tax rate, and have high tax payer subsidies. They have perfected dodging tax by passing money between overseas companies that aren't taxed, in this case trading amongst other Chinese companies and the China government.

- *Achieve the most efficient economic use of the land*

Wrong

Mining is unsustainable, it cannot be considered an efficient use of land, as it leaves huge piles of dirt and a hole in the ground which remain there into perpetuity with little production benefit. That land will continue to leech salts into the adjoining land, and every tonne of coal removed will pollute the atmosphere, and methane will be emitted from the operations throughout the life of the project.

- *"Unacceptable and uncertain environmental effects have been avoided. The Project's social and environmental costs have been avoided or minimised as far as practicable by implementing all reasonable and feasible management and mitigation measures. As a consequence, the socio-economic benefits of the Project will far outweigh it social and environmental costs. Therefore, it can be considered that the Project is in the public interest."*

Wrong

Environmental Impact Statements can no longer make such sweeping statements and be believed. The reality is that the public's interest would be best served by no mine. The only interest served is the short term benefit to China.

Such claims can no longer be accepted, there is plenty of evidence and economic assessments to say the opposite that it is in fact against the public's interest. The real health risks don't get considered, there is a growing weight of evidence coming from the Hunter valley that indicate health is a major issue.

See below the review of economic benefits from mining as done by the Australian Institute.

MINING THE TRUTH:
THE REAL ECONOMIC IMPACTS OF THE MINING BOOM

The Australia Institute
Research that matters.

Mining "crowds out" other industries

High commodity prices have pushed up the Australian dollar. The high Australian dollar and wage inflation erode other export industries such as agriculture, tourism, manufacturing and education.

The rising Australian dollar

When the Australian dollar increases farmers get less for their exports to the rest of the world. So do other industries that rely on overseas markets, like manufacturing. Tourism and education industries also suffer as Australia becomes less attractive as a destination for travellers and students.

Wage inflation and labour shortages

The high demand for skilled labour and high wages paid to mining workers means that other businesses and industries are often unable to recruit and retain workers or are forced to pay very high wages to compete.

The impact of this from a single mine, Clive Palmer's China First coal mine in QLD's Galilee Basin, was estimated by the company's own consultants to cost 3,000 manufacturing jobs across Australia.

As Figure 1 shows, over the past decade the expansion of the mining sector has caused a contraction in exports from other industries.

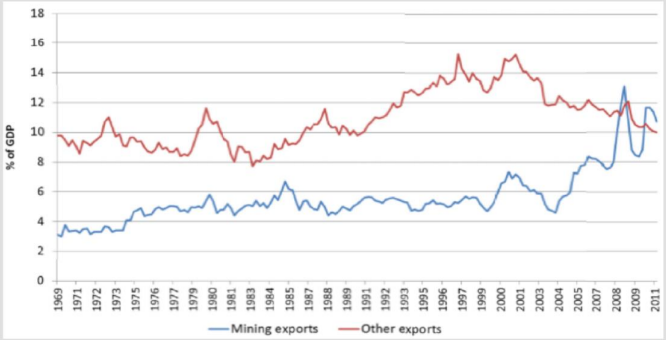


Figure 1. The correlation between the increase in mining exports as a percentage of Australian GDP and the decrease in all other exports.

Mining does not employ many people

Mining is, in fact, one of the smallest employers in Australia, offering work to around 2 per cent of the population. Mining may well lead to a net loss of jobs in the economy as a result of "crowding out" of other sectors, such as manufacturing, tourism and education.

The mining industry often points to the number of "indirect jobs" it creates but in reality every sector, whether it is teachers, plumbers or miners, creates additional jobs when income is spent.

A lot of the current employment in mining is temporary and those jobs will be lost when the construction phase is over. When this phase winds down over the next few years, communities that have become dependent on mining will be hit hard.

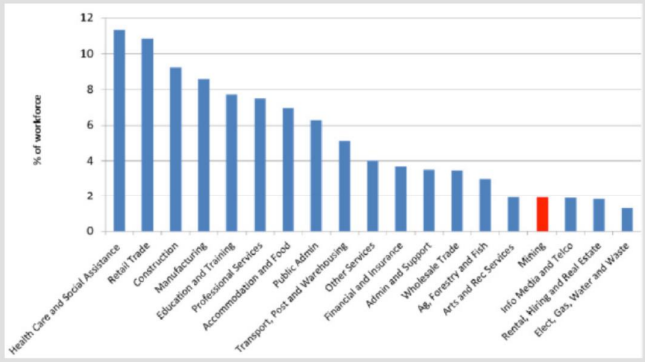


Figure 2. Relative employment levels of different Australian industries.

MINING THE TRUTH:
THE REAL ECONOMIC IMPACTS OF THE MINING BOOM

The Australia Institute
Research that matters.

The mining industry is 83% foreign owned

High levels of foreign ownership mean that the profits from mining, while counted in Australian GDP, go overwhelmingly to overseas shareholders. In fact the cheques rarely reach Australia, going from the foreign company buying the coal or gas to the foreign company mining it.

The black sections in Figure 3 represent the proportion of Australian ownership.

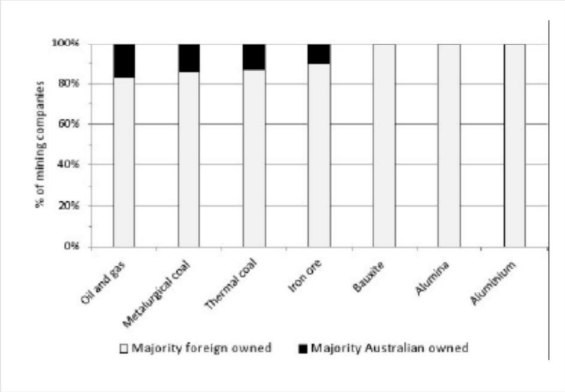


Figure 3. Level of foreign ownership of different resource sectors.

Mining companies are low taxpayers

The mining industry pays an average corporate tax rate of 13.9 per cent – far lower than the average of 21 per cent for other industries. Mining often "crowds out" better taxpayers.

But what about royalties?

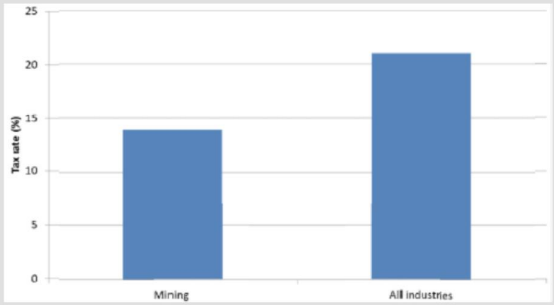
The mining industry often combines its corporate tax rate with royalties in order to argue that it is highly taxed. But royalties are the cost of raw materials, no different from when a restaurant buys food to sell or a builder buys bricks. These industries don't count their raw material costs as tax.

It is important to remember that the natural resources the mining industry profits from are owned by Australian citizens. If they didn't pay royalties mining companies would be getting our resources for free.

Figure 4. Average corporate tax rates.

Mining is highly subsidised

The mining industry receives huge direct and indirect subsidies from Australian taxpayers. Every year the Commonwealth Government alone subsidises the mining industry by at least $4 billion dollars. The main subsidies to mining include extraordinarily generous research and development tax concessions, accelerated depreciation of mines and equipment, fuel tax concessions and enormous infrastructure projects funded by state governments.



Source: All graphs are from The Australia Institute's *Mining the Truth* report

DOWNLOAD THE FULL ***MINING THE TRUTH*** REPORT AT: https://www.tai.org.au/?q=node/384

 LPO Box 5096, University of Canberra, Bruce ACT 2617 Tel +61 2 6206 8700 www.tai.org.au

The Australia Institute
Research that matters.

The economic impacts of Australia's mining expansion
Quick links to research from The Australia Institute

The Australia Institute (TAI) has been researching the economic impacts of mining activity in Australia. This document provides a brief summary of key facts and links to TAI research papers, policy briefs and submissions currently available online.

Key facts

1. **Mining 'crowds out' other industries:** The expansion of mining causes a contraction in non-mining industries, particularly manufacturing, tourism, agriculture and education. This results in business closures and job losses.
2. **Mining is a small employer:** Mining is highly mechanised and employs few people relative to other industries. It employs only around 2% of the Australian workforce.
3. **Mining is a poor taxpayer:** The effective corporate tax rate for mining is 13.9%, well below the industry average of 21%.
4. **Mining is highly subsidised:** Every year the Commonwealth Government subsidises the mining industry by at least $4 billion dollars.
5. **Mining is 83% foreign owned.**
6. **Mining did not 'save' Australia from the GFC**: Mining shed 15% of its employees within 6 months of the GFC. If the rest of the economy had behaved the same way, Australia would have experienced 19% unemployment.

TAI Research Papers

Click on the title below to download the full report. All are available at www.tai.org.au.

Title	Focus	Key Messages
Mining the Truth: The rhetoric and reality of the commodities boom **By David Richardson and Richard Denniss**	Economic impacts of Australia's resource boom.	• Mining only employs around 2% of the Australian workforce. • Mining activity 'crowds out' other sectors of the economy, especially agriculture, tourism, education and manufacturing. • The mining industry is 83% foreign-owned. • Mining companies are low taxpayers, paying around 13.9% corporate tax when the average is 21%.
Too much of a good thing? The macroeconomic case for slowing down the mining boom **By Richard Denniss and Matt Grudnoff**	The speed of mining development and Australia's national interest.	• It may be good for Australia that world prices for our resources are high. But it is not true that the faster new mines are developed the better off Australians will be. • The current rush to approve mining projects is damaging other industries. • There is a strong economic case for slowing down Australia's rapid mining expansion.

Mining Australia's Productivity: The role of the mining industry in driving down Australia's productivity growth **By David Richardson and Richard Denniss**	Mining sector influence on Australia's labour productivity figures.	• Weak national productivity growth is being driven by large reductions in labour productivity in the mining sector. • Other Australian industries are actually becoming more productive.
Job creator or Job destroyer? An analysis of the mining boom in Queensland **By Matt Grudnoff**	Economic impacts of mining in Queensland.	• Queensland's non-mining sectors are under pressure from a high AUD and skills shortages, driven by the mining boom. • Proposed mining projects in Queensland could destroy almost 20,000 jobs across Queensland and Australia, mostly in manufacturing.
Pouring Fuel on the Fire: The nature and extent of Federal Government subsidies to the mining industry **By Matt Grudnoff**	Subsidies to the mining industry from the Federal Government.	• The mining industry is making record profits. Yet it still receives billion of dollars in taxpayer subsidies every year. • This paper details more than $4 billion per year in subsidies and concessions from the Federal Government alone.
Beating Around the Bush: The impact of the mining boom on rural exports **By Matt Grudnoff**	Impacts of the mining boom on Australia's agricultural sector.	• Since the mining boom started, Australia's rural sector has lost $43.5 billion in export income due to the high AUD, which is being driven up by the mining boom. • In 2010-11 alone, the beef industry lost $2 billion in export income and the sugar industry lost $566 million.

Still Beating Around the Bush: The continuing impacts of the mining boom on rural exports
By Matt Grudnoff
	Impacts of the mining boom on Australia's agricultural sector.	• Updated analysis from Beating around the Bush shows rural sector losses of $61.5 billion in export income due to the high AUD, being driven up by the mining boom.
		• Over the nine years of the boom:
		  • Cotton growers have lost $2.5 billion
		  • Wheat growers have lost $8.3 billion
		  • The beef/veal industry has lost $8.5 billion
		  • The sugar industry has lost $2.7 billion.

An analysis of the impacts of the China First mine
By Richard Denniss
	Impacts of the mining boom on manufacturing and other non-mining industries.	• While the owners of Queensland's proposed China First coal mine stand to make large profits, net economic benefits to Australia are likely to be small at best.
		• According to Waratah Coal's own Economic Impact Statement the mine will cause:
		  • The loss of 3000 jobs across Australia
		  • The loss of $1,249 million of manufacturing activity

An analysis of the economic impacts of Arrow Energy's Gladstone LNG Plant
By Matt Grudnoff
	Impacts of the mining boom on manufacturing and other non-mining industries.	• The proposed Arrow Energy LNG project in QLD will have result in job losses across QLD and Australia, and a range of other negative economic impacts.
		• The company's own Environmental Impact Statement acknowledges it will result in;
		  • The loss of 1,600 jobs; 1,000 in manufacturing
		  • The loss of $441.5 million in manufacturing activity.

James Price Point: An economic analysis of the Browse LNG project **By Matt Grudnoff**	Impacts of the West Australian Government and Woodside's proposal for an LNG precinct in the Kimberley region.	• There is virtually no evidence that the proposed Browse LNG development at James Price Point will have any economic benefits. • It will result in around 3,000 job losses across WA, especially threatening local tourism. • It will rely on up to 97% fly-in fly-out (FIFO) workers, employing few locals.
Measuring Fugitive Emissions: Is coal seam gas a viable bridging fuel? **By Matt Grudnoff**	Fugitive emissions from coal seam gas.	• Fugitive methane emissions from coal seam gas mining are likely to be significantly higher than emissions from conventional natural gas. • More accurate measurement of fugitive emissions from CSG is urgently needed.
CSG economic modelling: On the alleged benefits of the Santos coal seam gas project in North West NSW **By David Richardson**	Impacts of the Santos coal seam gas project in North West NSW.	• Santos' modelling shows minimal benefits to the local economy, with major benefits accruing to Santos owners. • The modelling, by Allen Consulting Group, raises more questions than it answers, suggesting only 30 new gas jobs, but 570 new public sector jobs will be created.

Additional resources

You can download additional resources including a Mining the Truth fact sheet and presentation slides at www.tai.org.au/resources.

If you would like to arrange a 'Mining the Truth' presentation in your area or order hard copies of Mining the Truth contact us on the details below. TAI is also able to arrange training workshops in delivering the Mining the Truth presentation, or in understanding economic arguments more broadly.

Contact

Mark Ogge, Public Engagement Officer, The Australia Institute
M. +61 421 272 884 | E. mark@tai.org.au
Web: ***www.tai.org.au*** ***TheAustraliaInstitute*** ***@TheAusInstitute*** ***TheAusInstitute***
Check out all our INFOGRAPHICS on our Tumblr site **www.australiainstitute.tumblr.com**

4. BIODIVERSITY IMPACTS

- *A total of 4,084 ha of vegetation will be removed progressively over the life of the project, including 738 ha of Box Gum and Derived Native Grassland Critically Endangered Ecological Community, and 51 hectares of other Endangered Ecological Communities.*

- *The Biodiversity Offsets Strategy as a whole will address the predicted loss of vegetation by ultimately providing, following revegetation and rehabilitation initiatives, 6,366 ha of Box Gum Woodland and Derived Native Grassland, and 1,759 ha of other Endangered Ecological Communities, and 4, 890 ha of other woodland vegetation.*

- *The offset areas provide similar woodland and forest including Box Gum Woodland that will be impacted by the Project and offer valuable habitat for native flora and fauna.*

- In the area disturbed (4,084ha) there is approximately 800 hectares of Koala habitat.

It is questionable why the properties Aandra and Clonmeen are considered for offsets as they do not provide like for like vegetation communities or habitat similar to that occurring in the mine project area. For offsets to be acceptable they must be a legally defensible match of vegetation communities and habitat to that which will be impacted by the proposed mine. Elevation, soil type and rainfall must all be similar to have the same assemblage of flora and fauna.

The land near Barraba and Mt Kaputar proposed for offsets is likely to contain very little or no like for like match of vegetation communities and habitat as that found in the mine area.

Local knowledge of the locality gained when assessing the Maules Creek offsets found the communities not to be the endangered ecological community, but dominantly Stringybark open forests on skeletal ridges with shrubby understorey and litter ground cover. That review is attached.

The capability of the majority of the remnants in the Mt Kaputar area to be enhanced for offsets also needs to be independently assessed, as it is highly likely that the communities are in a mature or locked up state and not likely to change over time. Conservation management of such remnants will achieve very little gain.

The other real issue is that most of the woodland threatened species found in the Gunnedah region would find the Stringybark open forest habitat of Aandra and Clonmeen very marginal or unsuitable.

The revegetation proposed for the two properties is a very long term proposal for conservation gain, and even then would be marginal for many woodland species likely to occur in the Gunnedah region.

The offsets must be acquired on the Liverpool plains at the same elevation and in the same bioregion to be able to conclude that they meet the requirement of the offset policy.

There is a big reliance of achieving the offset through hectares of revegetation. The use of both woodland and derived native grassland endangered ecological community in the outcome of total hectares conserved 6,366ha is a concern, half of the total CEEC claimed is from tree planting. The habitat value of that land will be at least a 150 years away from offsetting the 830 hectares cleared.

Results from field assessment of Maules Creek mine offset properties Wirradale and Mt Lindesay, targeting sections of vegetation mapped as White Box – Stringbark grassy woodland as shown in Offset Management Plan Figure 2.2 Location 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.

The field assesmment targeted six areas mapped as White Box – Stringybark grassy woodland occuring 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 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 critical 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 vallley.

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

Where they were found to occur was in open forests dominated by Silvertop Stringybark *(Eucalyptus laevopinea*) where they were often in sub dominant associations with 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 seperated 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 dominatly 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 determing factors of species compositon of the ground layer, 20 or more mature trees per ha, and the presece 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 the two coal mines 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 occuring in the two bioregions. The most obvious are the geology, dominant trees and grasses, and bird species present. Leard 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 Stringbark (*Eucalyptus laevopinea*), Orange gum (*Eucalyptus prava*), New England Blackbutt (*Eucalyputs 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 occuring 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 identifed as fitting the CEEC. The independent review should be done botanists familiar with the regions flora, both David Carr, Lachlan Copeland and John Hunter would be very credible.

It is not clear where the 2604 ha of Conditon 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.

Over the 21-year life of the mine and the management of these properties, very little habitat change 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.

The vegetation map of Wirradale and Mt Lindesay prepared by Cumberland Ecology

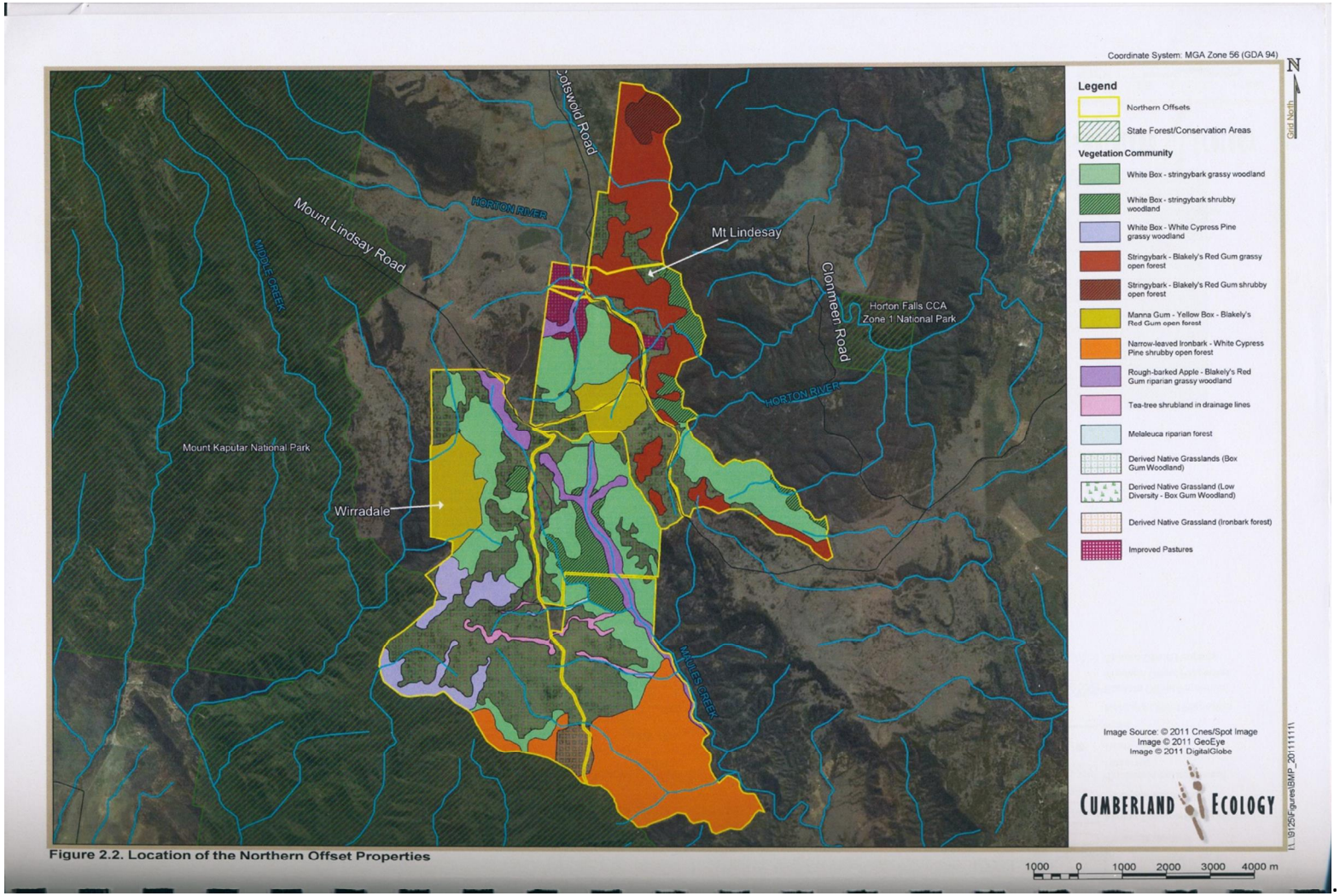
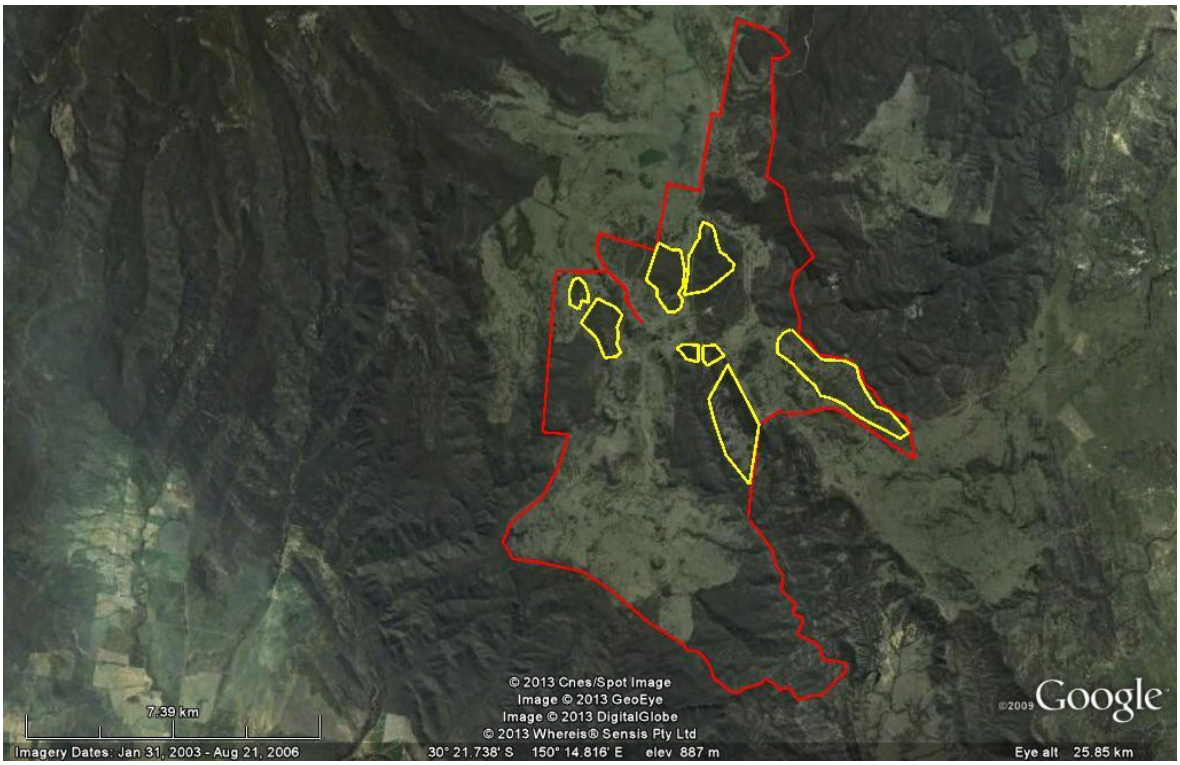
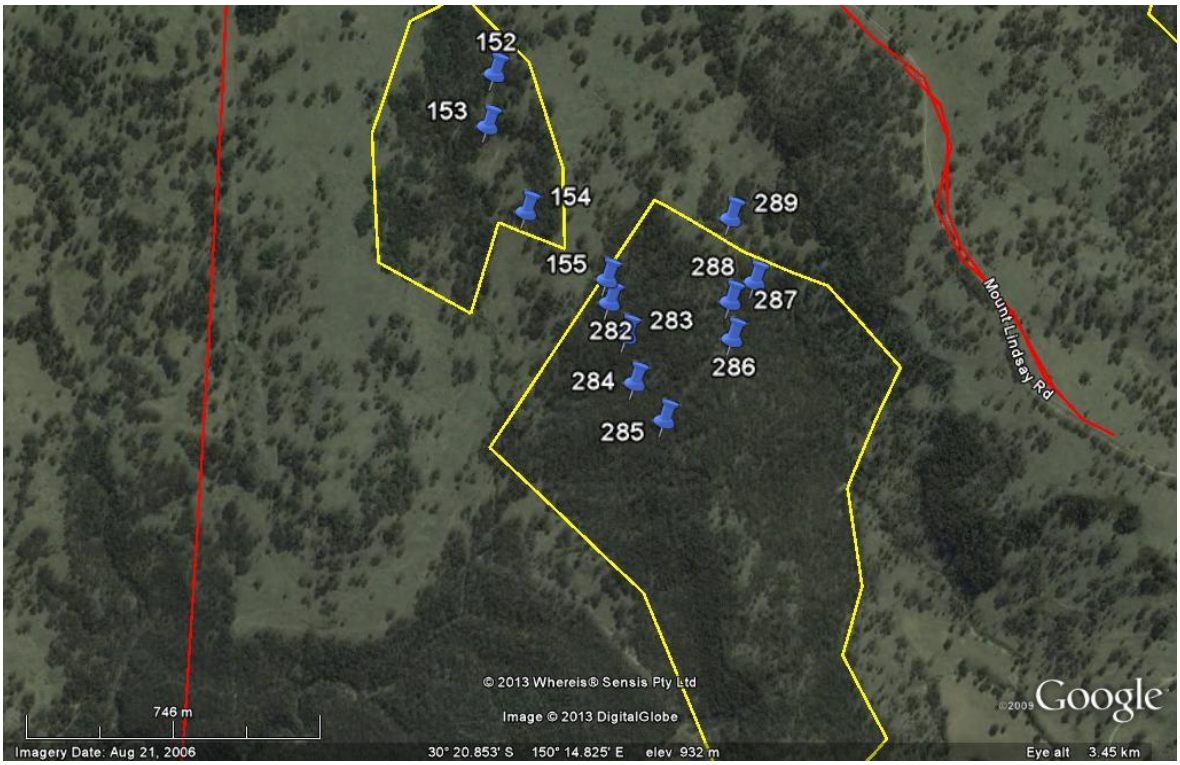


Figure 2.2. Location of the Northern Offset Properties

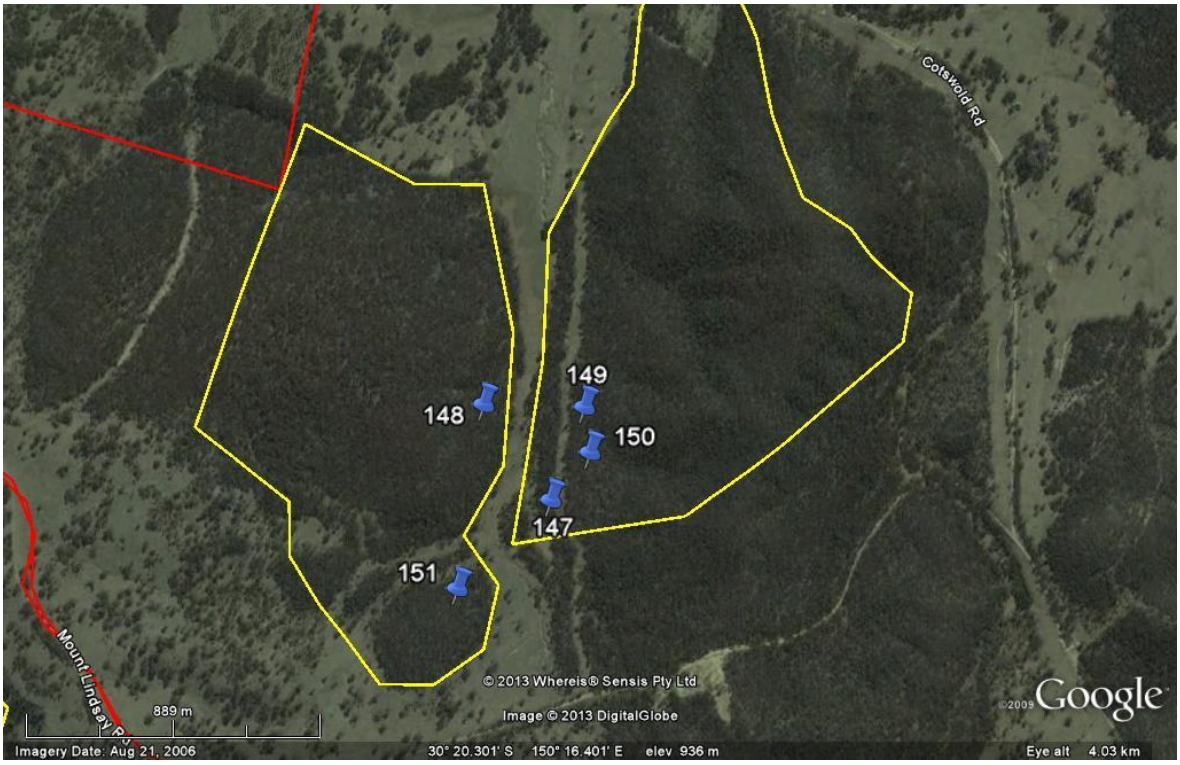
The areas of mapped White box – Stringybark grassy woodland targeted in this field assessment



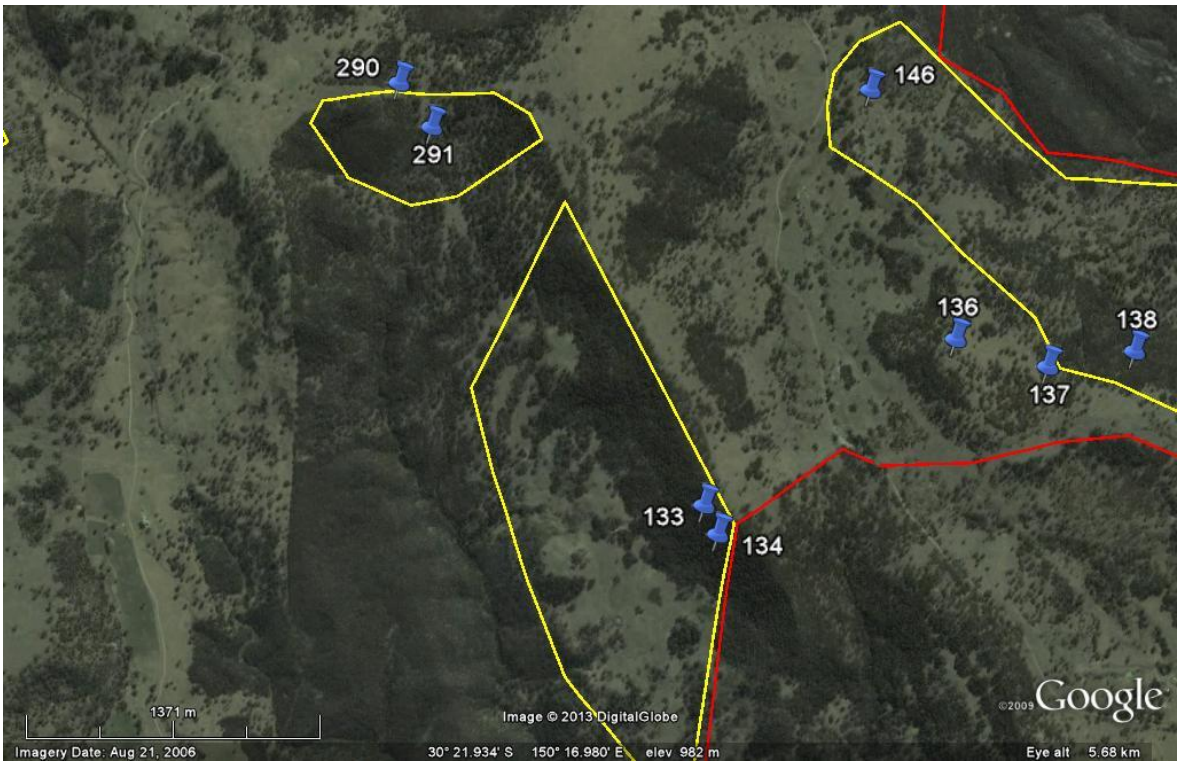
The waypoint locations where the vegetation was recorded, as detailed in the table below



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



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



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

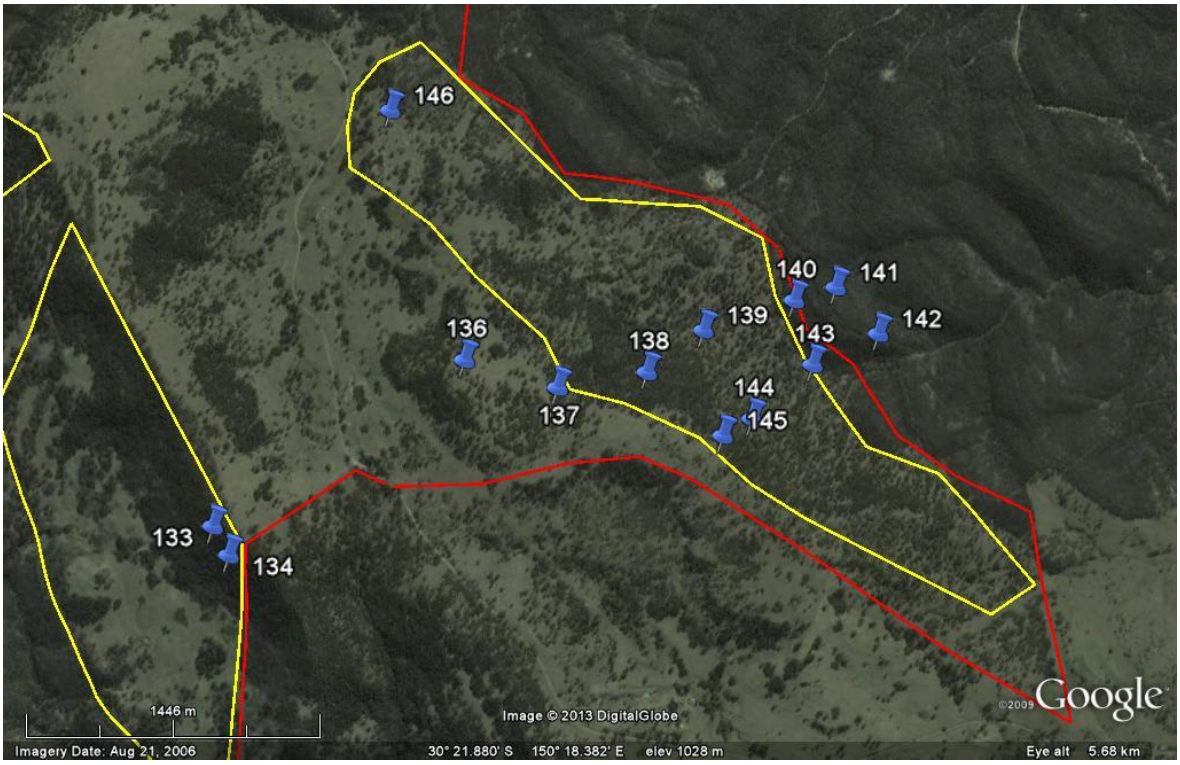


Table 1 details the vegetation and structure recorded at the waypoints shown in the previous maps, photos of each waypoint are provided on the attach CD

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