Mark Jacobs
General Manager, Environment, Approvals & Community Relations
Yancoal Australia Ltd
Level 25, 363 George Street
Sydney NSW 2000

Job No: 14SUTENV-0017

17 October 2014

Dear Mark

RE: Review of the adequacy of potential Regent Honeyeater habitat in the Moolarben Stage 2 proposed Biodiversity Offset Strategy

Yancoal Australia Pty Ltd (Yancoal) commissioned Cumberland Ecology to prepare a Biodiversity Offset Strategy (BOS) for the Moolarben Coal Project Stage 2 (Cumberland Ecology 2014).

The Stage 2 project will impact on 1,533.8 ha of remnant forest, woodlands and secondary grasslands, part of which is potential habitat for the critically endangered Regent Honeyeater. The proposed Stage 2 BOS includes a combined offset area of 4,822.3 ha (excluding 67.9 ha of exotic vegetation and cleared land) plus 1,502 ha of mine site rehabilitation (Cumberland Ecology 2014; letter from Yancoal to the NSW Department of Planning and Infrastructure, now Department of Planning and Environment (DPE) dated 25 March 2014).

The NSW Office of Environment and Heritage (OEH) made a submission to the Planning Assessment Commission (PAC) regarding the adequacy of the proposed Stage 2 BOS in providing suitable habitat for the Regent Honeyeater (OEH submission to PAC, undated 2014a).

OEH used the BioBanking Assessment Methodology (BBAM) (DECC 2008) and assumptions/estimates regarding site values scores (vegetation condition as described in the various environmental assessment reports) to run two scenarios which tested the adequacy of the proposed Stage 2 BOS against the NSW Governments Biodiversity Offset principles. Following its assessment, OEH was particularly concerned about the treatment of potential habitat for the Regent Honeyeater. OEH compared the analysis for this species in the Stage 1 modification Environmental Assessment Report (EMM 2013) and BOS (ELA 2013), which used a narrow definition of suitable habitat types for this species (Footslope grassy woodlands and Shrubby White Box open forest on hillsides and ridges – which OEH states is '*consistent with the habitat preferences in the Threatened Species Profile Database (TSPD) that underpins the BBAM'*) and the broader definition used by Cumberland Ecology in the Stage 2 BOS which has included all grassy woodlands and dry sclerophyll forest vegetation at both impact and offset sites. Cumberland Ecology (2014) included 2,094 ha of '*Red Stringybark – Scribbly Gum – Red Box – Long-leaved Box shrub – tussock grass open forest*' at the Dun Dun offset properties in their offset calculations which OEH and the TSPD states is not considered a suitable habitat for the Regent Honeyeater and is too remote from the impact sites. It is noted by Eco Logical Australia (ELA) that this statement is inconsistent with the data provided on the OEH website for this species which is used in Biobank offset calculations (see below).

Yancoal has commissioned ELA to undertake and independent assessment of the validity of the proposed Stage 2 BOS in relation to the Regent Honeyeater using the BBAM (DECC 2008) and recent modifications (now gazetted) to this methodology (OEH 2014b) and the TSPD (which has been replaced by BioNet).

ELA have considerable expertise in the use of the BBAM, with 12 accredited assessors, have had 10 Biobank Agreements registered, five Biobank Statements issued and as a Registered Training Organisation are licenced by OEH to deliver the BioBanking Assessment Methodology Accredited

Assessor Training Course. Since 2008, this course has been delivered 26 times to nearly 300 environmental consultants in NSW, including over 75 OEH staff.

Methods

ELA have not undertaken any site assessments or validation of the vegetation mapping undertaken by Cumberland Ecology and have used the data contained in the Yancoal letter to the DPE dated 25 March 2014 as the basis for determining the vegetation types and areas impacted by the Stage 2 project and proposed in the Stage 2 BOS (**Table 1**).

Like OEH, in the absence of biometric plot data, ELA has made assumptions on the current site value scores for each vegetation type based on the broad condition descriptions by Cumberland Ecology (2014) i.e. vegetation types mapped and described as intact woodlands (at both impact and proposed offset sites) have been assumed to be in 'benchmark' condition with a starting site value score of '100'. High species richness derived grasslands have been assumed to have no canopy, mid-story, hollow bearing trees or fallen logs and a condition score of '2' for native ground cover grasses, shrubs and other and '1' for overstory regeneration. Low species richness or poor condition secondary grasslands have been assumed to have no canopy, mid-story, hollow bearing trees or fallen logs and a condition score of '1' for native ground cover grasses, shrubs and other and '0' for over-story regeneration. It is noted that these assumptions are conservative and that the woodland vegetation is highly likely to not be in benchmark condition for several habitat attributes. These assumptions have resulted in impacts calculations 'requiring' more credits than would normally be the case and offset sites 'generating' fewer credits than is likely to be the case in a formal assessment.

At the impact site, the extent of vegetation cover in moderate-good condition in the 100 ha and 1,000 ha assessment circles was assessed by a single assessment circle and has been estimated to drop from '91-100%' before impact to '0' after impact and '51-60%' to '11-20%' after respectively. No separate calculation was undertaken for indirect impacts (or edge effects) as ELA does not have sufficient information at hand to determine the extent of possible indirect impacts.

Rehabilitation of the mine site was calculated on the offset side of the calculator using the 'default' increase in site value score rather than the '*increased scores for additional management actions'*. This is consistent with the Framework for Biodiversity Assessment – NSW Biodiversity Offset Policy for Major Projects (Major Projects FBA) (OEH 2014c). The area of rehabilitation was reduced to 1,502 ha to allow for a 30ha final 'void' and was assessed as being a rehabilitation of Blakely's Red Gum, Yellow Box and White Box grassy woodland vegetation types as stated in the Cumberland Ecology BOS.

At offset sites, the eight properties were grouped into two assessments (four sites each) for properties in the Hunter Central Rivers CMA (HCR CMA) and Central West CMA (CW CMA) and the extent of vegetation cover in moderate-good condition in the 100 ha and 1,000 ha circles was again assessed by a single assessment circle using the average cover across the four sites and has been estimated to increase from '71-80%' before management to '91-100%' and '81-90%' respectively after management (via regeneration of extensive secondary grasslands and cleared areas).

In the absence of the credit calculator tool for BBAM 2014 being available, the calculations have been undertaken in the current version of the tool (version 2.1) which includes the Regent Honeyeater as an 'ecosystem credit' species with a Tg score of 0.75.

As an ecosystem credit species there is no requirement under the BBAM to assess the adequacy of offset provided on a species by species bases as this is addressed via the protection of 'like for like' vegetation types – which OEH has stated in its PAC submission has not been met. ELA has thus calculated the number of ecosystem species credits generated for each of the OEH recognised vegetation types for this species as provided in the BioNet database (the BioNet database includes a list of all of the vegetation types associated with (or as predicted habitat) for the Regent Honeyeater. This list includes a number of revised and new biometric vegetation types within the Hunter Central Rivers (HCR) and Central West (CW) CMAs which are not included in the current version of the BBAM tool. ELA have aligned these new biometric vegetation types with those mapped at the Stage 2 impact and offset sites as indicated by a yellow highlighted) (**Attachments A** and **B**).

The BioNet website (which has replaced the TSPD as the threatened species database for use in the BBAM and the Major Projects FBA) has been updated for BBAM 2014 and now includes the Regent Honeyeater as a 'species credit' species with a Tg score of 0.125 (rounded to 0.13 within the credit calculator tool).

Further, as a Major Project, the Stage 2 project would have been assessed under the *OEHs 'Interim policy on assessing and offsetting biodiversity impacts of Part 3A, State Significant Developments and State Significant Infrastructure projects*' (OEH 2011)' which has been replaced by the new Major Projects Offset Policy, effective 1 October 2014 (OEH 2014). This policy, and the revised BBAM 2014 lead to significantly lower offset requirements than the old BBAM and states that '*where a critically endangered or endangered threatened species is concerned* (i.e. the Regent Honeyeater), *the threatened species multiplier used in equation 5 must be '3'* (i.e. equivalent to a Tg score of 0.33).

This does not affect the number of ecosystem credits required as a number of predicted threatened species have a Tg score lower than the Regent Honeyeater (and thus drive the offset ratios) but has a significant impact on the number of credits required when assessed as a species credit.

Given the above, ELA has assessed the adequacy of the proposed offset package for the Regent Honeyeater as an ecosystem credit species (i.e. the presence of predicted vegetation types using the updated BioNet database) and as a species credit with a Tg score of 0.75, 0.125 and 0.33.

Results

Area and biometric vegetation types in impact and offset areas

Table 1 shows the biometric vegetation types and areas reported by Cumberland Ecology (2014) and Yancoal (25 March 2014) and the ELA assigned revised biometric vegetation types for the impact area, the area of mine site rehabilitation (with a commitment to revegetation all as grassy woodland) and each of the proposed offset properties.

The total area of offset vegetation available is **4,827.61** ha (after a reduction of 20% for the area of each vegetation type in the Avisford 1 property due to existing conservation obligations) and removal of a 41 ha section in the Avisford 2 property (excludes land to be retained for access, a dwelling and various rural structures) with a further **67.86** ha available for restoration.

We note a minor discrepancy (0.1%) in the areas above compared to those reported by Yancoal on 25 March 2014 to DPE. This is due to a more accurate calculation of the remaining area of vegetation in the Avisford 2 property after removal of 41 ha being 212.89 ha rather than 208 ha (an increase of 4.89 ha). ELA considers this a very minor change.

Impact site offset requirements - Regent Honeyeater Ecosystem Credits

Table 2 shows the number of credits required/generated for impacts to and protection of those vegetation types recognised as Regent Honeyeater habitat by OEH's BioNet database which is used by the BBAM (see **Attachments A** & **B**).

The number of ecosystem credits required for impacts to **232.40 ha** of potential Regent Honeyeater habitat requires **19,535** credits. Conservation management of **2,818.41 ha** of existing woodland and forest habitats generates **16,770** credits. When **1,438.78 ha** of proposed derived and secondary grassland restoration is included as proposed in the BOS, an additional **12,440** credits are generated. When **1,502 ha** of mine site rehabilitation is included (targeted as Regent Honeyeater habitat) a further **15,639** credits are generated.

The number of Regent Honeyeater ecosystem credits generated by the proposed offset package, excluding mine site rehabilitation, generates a large surplus (19,535 credits required, 29,210 generated by existing woodland and woodland (DNG) restoration in offset areas).

Impact site offset requirements - Regent Honeyeater Species Credits

Due to changes in the way that the Regent Honeyeater is treated in the BBAM, the area of vegetation in **Table 2** was also used to calculate the number of species credits required with various Tg scores (see **Table 3**).

Using the current Tg score of 0.75, the number of credits required is **3,098**. Conservation management of **2,818.41 ha** of existing woodland and forest habitats that are recognised by BioNet as Regent Honeyeater habitat generates **16,910** credits, i.e. a large credit surplus without including credits generated for derived grassland restoration (an additional 8,633 credits) or mine site rehabilitation (an additional 9,012 credits).

If the Tg score is reduced to 0.125 as is currently stated by BioNet and will be used by BBAM 2014 (which the Biobanking tool rounds to 0.13), the number of credits required is significantly increased to **17,877**. The Conservation management of existing woodland habitats generates **16,910** credits with a further **8,663** credits generated for derived grassland restoration. Again a credit surplus without considering mine site rehabilitation (an additional 9,012 credits).

Conclusion

ELA has been asked to undertake an independent assessment of the adequacy of the proposed offset package for the Stage 2 Project in relation to the Regent Honeyeater using the BBAM and associated OEH datasets.

The BBAM and Interim Major Projects Offset Policy have recently changed (now BBAM 2014 and Major Projects FBA) which has altered the way the Regent Honeyeater is treated. This has lead to some difficulties in presenting this information in a simple format.

Regardless of whether the Regent Honeyeater is considered as an 'ecosystem' or 'species' credit species and whether the existing or new Biobanking calculator and associated methodology are used, the proposed offset package results in a surplus of credits with a Tg score of 0.75 or 0.125.

As a Major Project, the Stage 2 Project is not required to be assessed by the BBAM in a formal sense and accordingly ELA has not addressed the variation rules regarding IBRA subregions other than to state that the vegetation type found on the Dun Dun property (CW176 – now classified as CW291 – '*Red Stringybark – Inland Scribbly Gum open forest on steep hills in the Mudgee northern section of the NSW South Western Slopes Bioregion')*, is recognised by BioNet (and therefore BBAM 2014) as a potential Regent Honeyeater habitat.

Should the DP&E and/or OEH require copies of our detailed calculations, these can be provided.

Robert Humphries

Robert Humphries
Manager Biobanking and Offset Programs
Eco Logical Australia

Attachment A: Extract from BioNet data base providing a list of all vegetation types in the Central West CMA recognised as potential Regent Honeyeater habitat

Attachment B: Extract from BioNet data base providing a list of all vegetation types in the Hunter Central Rivers CMA recognised as potential Regent Honeyeater habitat.

References

Cumberland Ecology 2014. Moolarben Coal Project Stage 2 Biodiversity Offset Strategy, Additional Fauna and Flora Surveys. Prepared for Moolarben Coal, February 2014.

Department of Environment and Climate Change 2008. BioBanking Assessment Methodology. July 2008.

ELA 2013. Revised Moolarben Coal project Stage 1 – Optimisation Modification Project – Biodiversity Offset Strategy. Prepared for Moolarben Coal Operations Pty Limited, by Eco Logical Australia, September 2013.

EMM (2013) *Moolarben Coal Project Stage 1 Optimisation Modification Ecological Assessment. Prepared for Moolarben Coal Operations Pty Limited 22 February 2013.*

Office of Environment and Heritage 2011. NSW OEH Interim Policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects. Approved by Chief Executive Officer 25 June 2011.

Office of Environment and Heritage 2014a. OEH Biodiversity Comments on Department of Planning and Infrastructure Director-Generals Report and Recommended Approval Conditions. Submission to Planning Assessment Commission – date unknown.

Office of Environment and Heritage 2014b. BioBanking Assessment Methodology 2014. September 2014.

Office of Environment and Heritage 2014c. Framework for Biodiversity Assessment NSW Biodiversity Offset Policy for Major Projects, September 2014.

Yancoal Australia Ltd 2014. Letter to Department of Planning and Infrastructure regarding Moolarben Coal Project Stage 2 Biodiversity Offset Strategy, dated 25 March 2014.

Table 1: Biometric vegetation types and impact / offset areas assed by BBAM for Moolarben Stage 2 Project

CMA	Veg Zone	Biometric Vegetation Types	Condition	Site Value Score	Impacts (CE 2014)	Mine Site Rehab	OFFSET AREAS								
							Onsite	Old Bobadeen	Ulan	Libertus	Dun Dun East	Dun Dun West	Avisford 1 (Areas reduced by 20%)	Avisford 2 (Reduced by 41 ha)	Total
HCR	1	Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands	Woodland	100	115.4		15.43	6.49							21.92
HCR	2	Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands	DNG (Low)	28.65	631.5		198.94								198.94
HCR	3	Common Fringe-myrtle - Babingtonia densifolia - Leptospermum parvifolium low shrubland on sandstone ridges of the upper Hunter, Sydney Basin	Shrubland	100					13.07	18.72					31.79
HCR	4	Dwyer's Red Gum low woodland on exposed sandstone ridges of the upper Hunter Valley, Sydney Basin	Woodland	100						61.75					61.75
HCR	5	Grey Box - Narrow-leaved Ironbark shrubby woodland on hills of the Hunter Valley, North Coast and Sydney Basin	Woodland	100	27.4										
HCR	6	Grey Gum - Narrow-leaved Stringybark - ironbark woodland on ridges of the upper Hunter Valley, Sydney Basin	Woodland	100	314.5		214.89								214.89
HCR	7	Narrow-leaved Ironbark - Grey Gum shrubby woodland on footslopes on the upper Hunter Valley, Sydney Basin	Woodland	100				19.92							19.92
HCR	8	Narrow-leaved Ironbark shrubby open forest on hills of the central Hunter Valley, Sydney Basin	Woodland	100				64.40	118.04	23.44					205.88
HCR	9	River Oak riparian woodland of the North Coast and northern Sydney Basin	Woodland	100					3.86						3.86
HCR	10	Rough-barked Apple - Coast Banksia shrubby woodland on Warkworth Sands of the central Hunter Valley, Sydney Basin	Woodland	100	244.1		2.49								2.49
HCR	11	Scribbly Gum - Brown Bloodwood woodland of the southern Brigalow Belt South	Woodland	100	83.9		2.23			31.48					33.71
HCR	12	Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin	Woodland	100	101.5										
HCR	13	White Box - Narrow-leaved Ironbark shrubby open forest on hills of the central Hunter Valley, Sydney Basin	Woodland	100	7.6		1.47			24.85					26.32
HCR	14	White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South	Woodland	100	7.9		33.66	13.91	48.43	17.80					113.80
HCR	15	White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South	DNG (High)	22.4			2.27	385.55							387.82
HCR	16	White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South	DNG (Low)	13.02					155.24						155.24
HCR	17	Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands	Mine Rehab	14.06		746.9									
HCR	18	White Box - Narrow-leaved Ironbark shrubby open forest on hills of the central Hunter Valley, Sydney Basin	Mine Rehab	3.12		7.6									
HCR	19	White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South	Mine Rehab	3.12		747.5									
CW	20	Red Stringybark - Scribbly Gum - Red Box - Long-leaved Box shrub - tussock grass open forest the NSW South Western Slopes Bioregion (Benson 290)	Woodland	100							1,280.75	513.34	300.50		2,094.59
CW	21	Red Stringybark woodland of the dry slopes of the South Western Slopes Bioregion	Woodland	100										164.83	164.83
CW	22	River Oak riparian woodland of the Brigalow Belt South and Nandewar Bioregions (Benson 84)	Woodland	100								15.50			15.50
CW	23	White Box - Rough-barked Apple alluvial woodland on the NSW western slopes (Benson 274)	Woodland	100										43.34	43.34
CW	24	White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions	Woodland	100										4.72	4.72
CW	25	Yellow Box - Blakely's Red Gum grassy woodland of the Nandewar Bioregion	Woodland	100							115.19	122.44	91.90		329.53

CW	26	Yellow Box - Blakely's Red Gum grassy woodland of the Nandewar Bioregion	DNG (High)	22.4							293.20		9.61		302.81
CW	27	Yellow Box - Blakely's Red Gum grassy woodland of the Nandewar Bioregion	DNG (Low)	13.02							86.71	307.26			393.97
CW	28	Exotic	Exotic					23.51	22.27	22.08					67.86
					1533.8	**1502**	**471.38**	**513.78**	**360.91**	**200.12**	**1,775.85**	**958.54**	**402.00**	**212.89**	**4,895.47**

Table 2: Regent Honeyeater identified vegetation types and number of credits required / generated as an ecosystem credit species (refer to Attachments A & B)

Vegetation name	Old Veg Code	New (Equivalent Veg Code)	Impact			Offsets (Woodland)			Offsets (DNG)			Rehab		
			Area (ha)	Ecosystem Credits	Credits/ha	Area (ha)	Credits	Credits/ha	Area (ha)	Credits	Credits/ha	Area (ha)	Credits	Credits/ha
Blakely's Red Gum - Yellow Box grassy open forest or woodland	HU515	HU681 (Best fit)	115.40	9,700	84.06	21.92	130	5.93	198.94	1,385	6.96	746.90	7,732	10.35
White Box - Narrow-leaved Ironbark shrubby open forest	HU653	HU820 (Best fit)	7.60	639	84.08	26.32	157	5.97				7.60	80	10.53
White Box - Yellow Box grassy woodland	HU654	HU909 (Best fit)	7.90	664	84.05	113.80	677	5.95	543.06	5,101	9.39	747.50	7,827	10.47
Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin	HU618	HU618	101.50	8,532	84.06									
River Oak riparian woodland	HU598	HU711				3.86	23	5.96						
Red Stringybark - Scribbly Gum - Red Box - Long-leaved Box shrub - tussock grass open forest	CW176	CW291				2,094.59	12,463	5.95						
Red Stringybark woodland	CW177	CW177				164.83	981	5.95						
River Oak riparian woodland	CW180	CW180				15.50	92	5.94						
White Box - Rough-barked Apple alluvial woodland	CW211	CW211				43.34	258	5.95						
White Box grassy woodland	CW215	CW215				4.72	28	5.93						
Yellow Box - Blakely's Red Gum grassy woodland	CW225	CW112				329.53	1,961	5.95	696.78	5,954	8.55			
			232.40	**19,535**	**336.24**	**2,818.41**	**16,770**	**5.95**	**1,438.78**	**12,440**	**8.65**	**1,502.00**	**15,639**	**10.41**

Table 3: Regent Honeyeater habitat and number of credits required / generated as a species credit species

Regent Honeyeater Tg Score	Impact			Offsets (Woodland)			Offsets (DNG)			Rehab		
	Area (ha)	Credits	Credits/ha	Area (ha)	Credits	Credits/ha	Area (ha)	Credits	Credits/ha	Area (ha)	Credits	Credits/ha
0.75	232.4	3,098	13.33	2,818.40	16,910	6.00	1,438.78	8,633	6.00	1,502.00	9,012	6.00
0.33	232.4	7,043	30.31									
0.13	232.4	17,877	76.92									

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Ecological data

Descriptive text & photos | New search

Profile details

Profile ID	10841		
Scientific name	Anthochaera phrygia	**Kingdom**	Animal
Common name	Regent Honeyeater	**Family**	Meliphagidae
Profile type	Species	**General type**	Birds
NSW status	Critically Endangered	**Commonwealth status**	Endangered
		Date of final gazettal	05/11/2010

SRS habitat | SRS loss | Biobanking | Response to management | Vegetation type | RFS

Filter by CMA

CMA: Central West

Add veg types | Copy from another species

Results **51-73** of **73**

1 2

CMA	BioMetric vegetation type code	Vegetation type	Vegetation type status
Central West	CW139	Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion	Complete
Central West	CW207	Herbaceous White Box - Apple Box valley woodland of the NSW central western slopes	Complete
Central West	CW149	Long-leaved Box - Red Box - Red Stringybark mixed open forest on hills and hillslopes in the NSW South Western Slopes Bioregion	Complete
Central West	CW157	Mugga Ironbark - Buloke - Pillga Box - White Cypress Pine shrubby woodland on sandstone in the Dubbo region, south-western Brigalow Belt South Bioregion	Complete
Central West	CW156	Mugga Ironbark - Inland Grey Box shrubby woodland of the Brigalow Belt South Bioregion	Complete
Central West	CW155	Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	Complete
Central West	CW159	Narrow-leaved Ironbark grassy woodland of the Brigalow Belt South bioregion	Complete
Central West	CW160	Narrow-leaved Ironbark shrubby woodland of the Brigalow Belt South bioregion	Complete
Central West	CW177	Red Stringybark woodland of the dry slopes of the NSW South Western Slopes Bioregion	Complete
Central West	CW180	River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Complete
Central West	CW111	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Complete
Central West	CW198	Sydney sandstone hinterland dry sclerophyll forests of the Sydney Basin Bioregion	Complete
Central West	CW208	White Box - Black Cypress Pine - red gum +/- Mugga Ironbark shrubby woodland in hills of the NSW central western slopes	Complete
Central West	CW210	White Box - Red Stringybark shrubby woodlands on basalt slopes of the Nandewar Bioregion and Brigalow Belt South Bioregion	Complete
Central West	CW211	White Box - Rough-barked Apple alluvial woodland of the NSW central western slopes including in the Mudgee region	Complete
Central West	CW212	White Box - Tumbledown Red Gum - Long-leaved Box shrub/grass woodland on fine-grained sediments of the upper Macquarie River gorge, NSW central western slopes	Complete
Central West	CW213	White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	Complete
Central West	CW214	White Box - White Cypress Pine shrubby open forest of the Nandewar Bioregion and Brigalow Belt South Bioregion	Complete
Central West	CW216	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Complete
Central West	CW215	White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion	Complete
Central West	CW217	White Box shrubby open forest on fine grained sediments on steep slopes in the Mudgee region of the of central western slopes of NSW	Complete

Central West	CW225	Yellow Box - Blakely's Red Gum grassy woodland of the Nandewar Bioregion	Complete
Central West	CW226	Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	Complete

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BioNet the website for the Atlas of NSW Wildlife

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Ecological data

Descriptive text & photos | New search

Profile details

Profile ID	10841		
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Common name	Regent Honeyeater	**Family**	Meliphagidae
Profile type	Species	**General type**	Birds
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SRS habitat | **SRS loss** | **Biobanking** | **Response to management** | **Vegetation type** | **RFS**

Filter by CMA

CMA: Central West

Add veg types | Copy from another species

Results **1-50** of **73**

1 2

CMA	BioMetric vegetation type code	Vegetation type	Vegetation type status
Central West	CW235	Black Cypress Pine - Narrow-leaved Ironbark - red gum +/- White Bloodwood shrubby open forest on hills of the southern Pilliga, Coonabarabran and Garawilla regions, Brigalow Belt South Bioregion	New
Central West	CW242	Blue-leaved Stringybark open forest of the Mudgee region NSW central western slopes	New
Central West	CW243	Bottlebrush riparian shrubland wetland of the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion	New
Central West	CW259	Inland Scribbly Gum - Black Cypress Pine - Red Ironbark open forest of the NSW central western slopes	New
Central West	CW260	Inland Scribbly Gum - Red Stringybark - Black Cypress Pine - Red Ironbark open forest on sandstone hills in the southern Brigalow Belt South Bioregion and northern NSW South Western Slopes Bioregion	New
Central West	CW261	Inland Scribbly Gum - Red Stringybark - Black Cypress Pine hillslope shrub-tussock grass open forest on mainly sandstone ranges in the NSW central western slopes	New
Central West	CW262	Inland Scribbly Gum - White Bloodwood - Red Stringybark - Black Cypress Pine shrubby sandstone woodland mainly of the Warrumbungle NP - Pilliga region in the Brigalow Belt South Bioregion	New
Central West	CW263	Inland Scribbly Gum grassy open forest on hills in the Mudgee Region, NSW central western slopes	New
Central West	CW265	Long-leaved Box - Red Box grass-shrub open forest on hillslopes in the Mudgee Region, NSW central western slopes	New
Central West	CW268	Mugga Ironbark - Black Cypress Pine - Red Stringybark - Blakely's Red Gum - Red Ironbark woodland on hillslopes and in valleys on ranges in the NSW central western slopes	New
Central West	CW269	Mugga Ironbark - Narrow-leaved Ironbark - Buloke - Black Cypress Pine shrub grass open forest in the Goonoo forests and surrounding region, southern Brigalow Belt South Bioregion	New
Central West	CW270	Mugga Ironbark - Red Box - White Box - Black Cypress Pine tall woodland on rises and hills in the northern NSW South Western Slopes Bioregion	New
Central West	CW272	Narrow-leaved Ironbark - Black Cypress Pine +/- Blakely's Red Gum shrubby open forest on sandstone low hills in the southern Brigalow Belt South Bioregion (including Goonoo)	New
Central West	CW273	Narrow-leaved Ironbark - White Cypress Pine - Buloke tall open forest on lower slopes and flats in the Pilliga Scrub and surrounding forests in the central north Brigalow Belt South Bioregion	New
Central West	CW275	Narrow-leaved Ironbark- Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bio	New
Central West	CW280	Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion	New
Central West	CW281	Red gum - Rough-barked Apple - Narrow-leaved Ironbark - cypress pine grassy open forest on flats and drainage lines in the Goonoo and surrounding forests, southern Brigalow Belt South Bioregion	New
Central		Red gum - Rough-barked Apple +/- tea tree sandy creek woodland (wetland) in	

West	CW238	the Pilliga - Goonoo sandstone forests, Brigalow Belt South Bioregion	New
Central West	CW285	Red Stringybark - Blakely's Red Gum +/- Long-leaved Box shrub/grass hill woodland of the NSW South Western Slopes Bioregion	New
Central West	CW291	Red Stringybark - Inland Scribbly Gum open forest on steep hills in the Mudgee - northern section of the NSW South Western Slopes Bioregion	New
Central West	CW286	Red Stringybark - Kurrajong - mixed eucalypt grassy open forest of the Coonabarabran - Gulgong region in the Brigalow Belt South and NSW SWS Bioregion	New
Central West	CW287	Red Stringybark - Long-leaved Box - Black Cypress Pine - grassy/shrubby low woodland on ranges, central NSW South Western Slopes Bioregion	New
Central West	CW288	Red Stringybark - Long-leaved Box - Black Cypress Pine shrub/grass woodland on siliceous sedimentary ranges in the upper NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	New
Central West	CW289	Red Stringybark - Narrow-leaved Ironbark - Black Cypress Pine - hill red gum sandstone woodland of southern NSW Brigalow Belt South Bioregion	New
Central West	CW290	Red Stringybark - Rough-barked Apple +/- Nortons Box open forest on hillslopes in the Warrumbungle NP - Coolah regions	New
Central West	CW292	Red Stringybark woodland on hillslopes, northern NSW South Western Slopes Bioregion	New
Central West	CW294	Ribbon Gum - Narrow-leaved Peppermint grassy open forest on basalt plateaux, Sydney Basin Bioregion and South Eastern Highlands Bioregion	New
Central West	CW299	Rough-barked Apple - Blakely's Red Gum - Black Cypress Pine woodland on sandy flats, mainly in the Pilliga Scrub region	New
Central West	CW300	Rough-barked Apple - Yellow Box grass/shrub footslope open forest, Brigalow Belt South Bioregion	New
Central West	CW308	Thyme Honey-myrtle - red gum - Mugga Ironbark shrubland / woodland in impeded drainage flats or depressions in the southern Brigalow Belt South Bioregion	New
Central West	CW311	Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion	New
Central West	CW316	Warrumbungle mountains Nandewar Box - Yellow Box shrub grass open forest, Brigalow Belt South Bioregion	New
Central West	CW317	Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion	New
Central West	CW318	White Bloodwood - Red Ironbark - Black Cypress Pine shrubby sandstone woodland of the Pilliga Scrub and surrounding regions	New
Central West	CW319	White Box - Black Cypress Pine shrubby hill woodland in the east Pilliga - Mendooran - Gulgong regions, mainly Brigalow Belt South Bioregion	New
Central West	CW320	White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion	New
Central West	CW321	White Box - White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion	New
Central West	CW322	White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion	New
Central West	CW323	White Box shrubby woodland of the western Liverpool Range, Warrumbungle Range and south-west Pilliga forests, Brigalow Belt South Bioregion	New
Central West	CW326	White Cypress Pine - Narrow-leaved Ironbark - Buloke grassy open forest of the Dubbo region, southern Brigalow Belt South Bioregion	New
Central West	CW327	White Mallee - Dwyer's Red Gum mallee heath on sands in the Goonoo - Pilliga region, Brigalow Belt South Bioregion	New
Central West	CW328	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	New
Central West	CW329	Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion	New
Central West	CW330	Yellow Box grassy woodland on lower hillslopes and valley flats in the southern NSW Brigalow Belt South Bioregion	New
Central West	CW103	Apple Box - Blakely's Red Gum moist valley and footslopes grass-forb open forest of the NSW South Western Slopes Bioregion	Complete
Central West	CW102	Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion	Complete
Central West	CW209	Blakely's Red Gum - White Box - Yellow Box - Black Cypress Pine box grass/shrub woodland on clay loam soils on undulating hills of central NSW South Western Slopes Bioregion	Complete
Central West	CW112	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Complete
Central West	CW114	Blue-leaved Ironbark heathy woodland of the southern part of the Brigalow Belt South Bioregion	Complete
Central West	CW138	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Complete

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Ecological data

Descriptive text & photos | New search

Profile details

Profile ID	10841		
Scientific name	Anthochaera phrygia	**Kingdom**	Animal
Common name	Regent Honeyeater	**Family**	Meliphagidae
Profile type	Species	**General type**	Birds
NSW status	Critically Endangered	**Commonwealth status**	Endangered
		Date of final gazettal	05/11/2010

SRS habitat | SRS loss | Biobanking | Response to management | **Vegetation type** | RFS

Filter by CMA

CMA: Hunter-Central Rivers

Add veg types | Copy from another species

Results **1-50** of **74**

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CMA	BioMetric vegetation type code	Vegetation type	Vegetation type status
Hunter-Central Rivers	HU821	Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	Complete
Hunter-Central Rivers	HU910	Blakely's Red Gum - Rough-barked Apple shrubby woodland of central and upper Hunter	Complete
Hunter-Central Rivers	HU681	Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion	Complete
Hunter-Central Rivers	HU931	Broad-leaved Paperbark - Swamp Mahogany - Swamp Oak - Saw Sedge swamp forest of the Central Coast and Lower North Coast	Complete
Hunter-Central Rivers	HU938	Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast	Complete
Hunter-Central Rivers	HU892	Brown Bloodwood - Currawang - Caley's Ironbark shrubby woodland on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU891	Caley's Ironbark - Red Ironbark - Currawang shrubby woodland on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU822	Grey Box - Grey Gum - Rough-barked Apple - Blakely's Red Gum grassy open forest of the central Hunter	Complete
Hunter-Central Rivers	HU869	Grey Box - Slaty Box shrub - grass woodland on sandstone slopes of the upper Hunter and Sydney Basin	Complete
Hunter-Central Rivers	HU962	Grey Box grassy open forest of the Central and Lower Hunter Valley	Complete
Hunter-Central Rivers	HU690	Grey Box x White Box grassy open woodland on basalt hills in the Merriwa region, upper Hunter Valley	Complete
Hunter-Central Rivers	HU691	Grey Gum - Forest Red Gum - Yellow Box grassy tall open forest on mid-slopes of the Hunter Valley - North Coast escarpment	Complete
Hunter-Central Rivers	HU692	Grey Gum - Rough-barked Apple alluvial flat woodland in the upper Hunter Valley, mainly Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU754	Grey Myrtle - Grey Gum gully dry rainforest on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU937	Melaleuca biconvexa - Swamp Mahogany - Cabbage Palm swamp forest of the Central Coast	Complete

Hunter-Central Rivers	HU697	Mugga Ironbark - Black Cypress Pine shrub/grass open forest of the upper Hunter Valley, mainly Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU825	Narrow-leaved Ironbark - Black Cypress Pine shrub - grass woodland upper Hunter and northern Wollemi	Complete
Hunter-Central Rivers	HU817	Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	Complete
Hunter-Central Rivers	HU818	Narrow-leaved Ironbark - Grey Box - Spotted Gum shrub - grass woodland of the central and lower Hunter	Complete
Hunter-Central Rivers	HU905	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Complete
Hunter-Central Rivers	HU819	Narrow-leaved Ironbark - Native Olive shrubby open forest of the central and upper Hunter	Complete
Hunter-Central Rivers	HU837	Narrow-leaved Ironbark - Yellow bloodwood - Rough-barked Apple shrubby open forest on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU701	Narrow-leaved Ironbark +/- Grey Box grassy woodland of the upper Hunter Valley, mainly Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU702	Narrow-leaved Ironbark- Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bio	Complete
Hunter-Central Rivers	HU591	Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU865	Parramatta red gum - Fern-leaved banksia - Melaleuca sieberi swamp woodland of the Tomaree Peninsula	Complete
Hunter-Central Rivers	HU864	Parramatta Red Gum - Rough-barked Apple - Swamp Mahogany - Paperbarks swamp forest on lowlands of the Central Coast	Complete
Hunter-Central Rivers	HU772	Pink Bloodwood - Thin-leaved Stringybark - Grey Ironbark shrub - grass open forest on ranges of the lower North Coast	Complete
Hunter-Central Rivers	HU886	Red Ironbark - Grey Gum - Black Pine heathy woodland on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU883	Red Ironbark - Grey Gum - Narrow-leaved Stringybark - Brown Bloodwood shrubby open forest on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU807	Red Ironbark - Spotted Gum - Prickly-leaved Paperbark shrubby open forest of the Lower Hunter	Complete
Hunter-Central Rivers	HU709	Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Complete
Hunter-Central Rivers	HU975	River Oak - Rough-barked Apple grassy riparian forest of the Liverpool Plains	Complete
Hunter-Central Rivers	HU927	River Oak - Sandpaper Fig riparian forest of the Upper Hunter and Liverpool Ranges	Complete
Hunter-Central Rivers	HU711	River Oak moist riparian tall open forest of the upper Hunter Valley, including Liverpool Range	Complete
Hunter-Central Rivers	HU712	River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)	Complete
Hunter-Central Rivers	HU599	River Red Gum / River Oak riparian woodland wetland in the Hunter Valley	Complete
Hunter-Central Rivers	HU713	Rough-barked Apple - Blakely's Red Gum - Narrow-leaved Stringybark +/- Grey Gum sandstone riparian grass fern open forest on in the southern Brigalow Belt South Bioregion and Upper Hunter region	Complete
Hunter-Central Rivers	HU771	Rough-barked Apple - Forest Oak - Grey Gum grassy woodland on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU601	Rough-barked Apple - Grey Gum grassy open forest of the hinterland hills of the Central Coast, Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU714	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Complete

Hunter-Central Rivers	HU715	Scribbly Gum - Smooth-barked Apple - Red Bloodwood shrubby forest of the Lower Hunter, Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU720	Silvertop Stringybark - Yellow Box - Apple Box - Rough-barked Apple shrub grass open forest mainly on southern slopes of the Liverpool Range, Brigalow Belt South Bioregion	Complete
Hunter-Central Rivers	HU618	Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU860	Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast	Complete
Hunter-Central Rivers	HU863	Smooth-barked Apple - Red Mahogany - Swamp Mahogany - Melaleuca sieberi heathy swamp woodland of coastal lowlands	Complete
Hunter-Central Rivers	HU838	Smooth-barked Apple - Swamp Mahogany - Red Mahogany - Cabbage Palm open forest on lowlands of the Central Coast	Complete
Hunter-Central Rivers	HU803	Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast	Complete
Hunter-Central Rivers	HU804	Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest	Complete
Hunter-Central Rivers	HU816	Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter	Complete

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Ecological data

Descriptive text & photos | New search

Profile details

Profile ID	10841		
Scientific name	Anthochaera phrygia	**Kingdom**	Animal
Common name	Regent Honeyeater	**Family**	Meliphagidae
Profile type	Species	**General type**	Birds
NSW status	Critically Endangered	**Commonwealth status**	Endangered
		Date of final gazettal	05/11/2010

SRS habitat **SRS loss** **Biobanking** **Response to management** **Vegetation type** **RFS**

Filter by CMA

CMA: Hunter-Central Rivers

Add veg types | Copy from another species

Results **51-74** of **74**

1 2

CMA	BioMetric vegetation type code	Vegetation type	Vegetation type status
Hunter-Central Rivers	HU815	Spotted Gum - Narrow-leaved Ironbark-Red Ironbark shrub - grass open forest of the central and lower Hunter	Complete
Hunter-Central Rivers	HU806	Spotted Gum - Red Ironbark - Grey Gum shrub - grass open forest of the Lower Hunter	Complete
Hunter-Central Rivers	HU814	Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter	Complete
Hunter-Central Rivers	HU935	Swamp Mahogany - Broad-leaved Paperbark - Saw Sedge - Yellow Marsh Flower swamp forest of coastal lowlands	Complete
Hunter-Central Rivers	HU939	Swamp Mahogany - Broad-leaved Paperbark - Swamp Water Fern - Plume Rush swamp forest on coastal lowlands of the Central Coast and Lower North Coast	Complete
Hunter-Central Rivers	HU932	Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Complete
Hunter-Central Rivers	HU936	Swamp Mahogany - Paperbarks - Harsh Ground Fern swamp forest of the Central Coast	Complete
Hunter-Central Rivers	HU633	Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU635	Swamp Oak swamp forest fringing estuaries, Sydney Basin Bioregion and South East Corner Bioregion	Complete
Hunter-Central Rivers	HU770	Tallowwood - Smooth-barked Apple - Blackbutt grass tall open forest of the Central and lower North Coast	Complete
Hunter-Central Rivers	HU763	Tallowwood - Spotted Gum - Grey Gum grassy tall open forest of the lower North Coast	Complete
Hunter-Central Rivers	HU824	White Box - Black Cypress Pine shrubby woodland of the Western Slopes	Complete
Hunter-Central Rivers	HU820	White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter	Complete
Hunter-Central Rivers	HU729	White Box - Silvertop Stringybark +/- White Cypress Pine grass shrub open forest of the southern Nandewar Bioregion and New England Tableland Bioregion	Complete
Hunter-Central Rivers	HU823	White Box - White Cypress Pine - Native Olive woodland of upper Hunter and northern Wollemi	Complete

Hunter-Central Rivers	HU730	White Box x Grey Box - red gum - Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley	Complete
Hunter-Central Rivers	HU657	Yellow Bloodwood - ironbark shrubby woodland of the dry hinterland of the Central Coast, Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU658	Yellow Bloodwood - Narrow-leaved Apple heathy woodland on hinterland plateaux of the Central Coast, Sydney Basin Bioregion	Complete
Hunter-Central Rivers	HU854	Yellow Bloodwood - Narrow-leaved Apple heathy woodland on sandstone ranges of the Sydney Basin	Complete
Hunter-Central Rivers	HU848	Yellow Bloodwood - Red Bloodwood - Brown Stringybark shrub - grass open forest in the Cessnock-Kurri Kurri area	Complete
Hunter-Central Rivers	HU907	Yellow Box - Rough-barked Apple grassy woodland of the upper Hunter and Liverpool Plains	Complete
Hunter-Central Rivers	HU731	Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion	Complete
Hunter-Central Rivers	HU909	Yellow Box grassy woodland on basalt soils of the upper Hunter	Complete
Hunter-Central Rivers	HU732	Yellow Box grassy woodland on lower hillslopes and valley flats in the southern NSW Brigalow Belt South Bioregion	Complete