

# **Report on an Acquisition Proposal: Barnong Pastoral Lease South West of Yalgoo**

Barnong Pastoral Lease has an area of approximately 147,125 hectares. It is in the Yalgoo IBRA Region, a part of the State that is not well conserved at present and has been given a high subregional priority rating for land acquisition. The pastoral lease is varied, containing fifteen vegetation types (associations) including one bare or sparsely vegetated association according to the vegetation mapping at the 1:250,000 scale by JS Beard.

This property is adjacent to a recent acquisition, Executive Director CALM leasehold PIN 1334225 (EDCL PIN 1334225) and is quite different from it. Ten vegetation types found on Barnong Pastoral Lease are not found on the adjacent reserve (EDCL PIN 1334225). Of these ten, eight are currently under represented within conservation reserves that fall into IUCN Reserve Categories I-IV (i.e. National Parks, Nature Reserves, Marine Parks, Marine Nature Reserves, Conservation Parks or Executive Director CALM leasehold (CALM Act section 33(2)). One of the ten is not represented at all in conservation reserves.

Six vegetation types found on Barnong Pastoral Lease are very restricted in pre-European extent including two very rare types. A further two of these types have 56 and 84% of the Yalgoo IBRA Region pre-European extent coincident with this Pastoral Lease. The rest of the very restricted vegetation types are confined, for their Yalgoo extent, to areas local to Barnong Pastoral Lease.

One of two restricted vegetation types has 46% of Yalgoo IBRA Region pre-European extent coinciding with this Pastoral Lease.

There are eleven vegetation types on the proposed acquisition that are inadequately reserved with less than 15% pre-European extent within conservation reserves that fall into IUCN Reserve Categories I-IV. This includes two that are practically unreserved and there is a twelfth type that is currently unrepresented within conservation reserves that fall into IUCN Reserve Categories I-IV.

The purchase of this property will achieve a good level of reservation (>24%) for three very restricted types, an adequate reservation level for a fourth and significant improvement for a fifth very restricted type.

This acquisition will improve the reservation level of 14 vegetation types and bring one unreserved type into the conservation reserve system. A good level of representation will be achieved for the vegetation type currently unrepresented in conservation reserves and a good level of reservation will be achieved for three inadequately reserved vegetation types. Significant improvement will be achieved for a further two types currently inadequately reserved. In addition, the level of reservation will be improved for six other under represented vegetation types.

Six vegetation types are represented on Barnong Pastoral Lease by significant proportions (23% to 85%) of the Yalgoo IBRA Region, pre-European extent of those vegetation types. In the biogeographical regional context this indicates the importance of this property as opportunity to conserve these types.

This acquisition will add considerably to the conservation values of the adjacent reserve (EDCL PIN 1334225) through its differences and will improve the long-term viability of that reserve and the biota of the area.

## 1. The Interim Biogeographic Regionalisation for Australia.

Barnong Pastoral Lease lies in the central area of the Yalgoo IBRA Region extending to a small degree into the Avon Wheatbelt IBRA Region (Location map, Figure 1). The Yalgoo IBRA region is poorly reserved at present. Sixty-six of the 79 vegetation units (ie 84%) that occur in the region are inadequately represented in the conservation reserve system. Of these poorly reserved vegetation types, 42 do not occur in reserves at all and a further 24 occur but at a very low level of representation (<15% of their original areal extent). For consolidating Australia's protected area system, the Yalgoo IBRA Region has been given a medium national reservation priority rating (level 3) and a high subregional priority rating for land acquisition.

**Table 1.** Review of conservation status of vegetation types in Western Australia, by IBRA Region.

IBRA Region	No of Vegetation Types <15% Reserved	No of Vegetation Types Unreserved	Total Number of Types Under-represented in Reserves	Reserves % Types Under-represented of Total in Region	Total Number of Vegetation Types in IBRA Region
Yalgoo YAL	24	42	66	84	79

## 2. The Vegetation Map Database.

Barnong Pastoral Lease contains fifteen vegetation types (associations) according to the vegetation mapping at the 1:250,000 scale by J S Beard (Vegetation map, Figure 2). These are listed in Table 2 and Table 3 in order of their areal extent within Barnong Pastoral Lease. The tables also show the other IBRA Regions in which each of the vegetation types occurs, and the total area over which each of the vegetation types is mapped as being present at the time of European settlement. The tables also show the relative amounts of each type mapped for each IBRA Region and the percentage of Yalgoo IBRA Region extent that is mapped on Barnong Pastoral Lease.

The vegetation types on the proposed acquisition include the following general types:

- One Bare and poorly vegetated areas; salt lakes, lagoons & claypans
- One Hummock grassland
- Two Medium woodland; Shrublands; *Acacia quadrimarginea* & jam (*Acacia acuminata*) scrub on greenstone
- Ten Shrublands; acacia, casuarina & melaleuca thicket
- One Succulent steppe with open scrub

**Table 2.** Vegetation types mapped for Barnong Pastoral Lease at 1:250,000 scale by J S Beard and the conservation status of each of those vegetation types.

Veg. Assoc	Beard Code	Vegetation Description	IBRA Regions of occurrence	Area in IUCN I-IV * Reserves (ha)	% in IUCN I-IV* Reserves	Area in CALM Reserves (ha)	% in CALM Reserves	Total area of original vegetation (ha)
420	a9,19Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub	AW COO GS MUR YAL	53,278	6.21%	55,850	6.51%	858,501
419	a9,19m6 Sc	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla), jam ( Acacia acuminata) and Melaleuca uncinata thicket	AW YAL	98,769	31.43%	105,309	33.51%	314,273
361	a1Lr a9,17Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub with scattered mulga ( Acacia aneura)	MUR YAL	1,715	1.96%	1,715	1.96%	87,602
2685	a14,19Si	Shrublands; Acacia quadrimarginea & jam ( Acacia acuminata) scrub on greenstone	CAR YAL	32	0.05%	459	0.79%	58,355
683	a8,11Sr (k3)Ci	Succulent steppe with open scrub; scattered Acacia sclerosperma & snakewood ( Acacia eremaea) over samphire	MUR YAL	0	0.00%	302	0.60%	50,660
365	e6,22Mr a9,19Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub with scattered York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	AW GS YAL	1,879	3.36%	2,089	3.74%	55,928
364	ceLr a9Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) scrub with scattered eucalypts & cypress pine (Callitris columellaris)	AW CAR GS MUR YAL	198,337	38.84%	204,373	40.03%	510,588
243	a9,17Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub	CAR YAL	370	0.25%	370	0.25%	148,651
404	a9,20Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & Acacia murrayana scrub	AW GS MUR YAL	6,716	3.25%	6,716	3.25%	206,532
686	e6,22Mi	Medium woodland; York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	AW YAL	837	6.45%	837	6.45%	12,974
10	e22Mi	Medium woodland; red mallee (Eucalyptus oleosa group)	COO MAL MUR NUL YAL	3,726	2.56%	3,726	2.56%	145,766
202	a1,14Si	Shrublands; mulga ( Acacia aneura) & Acacia quadrimarginea scrub	COO GAS MUR YAL	78,796	17.59%	78,796	17.59%	447,967
125	sl	Bare and poorly vegetated areas; salt lakes, lagoons & claypans	AW CAR COO CR DL ESP GAS GD GS GSD GVD HAM JF LSD MAL MUR NK NUL PIL SWA TAN VB WAR YAL	295,498	8.46%	295,929	8.47%	3,493,603
2081	a9Si	Shrublands; bowgada (Acacia ramulosa- Acacia linophylla) and associated spp. scrub	AW CAR GAS GS MUR YAL	194,020	14.58%	197,132	14.82%	1,330,319
1413	acmSc	Shrublands; acacia, casuarina & melaleuca thicket	AW COO MAL MUR YAL	204,759	12.16%	206,850		1,684,498

\*Values for IUCN I-IV include Executive Director CALM leasehold CALM Act section 33(2) for the purposes of this analysis.

Six of the fifteen vegetation types found on this property are very restricted in their original distribution or area of extent. Two of these types are very rare, restricted to areas totalling less than 51,000 hectares each. A further two very restricted types have 56% and 84% of the Yalgoo pre-European extent coincident with this Pastoral Lease. The remainder of the very restricted types are confined within their Yalgoo extent to areas local to Barnong Pastoral Lease.

Two other restricted vegetation types also include a type with 46% of Yalgoo pre-European extent coinciding with this Pastoral Lease.

**Table 3.** Vegetation types mapped for Barnong Pastoral Lease at 1:250,000 scale by J S Beard and pre-European extent (PEV) for each IBRA Region and % of Yalgoo IBRA Region PEV on Barnong Pastoral Lease.

Vegetation Association	YAL PEV ha	AW PEV ha	CAR PEV ha	COO PEV ha	GAS PEV ha	MAL PEV ha	MUR PEV ha	GS PEV ha	NUL PEV ha	Sum of other IBRA PEV ha	% YAL PEV on this station
420	620,515	44,650		118			191,499	1,720			4.99%
419	303,689	10,584									9.21%
361	76,553						11,049				35.05%
2685	17,871		40,272								84.26%
683	50,445						215				28.23%
365	24,338	498						31,093			55.77%
364	508,426	2	569				95	1,497			1.97%
243	40,499		108,121								13.74%
404	151,859	386					54,209	78			0.60%
686	4,348	8,626									18.93%
10	1,550			32,799		45,777	65,485		156		45.94%
202	44,793			6,085	57,527		339,561				0.35%
125	106,825	166,663	201,223	544,711	249,864	165,272	710,395	8,586	10,974	1,323,653	0.11%
2081	33,805	12,440	878,540		9,221		388,950	4,701			0.32%
1413	291	550,836		1,061,120		42,457	29,794				22.69%

The unit that is most common on Barnong is a9,19Si, Shrublands; bowgada (*Acacia ramulosa*-*Acacia linophylla*) & jam (*Acacia acuminata*) scrub (Vegetation code No 420). The natural distribution of this type is approaching restricted. The majority of this type occurs within the Yalgoo IBRA Region and extends from there into adjacent parts of the Avon Wheatbelt, Coolgardie, Geraldton Sandplains and Murchison IBRA Regions.

Six vegetation types found on Barnong are very restricted in their original distributions; they are mapped as present in only one or two IBRA Regions and/or over an area of less than 90,000 hectares at the time of European settlement. These very restricted vegetation types are:

- e6,22Mi, Medium woodland; York gum (*Eucalyptus loxophleba*) & red mallee (*Eucalyptus oleosa* group) (Vegetation code No 686), a very rare type scattered in this part of the Yalgoo IBRA Region and extending into nearby areas of the Avon Wheatbelt IBRA Region with a pre-European area of only 12,974 hectares;
- a8,11Sr (k3)Ci, Succulent steppe with open scrub; scattered *Acacia sclerosperma* & snakewood (*Acacia eremaea*) over samphire (Vegetation code No 683), a rare vegetation type found only in this part of the Yalgoo IBRA Region and nearby boundary with the Murchison IBRA Region with a pre-European extent of 50,660 hectares;
- e6,22Mr a9,19Si, Shrublands; bowgada (*Acacia ramulosa*-*Acacia linophylla*) & jam (*Acacia acuminata*) scrub with scattered York gum (*Eucalyptus loxophleba*) & red mallee (*Eucalyptus oleosa* group) (Vegetation code No 365). This vegetation type is mapped with an original extent of 55,928 hectares restricted to the Yalgoo and Geraldton Sandplains IBRA Regions and on the boundary with the Avon Wheatbelt IBRA Region. The majority (56%) of the area within the Yalgoo IBRA Region coincides with Barnong Pastoral Lease.
- a14,19Si, Shrublands; *Acacia quadrimarginea* & jam (*Acacia acuminata*) scrub on greenstone (Vegetation code No 2685). This vegetation is very restricted with a total pre-European extent of 50,660 hectares found in two disparate areas. One very limited area is within the Carnarvon IBRA Region and a second distribution is confined to the Yalgoo IBRA Region in an area local to Barnong Pastoral Lease. The majority (84%) of the pre-European extent within the Yalgoo IBRA Region coincides with Barnong Pastoral Lease.
- a1Lr a9,17Si, Shrublands; bowgada (*Acacia ramulosa*-*Acacia linophylla*) & miniritchie (*Acacia grasbyi*) scrub with scattered mulga (*Acacia aneura*) (Vegetation code No 361). This vegetation type is found in the Yalgoo and Murchison IBRA Regions. The majority of this type is mapped within the Yalgoo IBRA Region and is local to the Barnong Pastoral Lease area (ie within 50 km of the property).
- a9,17Si, Shrublands; bowgada (*Acacia ramulosa*-*Acacia linophylla*) & miniritchie (*Acacia grasbyi*) scrub (Vegetation code No 243). Confined to the Yalgoo and Carnarvon IBRA Regions with a pre-European extent of 148,651, this vegetation type is limited within the Yalgoo to an area within 50 km of Barnong Pastoral Lease.

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Two other vegetation types found on Barnong are also restricted in their original distributions; they are mapped as present in only two or three IBRA Regions or to an extent less than 150,000 ha at the time of European settlement. These restricted vegetation types are:

- a9,19m6Sc, Shrublands; bowgada (*Acacia ramulosa*-*Acacia linophylla*), jam (*Acacia acuminata*) and *Melaleuca uncinata* thicket (Vegetation code No 419), mapped as occurring over an area of 314,273 hectares at the time of European settlement. It is the second most common vegetation type mapped for this property and it is mostly confined to the central area of the Yalgoo IBRA Region with a small extent in the adjacent area of the Avon Wheatbelt IBRA Region.
- e22Mi, Medium woodland; red mallee (*Eucalyptus oleosa* group) group (Vegetation code No 10) occupies scattered occurrences within the Coolgardie, Mallee, Murchison and Nullarbor IBRA Regions with a total pre-European extent of 145,766 hectares. Approximately 46% of the extent within the Yalgoo IBRA Region falls within the Barnong Pastoral Lease.

The non-vegetated or sparsely vegetated type (sl, Bare and poorly vegetated areas, salt lakes, lagoons & claypans, Vegetation code No.125) is mapped extensively in 22 IBRA Regions with scattered distributions totalling 3,493,603 hectares. The area mapped within Barnong would need on ground assessment for its significance within the range of components of this vegetation type.

Vegetation type ceLr a9Si, Shrublands; bowgada (*Acacia ramulosa*-*Acacia linophylla*) scrub with scattered eucalypts & cypress pine (*Callitris columellaris*) (Vegetation code No 364) is mapped with a pre-European extent of 510,588 hectares in 5 IBRA Regions. However, 99% of this type occurs in the Yalgoo IBRA Region and the remainder extends into adjacent parts of adjoining IBRA Regions.

a1,14Si, Shrublands; mulga (*Acacia aneura*) & *Acacia quadrimarginea* scrub (Vegetation code No 202) is a scattered vegetation type found mainly in the Murchison IBRA Region and to a lesser degree in Yalgoo, Gascoyne and Coolgardie IBRA Regions. The pre-European extent of this type is mapped as 447,967 hectares.

Vegetation type a9Si, Shrublands; bowgada (*Acacia ramulosa*- *Acacia linophylla*) and associated spp. scrub (Vegetation code No 2081) is mapped predominantly in the Murchison and Carnarvon IBRA Regions and has small extents in the Yalgoo, Avon Wheatbelt, Gascoyne and Geraldton Sandplains IBRA Regions.

acmSc, Shrublands; acacia, casuarina & *Melaleuca* thicket (Vegetation code No 1413) is predominantly mapped as occurring in the Avon Wheatbelt, Coolgardie, Mallee and Murchison IBRA Regions with a very small extension into the Yalgoo IBRA Region from the Avon Wheatbelt IBRA Region.

### 3. Reservation Status - The Gap Analysis Database.

This property is adjacent to a recent acquisition, Executive Director CALM leasehold PIN 1334225 (EDCL PIN 1334225). Of the 15 types mapped on Barnong Pastoral Lease, ten vegetation types are not found on the adjacent reserve (Table 4). Eight of these ten are currently under represented within conservation reserves that fall into IUCN Reserve Categories I-IV (i.e. National Parks, Nature Reserves, Marine Parks, Marine Nature Reserves, Conservation Parks or Executive Director CALM leasehold, CALM Act section 33(2)). One of the ten is not represented at all in conservation reserves and by only 0.6% in other categories of land managed by the Department of Conservation and Land Management (CALM).

There are eleven vegetation types on the proposed acquisition that are inadequately reserved at less than 15% pre-European extent within conservation reserves that fall into IUCN Reserve Categories I-IV (Table 2). This includes two that are practically

unreserved and there is a twelfth type that is currently unrepresented within conservation reserves that fall into IUCN Reserve Categories I-IV. Four others are conserved at less than 5%, three represented by between 5 and 10% and two that are approaching a level of adequate representation of 15% pre-European extent within conservation reserves that fall into IUCN Reserve Categories I-IV.

**Table 4.** Comparison of % pre-European vegetation extent, represented on Barnong Pastoral Lease and adjacent reserve (Executive Director Leasehold, PIN 1334225).

Veg Code No.	Vegetation Description	% pre-European extent (PEV) on Barnong	% PEV on Adjacent reserve PIN 1334225	Current % PEV in IUCN I-IV *Reserves
420	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub	3.61 %	0.07 %	6.21 %
419	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla), jam ( Acacia acuminata) and Melaleuca uncinata thicket	8.90 %	6.65 %	31.43 %
361	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub with scattered mulga ( Acacia aneura)	30.63 %		1.96 %
2685	Shrublands; Acacia quadrimarginea & jam ( Acacia acuminata) scrub on greenstone	25.80 %		0.05 %
683	Succulent steppe with open scrub; scattered Acacia sclerosperma & snakewood ( Acacia eremaea) over samphire	28.11 %		0.00 %
365	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub with scattered York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	24.27 %	0.45 %	3.36 %
364	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) scrub with scattered eucalypts & cypress pine (Callitris columellaris)	1.96 %	0.12 %	38.84 %
413	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub	3.74 %		0.25 %
404	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & Acacia murrayana scrub	0.44 %		3.25 %
386	Medium woodland; York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	6.34 %	1.03 %	6.45 %
10	Medium woodland; red mallee (Eucalyptus oleosa group) group	0.49 %		2.56 %
202	Shrublands; mulga ( Acacia aneura) & Acacia quadrimarginea scrub	0.04 %		17.59 %
125	Bare and poorly vegetated areas; salt lakes, lagoons & claypans	0.00 %		8.46 %
2081	Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) and associated spp. scrub	0.01 %		14.58 %
1413	Shrublands; acacia, casuarina & melaleuca thicket	0.00 %		12.16 %

\*Values for IUCN I-IV include Executive Director CALM leasehold CALM Act section 33(2) for the purposes of this analysis.

The predominant vegetation type on the proposed area of acquisition, (a9,19Si, Vegetation Code No 420), is found in the adjoining reserve (Executive Director Leasehold, PIN 1334225) at 0.07% of pre-European extent. Currently reserved at less than 7% of pre-European extent in conservation reserves that fall into IUCN Reserve Categories I-IV and a further 0.3% in other categories of land managed by the Department of Conservation and Land Management (CALM), this vegetation type is inadequately reserved.

Ten vegetation types found on Barnong Pastoral Lease are not found on the adjacent reserve (EDCL PIN 1334225). One of these types is currently unreserved in conservation reserves that fall into IUCN Reserve Categories I-IV, two types are practically unreserved at less than 0.5% in conservation reserves and six others are inadequately reserved. These ten types include the following:

- Very restricted in original extent, vegetation type a8,11Sr (k3)Ci, Vegetation Code No 683 is also currently unrepresented in conservation reserves that fall into IUCN Reserve Categories I-IV. There is only 0.6% in other categories of land managed by the Department of Conservation and Land Management (CALM). This type is not represented on the adjacent reserve.

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- Vegetation type a14,19Si, Vegetation Code No 2685, is a naturally very restricted vegetation type and is not found the adjacent reserve. This type is practically unrepresented at 0.05% of pre-European extent in conservation reserves that fall into IUCN Reserve Categories I-IV and there is a further 0.74% in other categories of land managed by CALM.
- a9,17Si, Vegetation Code No 243 is naturally very restricted, is not found on the adjacent reserve and is practically unrepresented in conservation reserves at 0.25% of pre-European extent with no further areas reserved in other categories of land managed by CALM.
- Vegetation type a1Lr a9,17Si, Vegetation Code No 361 occurs on a large proportion of the Barnong Pastoral Lease and is not present on the adjacent reserve. The current reservation level of this very restricted type is 1.96% with no further areas reserved in other categories of land managed by CALM. This type is inadequately reserved.
- Vegetation type e22Mi, Vegetation Code No 10 is currently represented at 2.56% in conservation reserves and is a restricted vegetation type. This type is not represented within the adjacent reserve and there are no further areas reserved in other categories of land managed by CALM, this type is inadequately reserved.
- Vegetation type a9,20Si, Vegetation Code No 404 is currently inadequately represented with 3.25% pre-European extent within conservation reserves and no further areas reserved in other categories of land managed by CALM.
- sl, Vegetation Code No 125 is not represented on the adjacent reserve and is currently inadequately represented with 8.46% in within conservation reserves that fall into IUCN Reserve Categories I-IV and a further 0.01% in other categories of land managed by the CALM.
- Vegetation type acmSc, Vegetation Code No 1413 is not represented on the adjacent reserve and is currently inadequately reserved at 12.16% pre-European extent within conservation reserves. There is a further 0.12% reserved in other categories of land managed by CALM.
- Currently inadequately reserved at 14.58%, a9Si, Vegetation Code No 2081 is not represented on the adjacent reserve. There is a further 0.24% reserved in other categories of land managed by CALM.

Five vegetation types are represented on both Barnong Pastoral Lease and the adjacent reserve. Three of these are currently inadequately reserved and two are well reserved at greater than 30% pre-European extent within conservation reserves that fall into IUCN Reserve Categories I-IV. In addition to the most common type found on Barnong Pastoral Lease, the inadequately reserved types common to both properties include the following:

- Very restricted vegetation type e6,22Mr a9,19Si, Vegetation Code No 365, currently represented at 3.36% pre-European extent within conservation reserves. There is a further 0.38% reserved in other categories of land managed by CALM. This type is found in the adjacent reserve and is currently inadequately reserved.
- Very rare vegetation type e6,22Mi, Vegetation Code No 686 is currently inadequately represented in conservation reserves at 6.45% of pre-European extent. There are a no further areas reserved in other categories of land managed by CALM.



#### **4. Potential Improvement to Reservation Status through the Acquisition of Barnong Pastoral Lease.**

Details from the area calculations associated with the proposed acquisition of Barnong Pastoral Lease are given in Table 5 and the calculations relating to context within the Yalgoo IBRA Region are given in Table 3.

The proposal to acquire Barnong Pastoral Lease for inclusion in the nature conservation reserve system will have the effect of improving the reservation status of fourteen vegetation types (associations) and bringing into the reserve system one unreserved type according to the vegetation mapping at the 1:250,000 scale by JS Beard.

The purchase of this property will achieve a good level of representation for three very restricted types and significant improvement for a fourth type and some improvement for a fifth very restricted vegetation type. The sixth very restricted type found on Barnong Pastoral Lease is currently unreserved and will be brought into the conservation reserve system at a good level of representation.

A good level of representation will be achieved for the vegetation type currently unrepresented in conservation reserves and a good level of reservation will be achieved for three inadequately reserved vegetation types. Significant improvement will be achieved for a further two types currently inadequately reserved. In addition, the level of reservation will be improved for six other inadequately represented vegetation types.

Six vegetation types are represented on Barnong Pastoral Lease by significant proportions (23% to 85%) of the Yalgoo regional pre-European extent of those vegetation types. In the bioregional context this indicates significant importance of this property as opportunity to conserve these types.

This acquisition will add considerably to the conservation values of the adjacent reserve through its differences and improve the long-term viability of that reserve and the biota of the area.

The predominant vegetation type on the proposed acquisition, (a9,19Si, Vegetation Code No 420), is found in the neighbouring reserve (Executive Director Leasehold, PIN 1334225) and is represented on that reserve by 611 hectares. The improvement in the reservation level will be from 6.12% to 9.82% with the addition of 30,990 hectares on Barnong Station.

Vegetation type a8,11Sr (k3)Ci, (Vegetation Code No 683) will be brought into the conservation reserves that fall into IUCN Reserve Categories I-IV at a good level of reservation. Opportunity to reserve this type is very restricted, predominantly confined to this part of the Yalgoo IBRA Region and it is not found on the adjacent reserve. Twenty eight percent of the Yalgoo IBRA Region pre-European extent coincides with this property. The addition of the 14,241 hectares on Barnong Pastoral Lease will achieve a reservation level of 28.11%. This property provides a significant opportunity bring this type into the conservation reserves system.

The opportunity to reserve vegetation type a14,19Si, (Vegetation Code No 2685) in the Yalgoo IBRA Region is very restricted. The majority (84%), of the Yalgoo extent of this type is on Barnong Pastoral Lease and it is not found on the adjacent reserve. The acquisition will improve the reservation level from practically unreserved at 0.05% to a good level of reservation at 25.85% of state pre-European extent with the addition of the 15,058 hectares mapped on Barnong Pastoral Lease. This property provides a significant opportunity to reserve this type.

The majority of vegetation type a1Lr a9,17Si, (Vegetation Code No 361) occurs within the Yalgoo IBRA Region and within 50 km of this property. This acquisition will improve the reservation status of this very restricted type from 1.96% to 32.59%. Acquisition will achieve a good level of reservation for this type, which is not found on the adjacent reserve and for which 35% of the original Yalgoo extent is found on this

property. This property provides a significant opportunity to reserve this vegetation type.

**Table 5.** Improvement in reservation status of vegetation types that would be achieved by the purchase of Barnong Pastoral Lease.

	Beard Code	Vegetation Description	Area in IUCN Reserves I-IV* (ha)	% in IUCN Reserves I-IV*	Area on this station	New total area in IUCN I-IV* Reserves (ha)	New % in IUCN I-IV* Reserves
420	a9,19Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub	53,278	6.21%	30,990	84,268	9.82%
419	a9,19m6Sc	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla), jam ( Acacia acuminata) and Melaleuca uncinata thicket	98,769	31.43%	27,977	126,746	40.33%
361	a1Lr a9,17Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub with scattered mulga ( Acacia aneura)	1,715	1.96%	26,831	28,546	32.59%
2685	a14,19Si	Shrublands; Acacia quadrimarginea & jam ( Acacia acuminata) scrub on greenstone	32	0.05%	15,058	15,090	25.86%
683	a8,11Sr (k3)Ci	Succulent steppe with open scrub; scattered Acacia sclerosperma & snakewood ( Acacia eremaea) over samphire	0	0.00%	14,241	14,241	28.11%
365	e6,22Mr a9,19Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub with scattered York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	1,879	3.36%	13,573	15,452	27.63%
364	ceLr a9Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) scrub with scattered eucalypts & cypress pine (Callitris columellaris)	198337	38.84%	9,996	208,333	40.80%
243	a9,17Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub	370	0.25%	5,565	5,935	3.99%
404	a9,20Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & Acacia murrayana scrub	6716	3.25%	910	7,626	3.69%
686	e6,22Mi	Medium woodland; York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	837	6.45%	823	1,660	12.79%
10	e22Mi	Medium woodland; red mallee (Eucalyptus oleosa group) group	3726	2.56%	712	4,438	3.04%
202	a1,14Si	Shrublands; mulga ( Acacia aneura) & Acacia quadrimarginea scrub	78796	17.59%	158	78,954	17.62%
125	sl	Bare and poorly vegetated areas; salt lakes, lagoons & claypans	295498	8.46%	115	295,613	8.46%
2081	a9Si	Shrublands; bowgada (Acacia ramulosa- Acacia linophylla) and associated spp. scrub	194,020	14.58%	109	194,129	14.59%
1413	acmSc	Shrublands; acacia, casuarina & melaleuca thicket	204759	12.16%	66	204,825	12.16%

\*Values for IUCN I-IV include Executive Director CALM leasehold CALM Act section 33(2) for the purposes of this analysis.

The occurrence of 56% of the Yalgoo IBRA Region extent of vegetation type e6,22Mr a9,19Si, (Vegetation Code No 365) on this property provides a significant opportunity to reserve this type for this region. The acquisition will improve the reservation level of this very restricted type from 3.36% of state pre-European extent in conservation reserves to a good level of representation at 27.63%.

Vegetation type e6,22Mi, (Vegetation Code No 686) is a very rare type and this acquisition will almost double the reservation level from 6.45% to 12.79% of pre-European extent in conservation reserves. The addition will include 712 hectares of this type mapped on this Pastoral Lease:

current extent      3722 155  
                                 4286 569  
                                 8008 724

The majority of the Yalgoo IBRA Region extent of vegetation type a9,17Si, (Vegetation Code No 243) occurs within 50 km of this property and it is not found on the adjacent reserve. The reservation level of this very restricted type will be improved with the addition of the 5,565 hectares on Barnong Pastoral Lease, from practically unreserved at 0.25% to 3.99% of pre-European extent.

A significant proportion (46%) of the Yalgoo IBRA Region extent of vegetation type e22Mi, (Vegetation Code No 10) is on Barnong Pastoral Lease and does not occur on the adjacent reserve. The reservation level of this restricted type will be improved from 2.56% to 3.04% of state pre-European extent and a significant proportion of the Yalgoo extent will be conserved. This property provides a significant opportunity to reserve this restricted vegetation type within the Yalgoo IBRA Region.

Restricted vegetation type a9, 19m6Sc, (Vegetation Code No 419) is predominantly confined to the central area of the Yalgoo IBRA Region. The proposed acquisition will improve the reservation level of this type from 31.43% to 40.33% with the addition of 27,977 hectares.

The reservation level of vegetation type a9,20Si, (Vegetation Code No 404) will be improved slightly by the addition of 910 ha. The level of representation in conservation reserves will be increased from 3.25% to 3.69% pre-European extent. This vegetation type is not found on the adjacent reserve.

Vegetation type a1,14Si, (Vegetation Code No 202) is not found on the adjacent reserve. The proposed acquisition will improve the reservation level of this already adequately represented type from 17.59% to 17.62%.

The value of this example of the very scattered vegetation association s1, (Vegetation Code No 125) is best determined from on ground assessment. This acquisition will increase the level of reservation of this inadequately reserved association by a very small amount with the addition of 115 hectares. None of this vegetation association is found on the adjacent reserve.

Vegetation type acmSc, (Vegetation Code No 1413) occurs on a very small part of the proposed acquisition and a very small area of Yalgoo IBRA Region. The addition of the 66 hectares will make a small increase (<0.01%) in the reservation level of this inadequately reserved type. This type is not found on the adjacent reserve.

There will be a very small increase (0.01%) in the reservation level of a9Si, (Vegetation Code No 2081), to 14.59%, with the addition of the 109 hectares mapped on Barnong Pastoral Lease. This type is not found on the adjacent reserve.

Vegetation type ceLr a9Si, (Vegetation Code No 364) is currently well reserved. The 9,996 hectares on the proposed acquisition will improve the level of reservation by 1.96% to 40.8%.

## 5. Data Sources.

This assessment was undertaken using the databases, Vegetation of Western Australia and Reservation Status of Vegetation Types throughout Western Australia. The Vegetation database draws on vegetation mapping by J S Beard at the scale of 1:250,000 and incorporates more detailed data where these are available. This database includes a spatially corrected version of the Interim Biogeographic Regionalisation for Australia (IBRA). The Reservation Status database was developed through a gap analysis procedure. The values for IUCN Reserve Categories I-IV includes reserves in the category Executive Director CALM leasehold, CALM Act section 33(2) for the purposes of analysis in the Pastoral Zone. Details of the development of the two databases are given in: A J M Hopkins, J Coker, G R Beeston, P Bowen and J M Harvey (1996) Conservation Status of Vegetation Types throughout Western Australia.

Australian Nature Conservation Agency, National Reserves System Co-operative Program Project No N703. Final Report. The Conservation Status analysis was re-run by GIS Section of Department of Conservation and Land Management in July 2003 (car\_reserve\_analysis\_0703.xls). The priority status for Reserve Development for IBRA Regions is published in the Australian Terrestrial Biodiversity Assessment 2002, Fig 8.3 of the Bioregional Priorities For Consolidating Australia's Protected Area System. Map Data Source: Collaborative Australian Protected Areas Database (CAPAD) 2000. Data used are assumed to be correct from the data suppliers.

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[http://audit.ea.gov.au/ANRA/vegetation/docs/biodiversity/bio\\_assess\\_reserves.cfm](http://audit.ea.gov.au/ANRA/vegetation/docs/biodiversity/bio_assess_reserves.cfm).

This portion of the document is for reference purposes only.

## Barnong

	Beard Code	Vegetation Description	IBRA Regions of occurrence	Area in IUCN Reserves I-IV (ha)	% in IUCN Reserves	Area in CALM Reserves (ha)	% in CALM Reserves	Total area of original vegetation (ha)	Area on this station	New total area in IUCN I-IV Reserves (ha)	New % in IUCN I-IV Reserves	% of PEV on Barnong
420	a9,19Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub	AW COO GS MUR YAL	53,278	6.21%	55,850	6.51%	858,501	30,990	84,268	9.82%	3.61%
419	a9,19m6Sc	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla). jam ( Acacia acuminata) and Melaleuca uncinata thicket	AW YAL	98,769	31.43%	105,309	33.51%	314,273	27,977	126,746	40.33%	8.90%
361	a1Lr a9,17Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub with scattered mulga ( Acacia aneura)	MUR YAL	1,715	1.96%	1,715	1.96%	87,602	26,831	28,546	32.59%	30.63%
2685	a14,19Si	Shrublands; Acacia quadrimarginea & jam ( Acacia acuminata) scrub on greenstone	CAR YAL	32	0.05%	459	0.79%	58,355	15,058	15,090	25.86%	25.80%
683	a8,11Sr (k3)Ci	Succulent steppe with open scrub; scattered Acacia sclerosperma & snakewood ( Acacia eremaea) over samphire	MUR YAL	0	0.00%	302	0.60%	50,660	14,241	14,241	28.11%	28.11%
365	e6,22Mr a9,19Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub with scattered York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	AW GS YAL	1,879	3.36%	2,089	3.74%	55,928	13,573	15,452	27.63%	24.27%
364	ceLr a9Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) scrub with scattered eucalypts & cypress pine (Callitris columellaris)	AW CAR GS MUR YAL	198337	38.84%	204,373	40.03%	510,588	9,996	208,333	40.80%	1.96%
243	a9,17Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub	CAR YAL	370	0.25%	370	0.25%	148,651	5,565	5,935	3.99%	3.74%
404	a9,20Si	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & Acacia murrayana scrub	AW GS MUR YAL	6716	3.25%	6,716	3.25%	206,532	910	7,626	3.69%	0.44%
686	e6,22Mi	Medium woodland; York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	AW YAL	837	6.45%	837	6.45%	12,974	823	1,660	12.79%	6.34%
10	e22Mi	Medium woodland; red mallee (Eucalyptus oleosa group)	COO MAL MUR NUL YAL	3726	2.56%	3,726	2.56%	145,766	712	4,438	3.04%	0.49%
202	a1,14Si	Shrublands; mulga ( Acacia aneura) & Acacia quadrimarginea scrub	COO GAS MUR YAL	78796	17.59%	78,796	17.59%	447,967	158	78,954	17.62%	0.04%
125	sl	Bare and poorly vegetated areas; salt lakes, lagoons & claypans	AW CAR COO CR DL ESP GAS GD GS GSD GVD HAM JF LSD MAL MUR NK NUL PIL SWA TAN VB WAR YAL	295498	8.46%	295,929	8.47%	3,493,603	115	295,613	8.46%	0.00%
2081	a9Si	Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) and associated spp. scrub	AW CAR GAS GS MUR YAL	194,020	14.58%	197,132	14.82%	1,330,319	109	194,129	14.59%	0.01%
1413	acmSc	Shrublands; acacia, casuarina & melaleuca thicket	AW COO MAL MUR YAL	204759	12.16%	206,850	12.28%	1,684,498	66	204,825	12.16%	0.00%

a9,19Si, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) & jam (Acacia acuminata) scrub (Vegetation code No 420)  
a9,19m6Sc, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla), jam (Acacia acuminata) and Melaleuca uncinata thicket (Vegetation code No 419)  
a1Lr a9,17Si, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) & miniritchie (Acacia grasbyi) scrub with scattered mulga (Acacia aneura) (Vegetation code No 361)  
a14,19Si, Shrublands; Acacia quadrimarginea & jam (Acacia acuminata) scrub on greenstone (Vegetation code No 2685)  
a8,11Sr (k3)Ci, Succulent steppe with open scrub; scattered Acacia sclerosperma & snakewood (Acacia eremaea) over samphire (Vegetation code No 683)  
e6,22Mr a9,19Si, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) & jam (Acacia acuminata) scrub with scattered York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group) (Vegetation code No 365)  
ceLr a9Si, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) scrub with scattered eucalypts & cypress pine (Callitris columellaris) (Vegetation code No 364)  
a9,17Si, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) & miniritchie (Acacia grasbyi) scrub (Vegetation code No 243)  
a9,20Si, Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) & Acacia murrayana scrub (Vegetation code No 404)  
e6,22Mi, Medium woodland; York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group) (Vegetation code No 686)  
e22Mi, Medium woodland; red mallee (Eucalyptus oleosa group) group (Vegetation code No 10)  
a1,14Si, Shrublands; mulga (Acacia aneura) & Acacia quadrimarginea scrub (Vegetation code No 202)  
sl, Bare and poorly vegetated areas; salt lakes, lagoons & claypans (Vegetation code No 125)  
a9Si, Shrublands; bowgada (Acacia ramulosa- Acacia linophylla) and associated spp. scrub (Vegetation code No 2081)  
acmSc, Shrublands; acacia, casuarina & melaleuca thicket (Vegetation code No 1413)

Veg Code No.	Vegetation Description	% on Barnong	% on Ex Barnong PIN 1334225	Current % pre-European extent in IUCN I-IV Reserves
420	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub	3.61%	0.07%	6.21%
419	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla), jam ( Acacia acuminata) and Melaleuca uncinata thicket	8.90%	6.65%	31.43%
361	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub with scattered mulga ( Acacia aneura)	30.63%		1.96%
2685	Shrublands; Acacia quadrimarginea & jam ( Acacia acuminata) scrub on greenstone	25.80%		0.05%
683	Succulent steppe with open scrub; scattered Acacia sclerosperma & snakewood ( Acacia eremaea) over samphire	28.11%		0.00%
365	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & jam ( Acacia acuminata) scrub with scattered York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	24.27%	0.45%	3.36%
364	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) scrub with scattered eucalypts & cypress pine (Callitris columellaris)	1.96%	0.12%	38.84%
243	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & miniritchie ( Acacia grasbyi) scrub	3.74%		0.25%
404	Shrublands; bowgada ( Acacia ramulosa- Acacia linophylla) & Acacia murrayana scrub	0.44%		3.25%
686	Medium woodland; York gum (Eucalyptus loxophleba) & red mallee (Eucalyptus oleosa group)	6.34%	1.03%	6.45%
10	Medium woodland; red mallee (Eucalyptus oleosa group) group	0.49%		2.56%
202	Shrublands; mulga ( Acacia aneura) & Acacia quadrimarginea scrub	0.04%		17.59%
125	Bare and poorly vegetated areas; salt lakes, lagoons & claypans	0.00%		8.46%
2081	Shrublands; bowgada (Acacia ramulosa-Acacia linophylla) and associated spp. scrub	0.01%		14.58%
1413	Shrublands; acacia, casuarina & melaleuca thicket	0.00%		12.16%

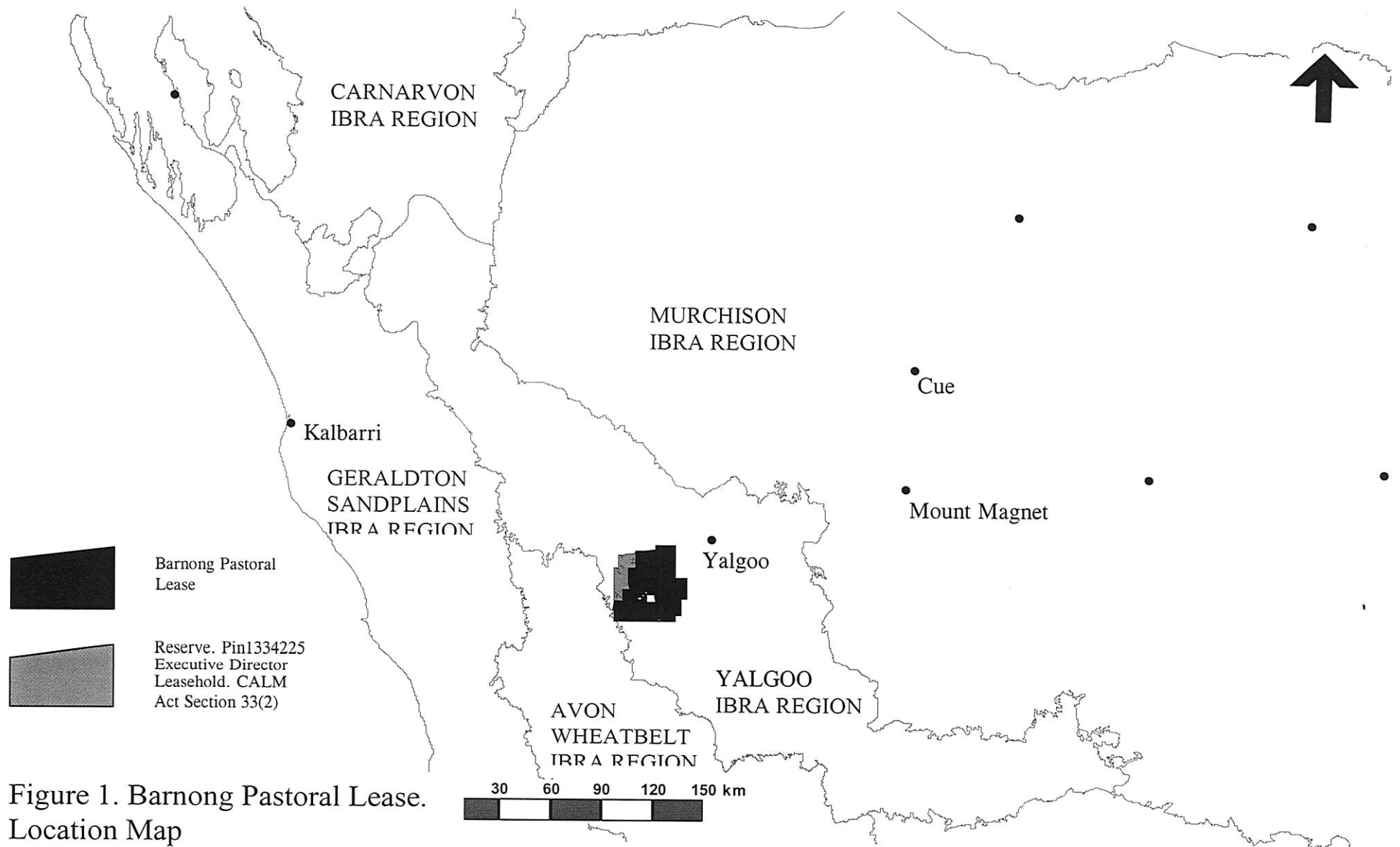
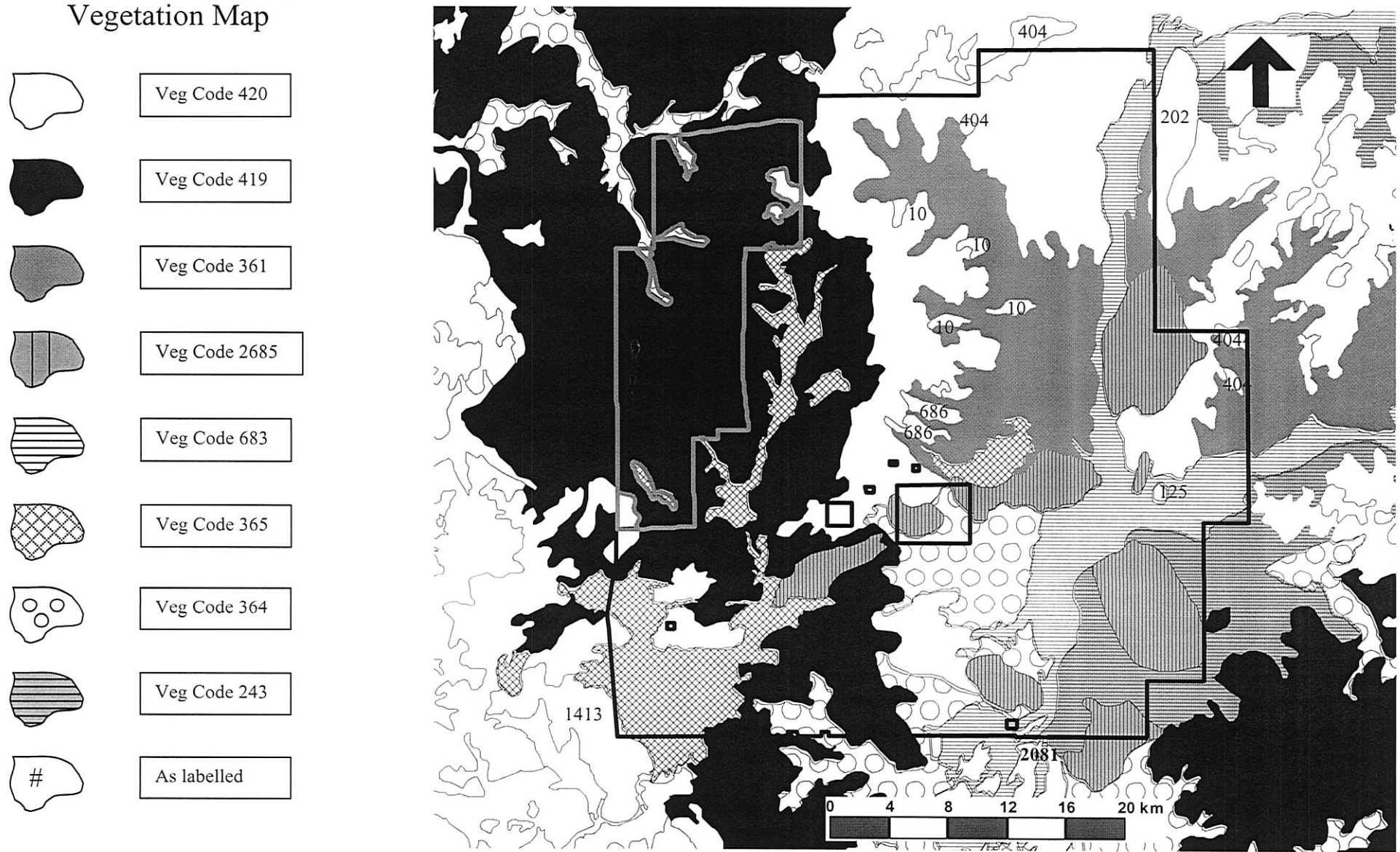


Figure 1. Barnong Pastoral Lease.  
Location Map

Figure 2. Barnong Pastoral Lease.  
Vegetation Map





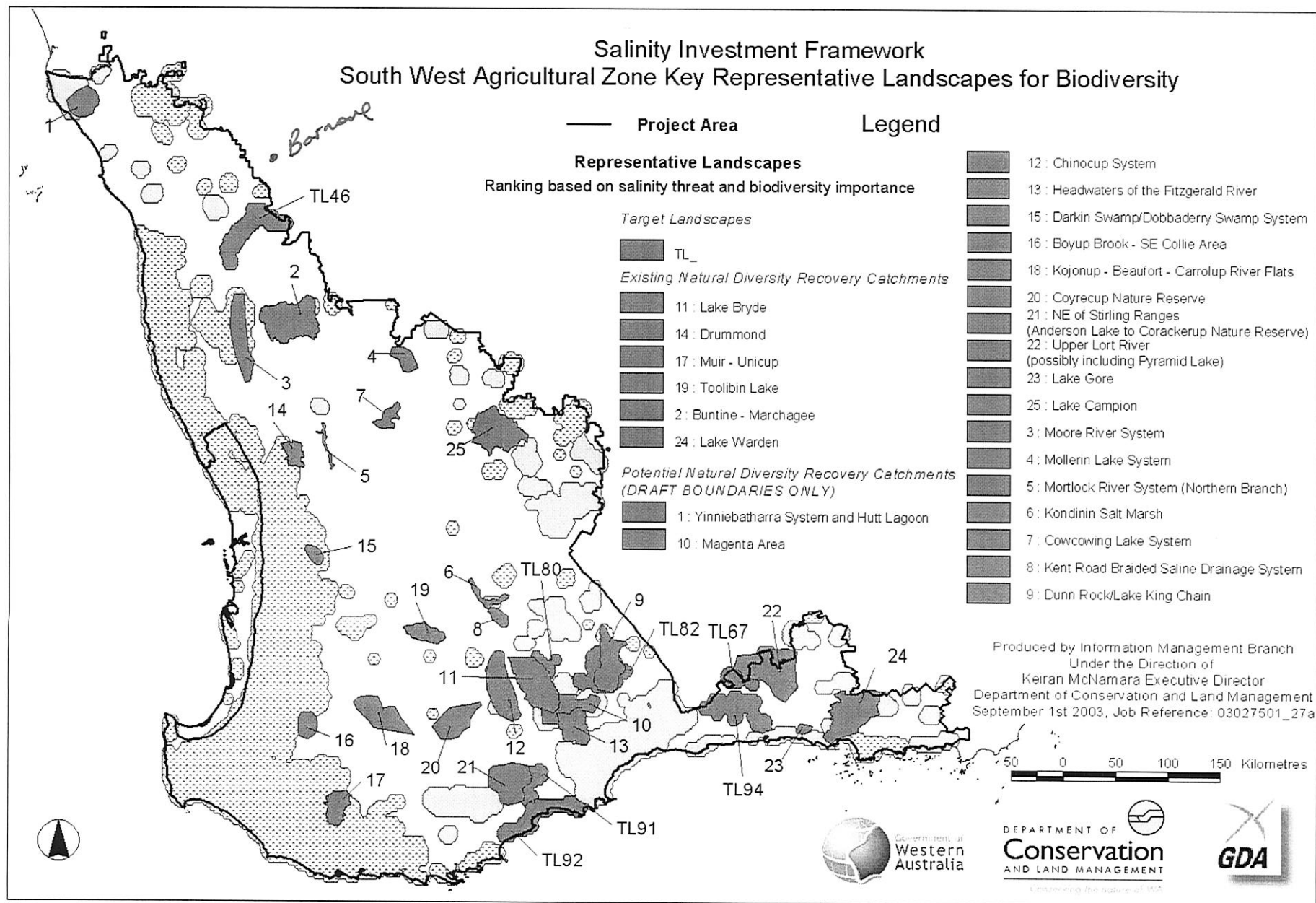
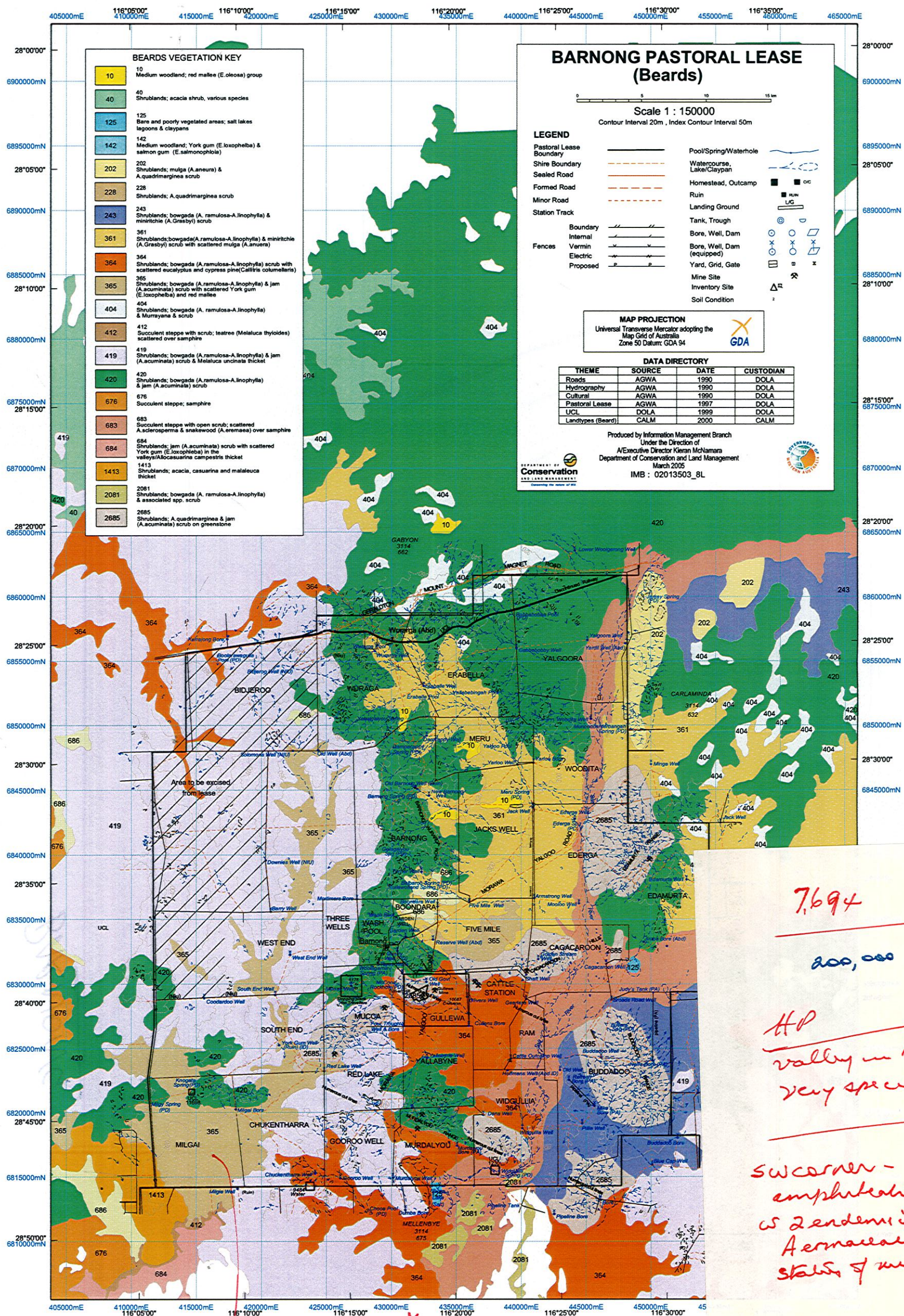


Figure 3:



Joseph land system yellow sands in fluvial latviti  
 (weathering of laterite surface) with Gondwanan relief floor  
 southern yellow sand. in back + mallee  
 of Kallie - red sand over laterite grassy mallee sandplain, extends  
 to N.



7,694

200,000

HP  
 valley in NE end  
 very special

SW corner -  
 amphiteater of the  
 w 2 endemic species  
 A. ornata  
 status of mines etc?

bottom-land wetland  
 woodlands @ wetland  
 end from gold fields  
 (daisy land system)  
 York gum + Callitris  
 + Salicornia (gimlet)