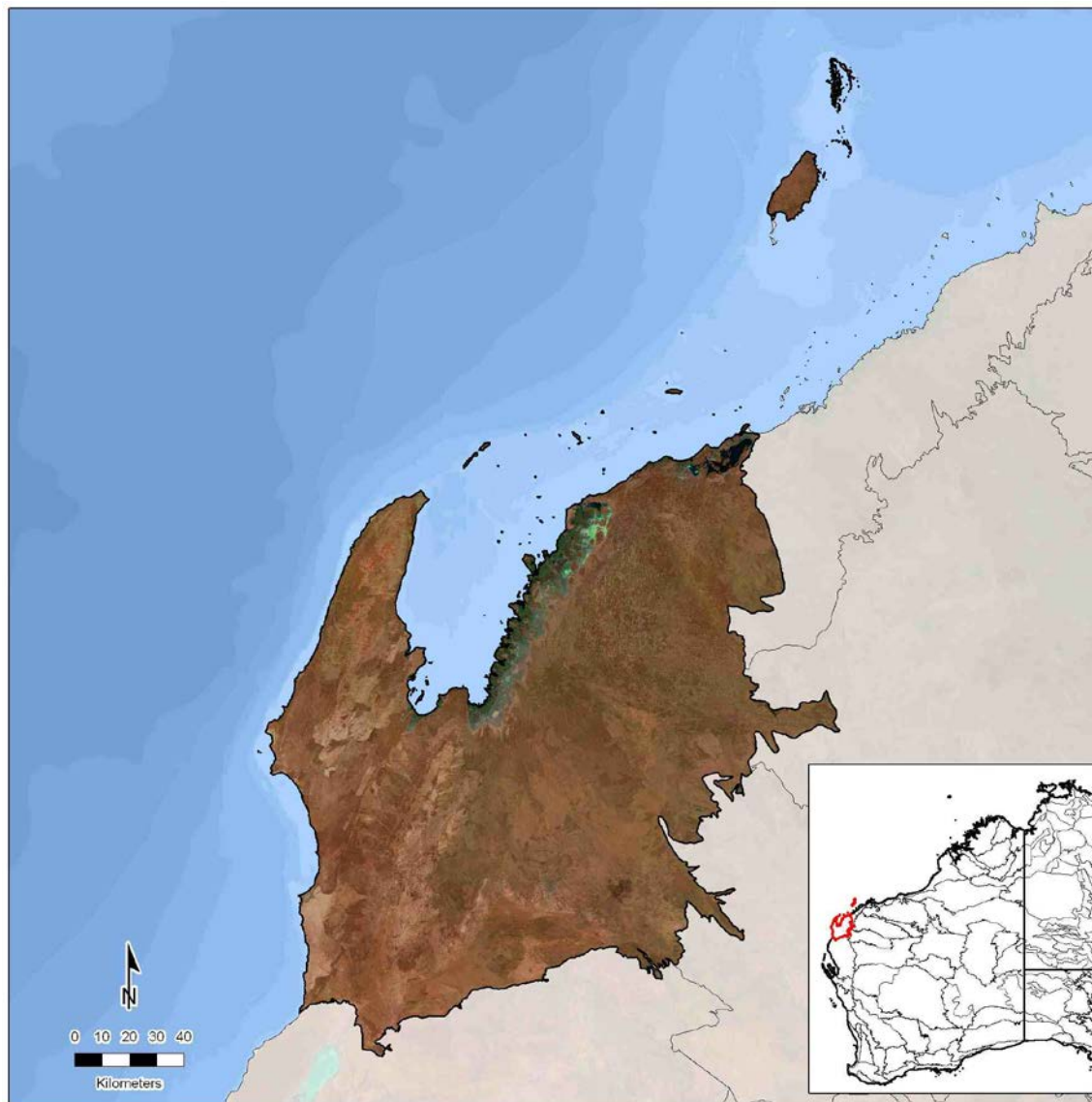


## Carnarvon 1 Sub-region



*Statistics and maps produced by GIS Branch, Department of Parks and Wildlife (2014)*

Information on the methods used to generate the statistics is available [here](#).

Note: the analysis was undertaken in 2012 under the auspices of the Department of Environment and Conservation. Therefore the acronym of “DEC” is used in this document.

## PROFILE OF SUB-REGION

### Total area of sub-region (ha)

Size of sub-region in WA (ha)	Percentage of WA covered by sub-region (%)	Percentage of sub-region within WA (%)	Percentage of sub-region covered by intact habitat* (%)	Percentage of sub-region within DEC-managed conservation reserves (IUCN Ia - IV) (%)
2,380,498	0.94	100	99.39	3.46

\*Intact habitat includes remnant vegetation and additional intact habitats (wetlands) not mapped in the remnant vegetation dataset.

Please see the GIS Branch intranet site for the latest annual statistics in the following report:

- [DPaW-Managed and Other IUCN Terrestrial Lands by IBRA Sub-Regions Report](#). Statistic: Percentage of sub-region within DEC-managed conservation reserves (IUCN Ia – IV).

## Remnant vegetation

		Extent of remnant vegetation		Extent of additional intact habitats (wetlands) not mapped in the remnant vegetation dataset		Total extent	
		(ha)	(%)	(ha)	(%)	(ha)	(%)
Native vegetation on DEC-managed lands	Conservation reserves (IUCN Ia - IV)	79,591	3.34	11	0.00	79,602	3.34
	DEC-managed lands proposed for conservation	287,389	12.07	0	0.00	287,389	12.07
	Conservation reserves (IUCN V & VI)	96	0.00	0	0.00	96	0.00
	Other DEC-managed lands	0	0.00	0	0.00	0	0.00
Native vegetation on other public lands		187,201	7.86	265	0.01	187,466	7.88
Native vegetation on leasehold lands		1,801,082	75.66	226	0.01	1,801,308	75.67
Native vegetation on freehold lands		8,843	0.37	0	0.00	8,843	0.37
Native vegetation with no tenure category assigned		834	0.04	456	0.02	1,290	0.05
Cleared areas		-	-	-	-	14,125	0.59
Unmapped islands*		-	-	-	-	381	0.02
<b>Total</b>		<b>2,365,036</b>	<b>99</b>	<b>958</b>	<b>0</b>	<b>2,380,500</b>	<b>100</b>

NB: some rounding errors may occur.

\* DEC regions may advise if these are to be included under additional intact habitat.

Please see the GIS Branch intranet site for the latest annual statistics in the following report:

- [Statewide Vegetation Statistics \(Full report\)](#). Statistic: Extent of Remnant Vegetation including on DEC-managed lands.

## Tenure

			Extent (ha)			Extent (%)			Number of reserves		
			2002	2012	Change	2002	2012	Change	2002	2012	Change
DEC-managed lands	Conservation reserves (IUCN Ia - IV) <sup>1</sup>		82,179	82,373	194	3.45	3.46	0.01	21	21	0
	DEC-managed lands proposed for conservation		54,939	287,403	232,464	2.31	12.07	9.76	1	2	1
	Conservation reserves (IUCN V & VI) <sup>1</sup>		0	478	478	0.00	0.02	0.02	0	3	3
	State forest / timber reserves		0	0	0	0.00	0.00	0.00	0	0	0
	Other DEC-managed lands		1	1	0	0.00	0.00	0.00	4	2	-2
Other lands	Unallocated crown lands		136,363	134,867	-1,496	5.73	5.67	-0.06	-	-	-
	Other crown reserves		15,886	17,548	1,662	0.67	0.74	0.07	-	-	-
		Crown reserves vested in Aboriginal Lands Trust*	-	0	-	-	0.00	-	-	-	-
	Pastoral leases^		2,048,231	1,801,820	-246,411	86.04	75.69	-10.35	-	-	-
		Pastoral leases held by Aboriginal Lands Trust*	-	0	-	-	0.00	-	-	-	-
	Other leasehold lands^		0	1,578	1,578	0.00	0.07	0.07	-	-	-
		General purpose leases held by Aboriginal Lands Trust*	-	0	-	-	0.00	-	-	-	-
	Freehold lands		4,907	9,182	4,275	0.21	0.39	0.18	-	-	-
		Freehold lands held by Aboriginal Lands Trust*	-	0	-	-	0.00	-	-	-	-
	Commonwealth lands (defence)		29,722	29,729	7	1.25	1.25	0.00	-	-	-
	Other public lands (roads and water bodies)		224	13,215	12,991	0.01	0.56	0.55	-	-	-
	No tenure category assigned <sup>†</sup>		8,046	2,304	-5,742	0.34	0.10	-0.24	-	-	-
<b>Total</b>			<b>2,380,498</b>	<b>2,380,498</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>-</b>	<b>26</b>	<b>28</b>	<b>-</b>

NB: some rounding errors may occur.

<sup>1</sup> The extents shown in this category include parts of marine reserves. This is due to misalignments of coastal boundaries between tenure and IBRA datasets.

\* Aboriginal Lands Trust data are only available for 2012. The extents shown are a subset of the category they sit below. These values should therefore not be summed since they are not mutually exclusive.

^ In 2002, there is not data to differentiate other leasehold lands. Therefore it is likely that the total extent shown for pastoral leases in 2002 includes both pastoral leases and other leasehold lands.

† The attributing of the state cadastral database has improved considerably over time. Therefore much of the land which had no tenure category assigned in 2002 will have been attributed and consequently distributed between other reporting categories in 2012. Much of this is expected to be distributed to the "Other public lands (roads and water bodies)" category, as road casings are progressively digitised and attributed, though increases in other categories is also possible as attributing improves.

Please see the GIS Branch intranet site for the latest annual statistics in the following report:

- [DPaW-Managed and Other IUCN Terrestrial Lands by IBRA Sub-Regions Report](#). Statistic: DEC-managed lands (extent only).

## Mining and petroleum

		IBRA sub-region					DEC-managed conservation reserves (IUCN Ia - IV)			DEC-managed lands proposed for conservation			DEC-managed conservation reserves (IUCN V & VI)			Other DEC-managed lands		
		2001/02	2001/02 % of IBRA sub-region	2012	2012 % of IBRA sub-region	Change^	2001/02	2012	Change	2001/02	2012	Change	2001/02	2012	Change	2001/02	2012	Change
Number of mining (live) tenements	Prospecting	0	N/A	3	N/A	3	0	0	0	0	0	0	0	0	0	0	0	0
	Exploration	20	N/A	67	N/A	47	0	2	2	3	9	6	0	0	0	0	0	0
	Mining	26	N/A	43	N/A	17	0	0	0	1	0	-1	0	0	0	0	0	0
	Other	3	N/A	3	N/A	0	1	1	0	1	1	0	1	1	0	0	0	0
Number of petroleum (active) titles	Exploration	18	N/A	18	N/A	0	15	12	-3	1	4	3	7	6	-1	1	1	0
	Production	9	N/A	12	N/A	3	7	9	2	0	0	0	2	2	0	0	0	0
Land area (ha)	Mining (live) tenements	482,248	20.26	919,652	38.63	18.37	34	326	292	42,816	26,876	-15,940	14	14	0	0	0	0
	Petroleum (active) titles	752,631	31.62	1,915,764	80.48	48.86	30,591	76,425	45,834	126,153	232,888	106,735	202	225	23	1	1	0
	Mining (live) tenements and petroleum (active) titles*	975,869	40.99	2,158,635	90.68	49.69	30,625	76,717	46,092	140,830	237,316	96,486	216	225	9	1	1	0

\*An area of land can have over it both a mining tenement and petroleum title. The combined total represents the land area which is covered by a mining tenement or petroleum title or both.

^For the Land Area "Change" is calculated as the difference in % coverage at the IBRA sub-region scale of the two year dates.

## Current dominant land uses

	Extent (ha)			Extent (%)		
	1996/97	2005/06	Change	1996/97	2005/06	Change
Pastoralism	2,076,768	2,028,492	-48,276	87.24	85.21	-2.03
Conservation	143,021	129,523	-13,498	6.01	5.44	-0.57
Miscellaneous (non-intensive use)*	50,237	102,374	52,137	2.11	4.30	2.19
Water (not classified)	97,842	92,127	-5,715	4.11	3.87	-0.24
Water (man-made/man modified)	0	9,600	9,600	0.00	0.40	0.40
Traditional indigenous use	0	1,199	1,199	0.00	0.05	0.05
Agriculture (intensive use)	0	869	869	0.00	0.04	0.04
Urban	404	240	-164	0.02	0.01	-0.01
Native forestry	0	0	0	0.00	0.00	0.00
Plantation forestry	0	0	0	0.00	0.00	0.00
Mining	0	0	0	0.00	0.00	0.00
No data	12,226	16,075	3,849	0.51	0.68	0.17
<b>Total</b>	<b>2,380,498</b>	<b>2,380,499</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>-</b>

NB: some rounding errors may occur.

\* Largely unmodified natural systems under various land uses. See detailed descriptions.

See the methods document available [here](#) for definitions of the categories.

## Linear infrastructure

	Length (km)	Area of reporting region (ha)	Length per hectare (km/ha)
Roads (sub-region)	5,367	2,380,498	0.0023
Roads (Strategic Survey Roads in national parks, conservation parks and nature reserves)	56	80,356	0.0007
Railways (sub-region)	0	2,380,498	0.0000

## Complementary conservation initiatives to the formal conservation reserve system

	Extent (ha)			Extent (%)		
	2002	2012	Change	2002	2012	Change
Private conservation organisations' land	0	0	0	0.00	0.00	0.00
Nature Conservation covenants	0	0	0	0.00	0.00	0.00
Land for Wildlife properties	0	0	0	0.00	0.00	0.00
Combined total*	0	0	0	0.00	0.00	0.00

\* These conservation initiatives are not mutually exclusive. For example freehold land owned by a private conservation organisation may have a formal nature conservation covenant on its title. Therefore its area will be included in both category totals. The combined total represents the total extent of land which is covered by one or more initiative.

Please see the GIS Branch intranet site for the latest annual statistics in the following report:

- [\*DPaW-Managed and Other IUCN Terrestrial Lands by IBRA Sub-Regions Report\*](#). Statistic: Nature conservation covenants.

## Indigenous

		Extent (ha)			Extent (%)		
		2002	2012	Change	2002	2012	Change
Native Title determinations	On DEC-managed lands	0	2,194	2,194	0.00	0.09	0.09
	On all other lands	0	651,180	651,180	0.00	27.35	27.35
Commonwealth Indigenous Protected Areas		0	0	0	0.00	0.00	0.00

Please see the GIS Branch intranet site for the latest annual statistics in the following report:

- [\*DPaW-Managed and Other IUCN Terrestrial Lands by IBRA Sub-Regions Report\*](#). Statistic: Commonwealth Indigenous Protected Areas.

## Climate projection 2030, 2050 and 2070

### Projected climate change scenarios (OzClim)

ANNUAL	Projected (Average)			Change from Base Climate* (Average)			Change from Base Climate* (range)		
	2030	2050	2070	2030	2050	2070	2030	2050	2070
	High impact scenario								
Minimum Temperature (degrees C)	19.58	21.05	22.77	1.36	2.83	4.55	1.19 - 1.53	2.48 - 3.18	3.98 - 5.12
Maximum Temperature (degrees C)	33.62	35.27	37.20	1.53	3.17	5.11	1.28 - 1.76	2.66 - 3.67	4.28 - 5.90
Precipitation (mm)	203.68	159.93	124.09	-59.43	-103.18	-139.02	-65.30 - -51.70	-112.30 - -90.60	-150.70 - -123.50
	Medium impact scenario								
Minimum Temperature (degrees C)	19.30	20.06	20.80	1.08	1.84	2.58	0.95 - 1.22	1.61 - 2.07	2.26 - 2.90
Maximum Temperature (degrees C)	33.31	34.16	34.99	1.22	2.07	2.89	1.02 - 1.40	1.73 - 2.39	2.42 - 3.34
Precipitation (mm)	213.91	187.58	166.41	-49.20	-75.53	-96.69	-54.30 - -42.80	-82.70 - -66.00	-105.40 - -84.80

\* Base Climate is 1990

The Global Climate Change Model (GCM) used in both scenarios is CSIRO Mk3.5 (CSIRO: CSIRO Mk3.5 on OzClim).

For more information see <https://wiki.csiro.au/confluence/display/ozclim/Science#Science-CSIRO35>

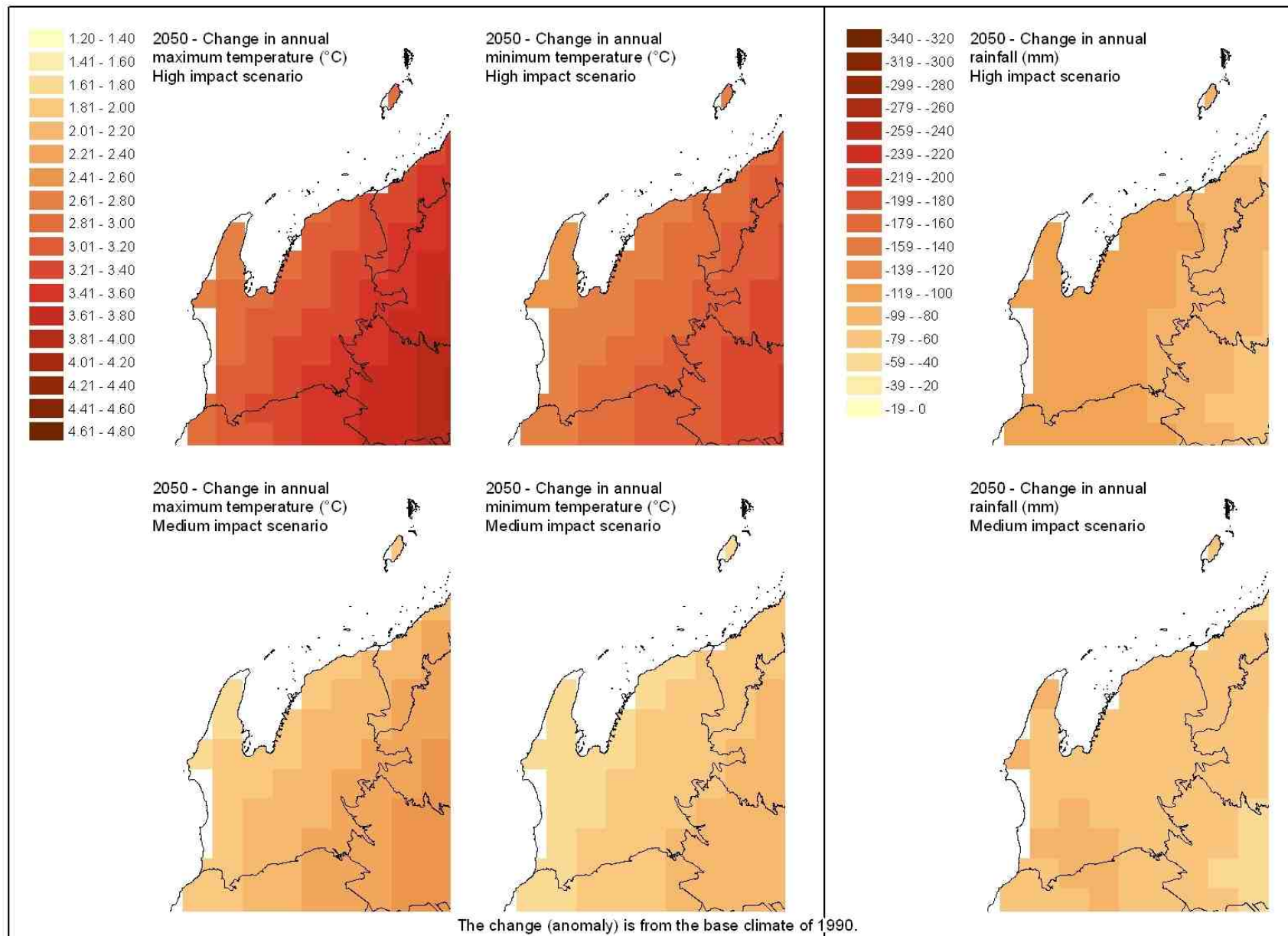
#### Medium Impact Scenario:

- *Emission Scenario:* Medium CO<sub>2</sub> emissions, peaking around 2030 (SRES Marker Scenario A1B)
- *Climate Sensitivity (Rate of Global Warming):* Moderate rate of global warming corresponds to a global warming of 2.6°C for a doubling of CO<sub>2</sub> from 280 ppm to 560 ppm.

#### High Impact Scenario:

- *Emission Scenario:* High CO<sub>2</sub> emissions, increasing throughout the 21st century (SRES Marker Scenario A1FI)
- *Climate Sensitivity (Rate of Global Warming):* High rate of global warming corresponds to a global warming of 4.2°C for a doubling of CO<sub>2</sub> from 280 ppm to 560 ppm.





# BIODIVERSITY ASSETS

## Native vegetation

Please see the GIS Branch intranet site for the latest annual statistics in the following report:

- [Statewide Vegetation Statistics \(Full report\)](#). Statistic: All statistics except 'Currently remaining on other lands'.

Vegetation Association descriptions can be viewed [here](#) (worksheet "Veg Assoc Descriptions").

### *Dominant vegetation associations*

Dominant vegetation associations are those which together occupied 85% of the sub-region at the time of European settlement (when sorted from largest to smallest).

Beard's veg assoc no.	Percentage of veg assoc within sub- region (%)	Pre- European extent (ha)	Current extent (ha)	Percentage remaining (%)	Currently remaining on DEC-managed lands (ha)				Currently remaining on other lands (ha)		
					IUCN Ia-IV	Proposed for conservation	IUCN V-VI	Non-IUCN	Public lands	Leasehold lands	Freehold lands
<b>2675</b>	99.92	350,960	350,960	100.00	0	134,586	0	0	2,932	213,092	350
<b>608</b>	99.75	312,836	312,836	100.00	0	2,040	0	0	1,675	308,732	390
<b>662</b>	99.27	282,710	281,679	99.64	5,142	0	37	0	30,372	244,604	1,509
<b>98</b>	71.64	221,820	221,813	100.00	252	55,417	0	0	1,448	164,103	593
<b>1322</b>	65.12	159,750	159,750	100.00	0	3,666	0	0	835	154,362	886
<b>670</b>	99.94	147,809	147,792	99.99	0	17,394	0	0	10,111	119,623	663
<b>658</b>	66.54	133,267	133,267	100.00	0	44,168	0	0	404	88,109	587
<b>127</b>	13.69	100,988	99,791	98.81	0	465	0	0	70,998	27,199	964
<b>680</b>	100.00	90,328	90,328	100.00	2,991	21,594	0	0	1,839	63,843	61
<b>664</b>	99.96	83,740	82,154	98.11	35,006	0	0	0	16,478	30,635	35
<b>589</b>	9.67	78,101	77,835	99.66	0	0	0	0	856	76,700	279
<b>1684</b>	100.00	58,141	58,141	100.00	0	0	0	0	425	57,716	0
<b>95</b>	4.72	57,808	57,808	100.00	0	0	0	0	149	56,890	768

### *Unique vegetation associations*

Unique vegetation associations are those which were largely restricted to only one sub-region at the time of European settlement (i.e.  $\geq 85\%$  of the vegetation association falls within one sub-region).

Beard's veg assoc no.	Percentage of veg assoc within sub-region (%)	Pre-European extent (ha)	Current extent (ha)	Percentage remaining (%)	Currently remaining on DEC-managed lands (ha)				Currently remaining on other lands (ha)		
					IUCN Ia-IV	Proposed for conservation	IUCN V-VI	Non-IUCN	Public lands	Leasehold lands	Freehold lands
680	100.00	90,328	90,328	100.00	2,991	21,594	0	0	1,839	63,843	61
1684	100.00	58,141	58,141	100.00	0	0	0	0	425	57,716	0
678	100.00	5,980	5,866	98.09	0	0	0	0	8	5,850	8
664	99.96	83,740	82,154	98.11	35,006	0	0	0	16,478	30,635	35
670	99.94	147,809	147,792	99.99	0	17,394	0	0	10,111	119,623	663
2675	99.92	350,960	350,960	100.00	0	134,586	0	0	2,932	213,092	350
608	99.75	312,836	312,836	100.00	0	2,040	0	0	1,675	308,732	390
662	99.27	282,710	281,679	99.64	5,142	0	37	0	30,372	244,604	1,509
667	95.51	21,834	21,460	98.29	21,460	0	0	0	0	0	0
663	95.39	29,068	25,866	88.98	6,756	0	5	0	10,708	8,120	275
681	94.05	5,687	5,407	95.08	41	0	23	0	37	5,305	0

### *Rare vegetation associations*

Rare vegetation associations are those which together occupied  $\leq 1\%$  of the state at the time of European settlement. The table below lists any rare vegetation associations which fall within this sub-region.

Beard's veg assoc no.	Percentage of veg assoc within sub- region (%)	Pre- European extent (ha)	Current extent (ha)	Percentage remaining (%)	Currently remaining on DEC-managed lands (ha)				Currently remaining on other lands (ha)		
					IUCN Ia-IV	Proposed for conservation	IUCN V-VI	Non-IUCN	Public lands	Leasehold lands	Freehold lands
681	94.05	5,687	5,407	95.08	41	0	23	0	37	5,305	0
678	100.00	5,980	5,866	98.09	0	0	0	0	8	5,850	8
667	95.51	21,834	21,460	98.29	21,460	0	0	0	0	0	0