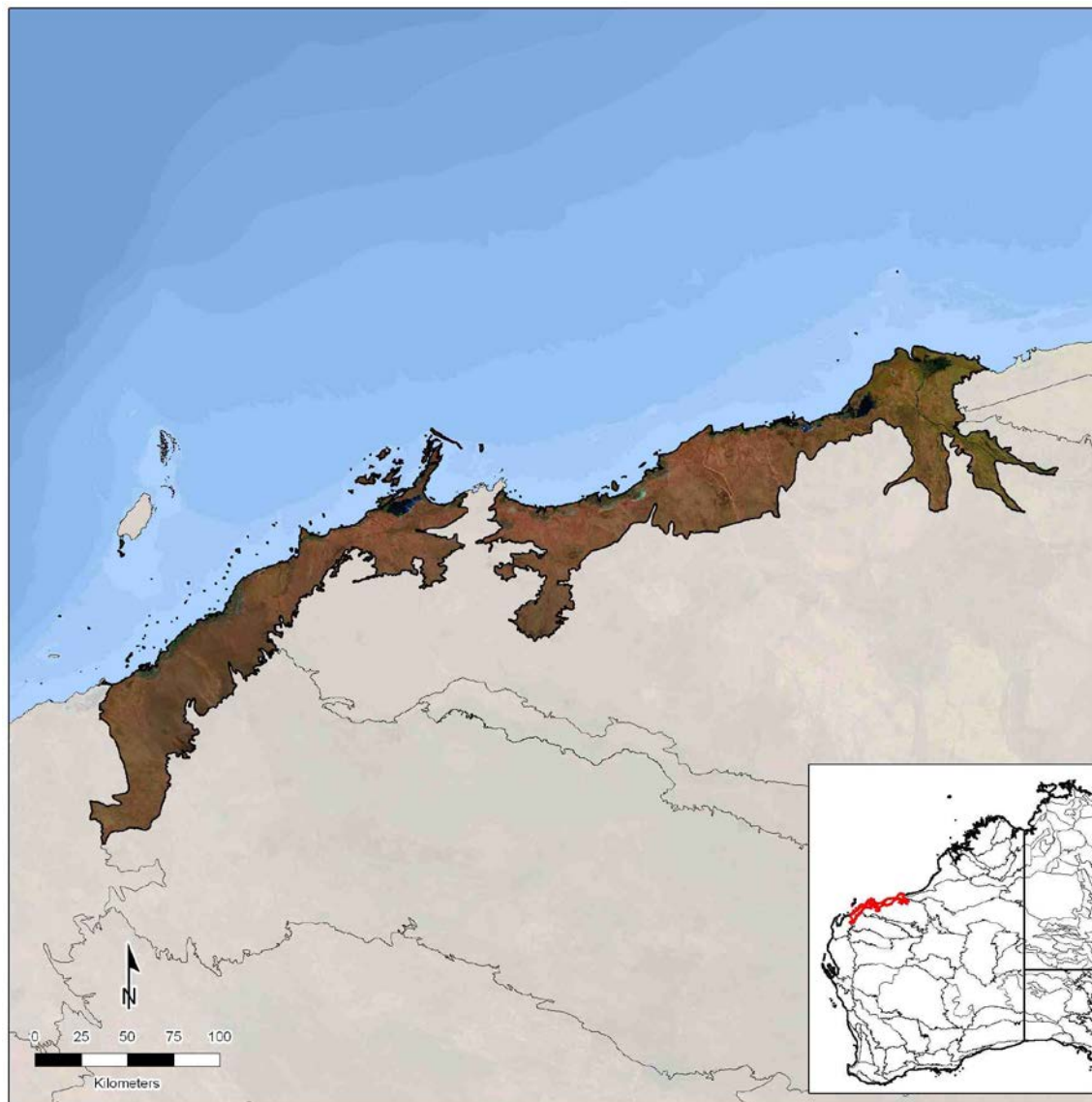


Pilbara 4 Sub-region



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) (%)
1,862,236	0.74	100	97.87	3.45

*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)	63,117	3.39	0	0.00	63,117	3.39
	DEC-managed lands proposed for conservation	60,544	3.25	0	0.00	60,544	3.25
	Conservation reserves (IUCN V & VI)	28	0.00	0	0.00	28	0.00
	Other DEC-managed lands	0	0.00	0	0.00	0	0.00
Native vegetation on other public lands		338,519	18.18	1,004	0.05	339,523	18.23
Native vegetation on leasehold lands		1,344,662	72.21	580	0.03	1,345,242	72.24
Native vegetation on freehold lands		9,481	0.51	2	0.00	9,483	0.51
Native vegetation with no tenure category assigned		3,863	0.21	798	0.04	4,661	0.25
Cleared areas		-	-	-	-	39,023	2.10
Unmapped islands*		-	-	-	-	616	0.03
Total		1,820,214	98	2,384	0	1,862,237	100

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) ¹		65,010	64,283	-727	3.49	3.45	-0.04	17	15	-2
	DEC-managed lands proposed for conservation		58,722	60,555	1,833	3.15	3.25	0.10	2	3	1
	Conservation reserves (IUCN V & VI)		0	29	29	0.00	0.00	0.00	0	5	5
	State forest / timber reserves		0	0	0	0.00	0.00	0.00	0	0	0
	Other DEC-managed lands		30	1	-29	0.00	0.00	0.00	6	3	-3
Other lands	Unallocated crown lands		242,664	200,281	-42,383	13.03	10.75	-2.28	-	-	-
	Other crown reserves		117,806	160,973	43,167	6.33	8.64	2.31	-	-	-
		Crown reserves vested in Aboriginal Lands Trust*	-	1,332	-	-	0.07	-	-	-	-
	Pastoral leases^		1,347,042	1,340,310	-6,732	72.33	71.97	-0.36	-	-	-
		Pastoral leases held by Aboriginal Lands Trust*	-	21,380	-	-	1.15	-	-	-	-
	Other leasehold lands^		0	9,141	9,141	0.00	0.49	0.49	-	-	-
		General purpose leases held by Aboriginal Lands Trust*	-	0	-	-	0.00	-	-	-	-
	Freehold lands		15,244	12,100	-3,144	0.82	0.65	-0.17	-	-	-
		Freehold lands held by Aboriginal Lands Trust*	-	0	-	-	0.00	-	-	-	-
	Commonwealth lands (defence)		0	0	0	0.00	0.00	0.00	-	-	-
	Other public lands (roads and water bodies)		432	7,097	6,665	0.02	0.38	0.36	-	-	-
	No tenure category assigned [†]		15,286	7,465	-7,821	0.82	0.40	-0.42	-	-	-
Total			1,862,236	1,862,235	-	100	100	-	25	26	-

NB: some rounding errors may occur.

¹ 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	23	N/A	60	N/A	37	0	0	0	0	0	0	0	0	0	0	0	0
	Exploration	48	N/A	246	N/A	198	2	9	7	2	8	6	0	0	0	0	0	0
	Mining	350	N/A	375	N/A	25	0	3	3	0	1	1	0	0	0	0	0	0
	Other	5	N/A	5	N/A	0	1	1	0	0	0	0	1	1	0	1	1	0
Number of petroleum (active) titles	Exploration	10	N/A	7	N/A	-3	7	4	-3	0	0	0	1	0	-1	0	0	0
	Production	3	N/A	5	N/A	2	3	5	2	0	0	0	1	1	0	0	0	0
Land area (ha)	Mining (live) tenements	228,075	12.25	1,203,132	64.61	52.36	11,862	41,335	29,473	2,834	40,580	37,746	< 1	< 1	0	1	1	0
	Petroleum (active) titles	97,485	5.23	115,002	6.18	0.95	1,163	1,043	-120	0	0	0	< 1	< 1	< 1	0	0	0
	Mining (live) tenements and petroleum (active) titles*	325,546	17.48	1,240,269	66.60	49.12	13,025	42,377	29,352	2,834	40,580	37,746	< 1	< 1	< 1	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	1,498,609	1,425,830	-72,779	80.47	76.57	-3.90
Conservation	161,406	178,220	16,814	8.67	9.57	0.90
Miscellaneous (non-intensive use)*	134,198	178,117	43,919	7.21	9.56	2.35
Water (not classified)	44,071	28,256	-15,815	2.37	1.52	-0.85
Water (man-made/man modified)	0	14,600	14,600	0.00	0.78	0.78
Traditional indigenous use	0	8,959	8,959	0.00	0.48	0.48
Native forestry	1,764	1,638	-126	0.09	0.09	0.00
Urban	1,596	1,193	-403	0.09	0.06	-0.03
Plantation forestry	0	200	200	0.00	0.01	0.01
Agriculture (intensive use)	0	100	100	0.00	0.01	0.01
Mining	116	0	-116	0.00	0.00	0.00
No data	20,476	25,123	4,647	1.10	1.35	0.25
Total	1,862,236	1,862,236	-	100	100	-

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)	4,655	1,862,236	0.0025
Roads (Strategic Survey Roads in national parks, conservation parks and nature reserves)	12	61,198	0.0002
Railways (sub-region)	280	1,862,236	0.0002

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	38,664	38,664	0.00	2.08	2.08
	On all other lands	0	588,959	588,959	0.00	31.63	31.63
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)	21.59	23.20	25.08	1.49	3.10	4.98	1.37 - 1.64	2.85 - 3.42	4.58 - 5.50
Maximum Temperature (degrees C)	35.35	37.15	39.25	1.66	3.46	5.57	1.47 - 1.89	3.05 - 3.94	4.91 - 6.34
Precipitation (mm)	279.28	244.23	217.31	-49.86	-84.91	-111.83	-69.19 - -39.50	-118.10 - -66.19	-155.10 - -85.20
	Medium impact scenario								
Minimum Temperature (degrees C)	21.29	22.12	22.92	1.18	2.01	2.82	1.09 - 1.31	1.85 - 2.23	2.59 - 3.11
Maximum Temperature (degrees C)	35.01	35.94	36.84	1.33	2.25	3.15	1.16 - 1.51	1.99 - 2.56	2.78 - 3.59
Precipitation (mm)	287.69	266.17	249.30	-41.44	-62.97	-79.84	-57.50 - -33.00	-87.50 - -49.70	-111.00 - -62.50

* 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>

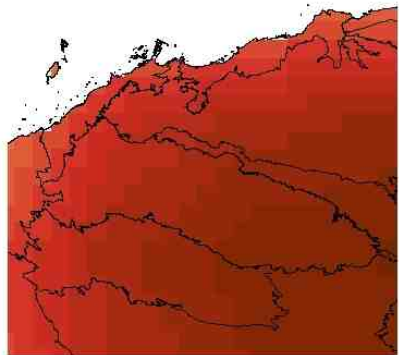
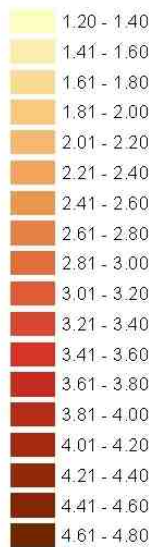
Medium Impact Scenario:

- *Emission Scenario:* Medium CO₂ 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 CO₂ from 280 ppm to 560 ppm.

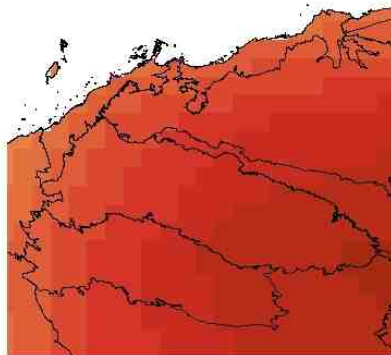
High Impact Scenario:

- *Emission Scenario:* High CO₂ 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 CO₂ from 280 ppm to 560 ppm.

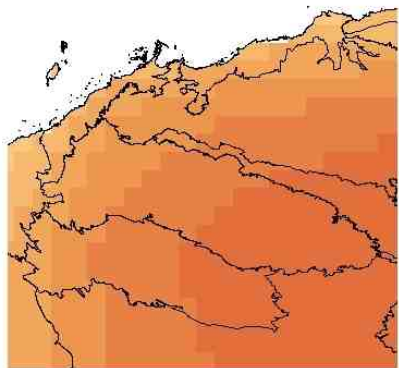
2050 - Change in annual maximum temperature (°C)
High impact scenario



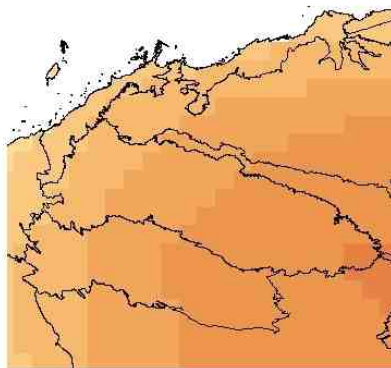
2050 - Change in annual minimum temperature (°C)
High impact scenario



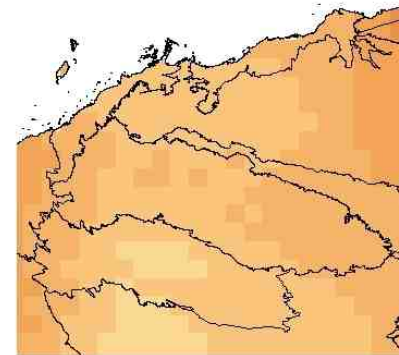
2050 - Change in annual maximum temperature (°C)
Medium impact scenario



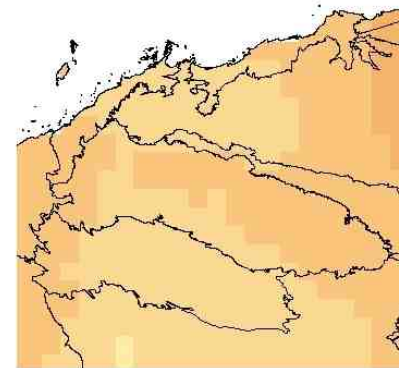
2050 - Change in annual minimum temperature (°C)
Medium impact scenario



2050 - Change in annual rainfall (mm)
High impact scenario



2050 - Change in annual rainfall (mm)
Medium impact scenario



The change (anomaly) is from the base climate of 1990.

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
589	83.62	675,392	671,328	99.40	12,003	0	0	0	95,263	558,407	5,566
647	96.45	188,901	184,775	97.82	0	0	0	0	20,691	162,566	1,497
127	24.02	177,179	159,024	89.75	14	143	0	0	128,362	28,263	56
585	99.46	144,782	144,770	99.99	34,062	57,124	0	0	1,056	52,261	267
175	21.69	114,319	114,284	99.97	0	2,323	0	0	16,610	94,864	486
601	98.29	107,810	107,742	99.94	0	0	0	0	12,241	95,317	175
605	77.17	88,058	88,058	100.00	172	240	0	0	334	87,293	19
600	99.87	67,035	66,954	99.88	0	0	0	0	4,323	62,626	2
117	5.54	50,963	46,902	92.03	11,747	0	0	0	21,182	13,434	248

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
600	99.87	67,035	66,954	99.88	0	0	0	0	4,323	62,626	2
604	99.81	15,637	15,637	100.00	0	0	0	0	738	14,899	0
606	99.77	32,104	32,104	100.00	0	0	0	0	2,521	29,583	0
585	99.46	144,782	144,770	99.99	34,062	57,124	0	0	1,056	52,261	267
584	98.47	710	710	100.00	710	0	0	0	0	0	0
601	98.29	107,810	107,742	99.94	0	0	0	0	12,241	95,317	175
647	96.45	188,901	184,775	97.82	0	0	0	0	20,691	162,566	1,497

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
584	98.47	710	710	100.00	710	0	0	0	0	0	0
640	22.88	4,006	4,006	100.00	0	0	0	0	1,214	2,790	0
604	99.81	15,637	15,637	100.00	0	0	0	0	738	14,899	0