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Native vegetation in Western Australia : extent, type and status

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NATIVE VEGETATION IN WESTERN AUSTRALIA

EXTENT, TYPE AND STATUS

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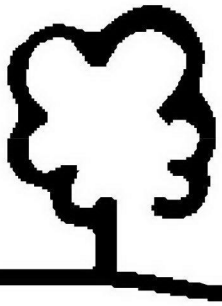

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Native vegetation in Western Australia:
Extent, type and status

Based on work for the
National Land and Water Resources Audit – Vegetation Theme

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Summary

This report describes a new vegetation extent and type dataset for Western Australia prepared through the National Land and Water Resources Audit. Summary tables and maps prepared from these data are presented describing vegetation in relation to natural resource boundaries commonly used for environmental reporting.

The present vegetation extent dataset builds on previous vegetation mapping exercises in Western Australia. A map of vegetation interpreted from Landsat satellite imagery was used as a base for this dataset and this has been substantially improved using on-screen interpretation of digital orthophotos.

In the Extensive Land-use Zone native vegetation remains largely intact. However, the structure and floristics have been substantially altered since European settlement by grazing of introduced animals such as sheep, cattle, goats and rabbits, and by altered fire regimes.

The Intensive Land-use Zone has been extensively cleared for intensive agriculture – principally cropping and grazing on improved pastures, intensive animal production and horticulture. Only the jarrah, marri and karri forests of the extreme south-west remain largely intact. The Swan Coastal Plain, wheatbelt and mallee regions have been largely cleared and only patches of the original vegetation remain.

The pre-European type vegetation dataset builds on the vegetation map database developed over the past 14 years by G.R. Beeston and A.J.M. Hopkins which is based on 1:250,000 scale mapping.

A total of 819 vegetation types is recognised in Western Australia. These are considered to be Association-level units, for the purposes of edge-matching and comparing data from other States and Territories. These Vegetation Associations range from tall forests, through a wide variety of forests and woodlands, shrublands and grasslands, mostly with an overstorey of trees.

The pre-European vegetation type and present extent datasets were intersected in order to develop a surrogate dataset on present vegetation type and extent.

Tables included show the original pre-European and current extent of each of these Vegetation Associations. Clearing over the past 30 years has substantially reduced some of these Vegetation Associations. A total of 119 associations have been reduced to below 30 per cent of their pre-European extent and of these, 48 have $\leq$10 per cent remaining and two are presumed extinct. The vegetation extent dataset represents an important benchmark/baseline for managing issues such as land clearing and carbon accounting.

The National Land and Water Resources Audit has resulted in the compilation and/or upgrading of substantial spatial data about vegetation in Western Australia. These datasets will be distributed widely and available to planners, managers and decision-makers as an aid in the performance of their functions. These datasets are also an accurate baseline against which changes in land use, vegetation extent and condition can be assessed.

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Introduction

The Western Australian Vegetation and Land Use Project for the National Land and Water Resources Audit was developed in recognition of the close inter-relationship between the data needs under the Vegetation and Land Use Themes of the Audit. This led to the development of a project that integrates work on the two Audit themes. The Western Australian Land Use and Vegetation Data Project has produced spatial datasets on original (pre-European) vegetation, present vegetation extent, vegetation condition and land use, and a land-use database for Western Australia.

The strength of this integrated approach lies in the ability to cross-validate aspects of the vegetation theme data with land-use data and vice versa. It also ensures that derived datasets e.g. vegetation cover derived through intersecting vegetation map data with land-use and vegetation cover data are reliable. The cross-validation and intersection requires that the datasets be comparable in terms of scale and accuracy.

The work was designed to produce results that can be integrated with land-use projects undertaken elsewhere in Australia (e.g. in terms of compatibility of land-use definitions), and work undertaken under the Rangelands Theme of the Audit.

For the purposes of the Audit, Western Australia was divided into two land-use zones. The Intensive Land-use Zone (ILZ) describes the south-west agricultural area, dominated by intensive agricultural enterprises – mainly cropping and grazing with some horticulture, intensive livestock production and resource protection. The Extensive Land-use Zone (ELZ) describes the remainder of the State, which is dominated by grazing and mining activities. These zones are illustrated in Figure 1. Major land uses within each zone are illustrated in Figures 2 and 3.

This report describes the methods used to develop the vegetation extent and extent by type datasets for the Audit. These datasets have been used to describe the status and distribution of vegetation in relation to a number of widely-used natural resource boundaries. The results of this assessment are presented. Further information on the land-use dataset will be made available in another report in this series.

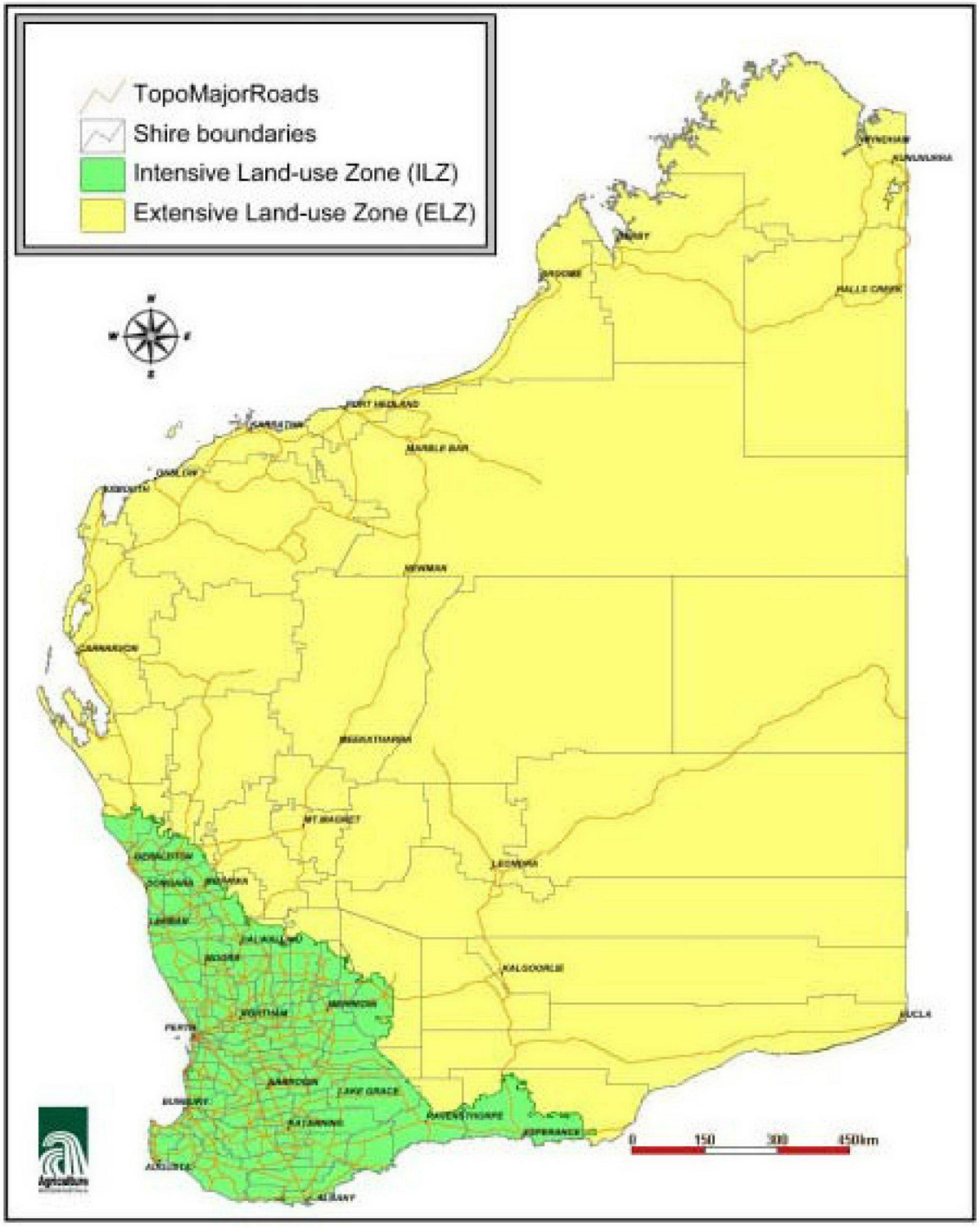

Figure 1. Land-use zones in Western Australia

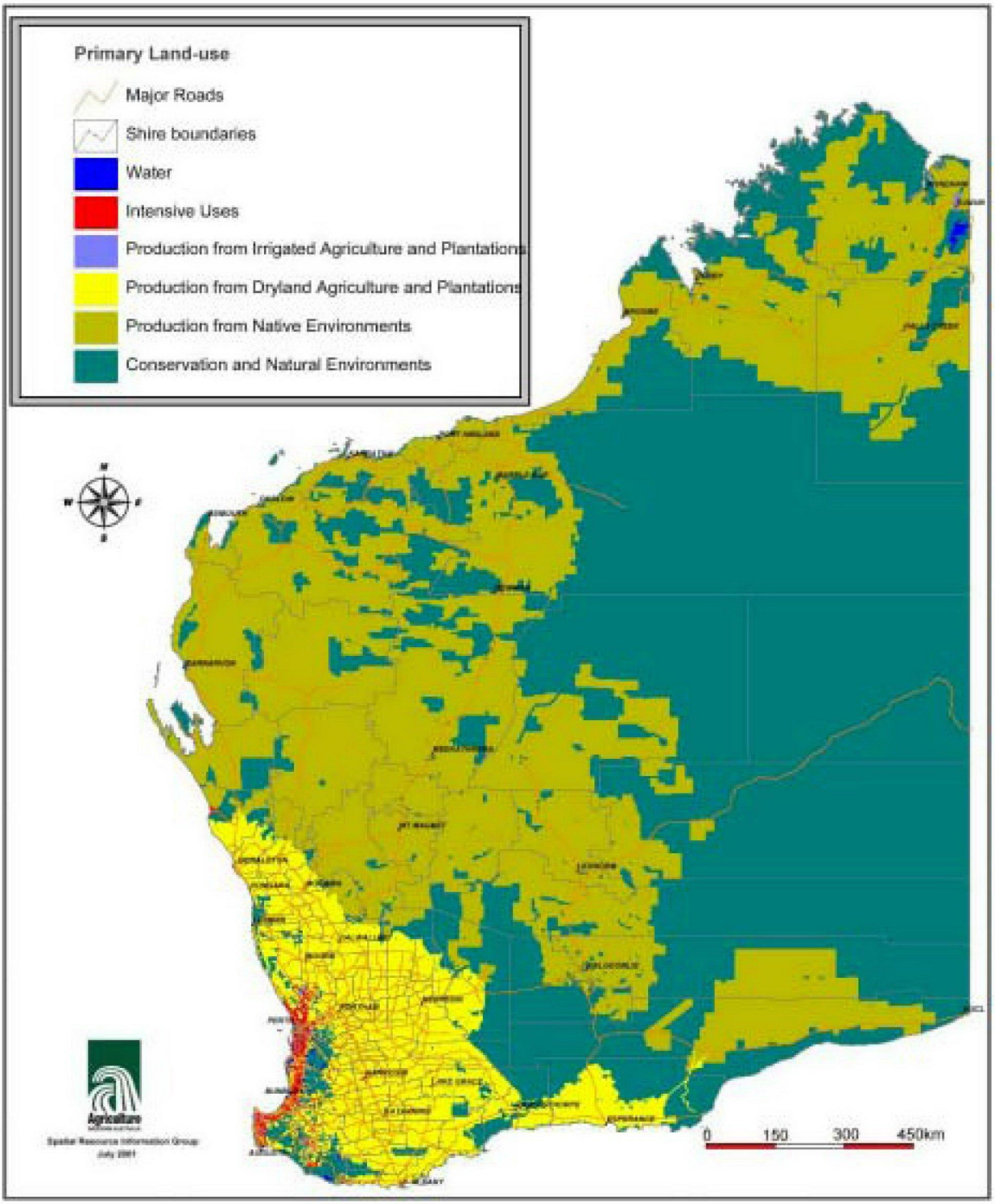

Figure 2. Land use in Western Australia

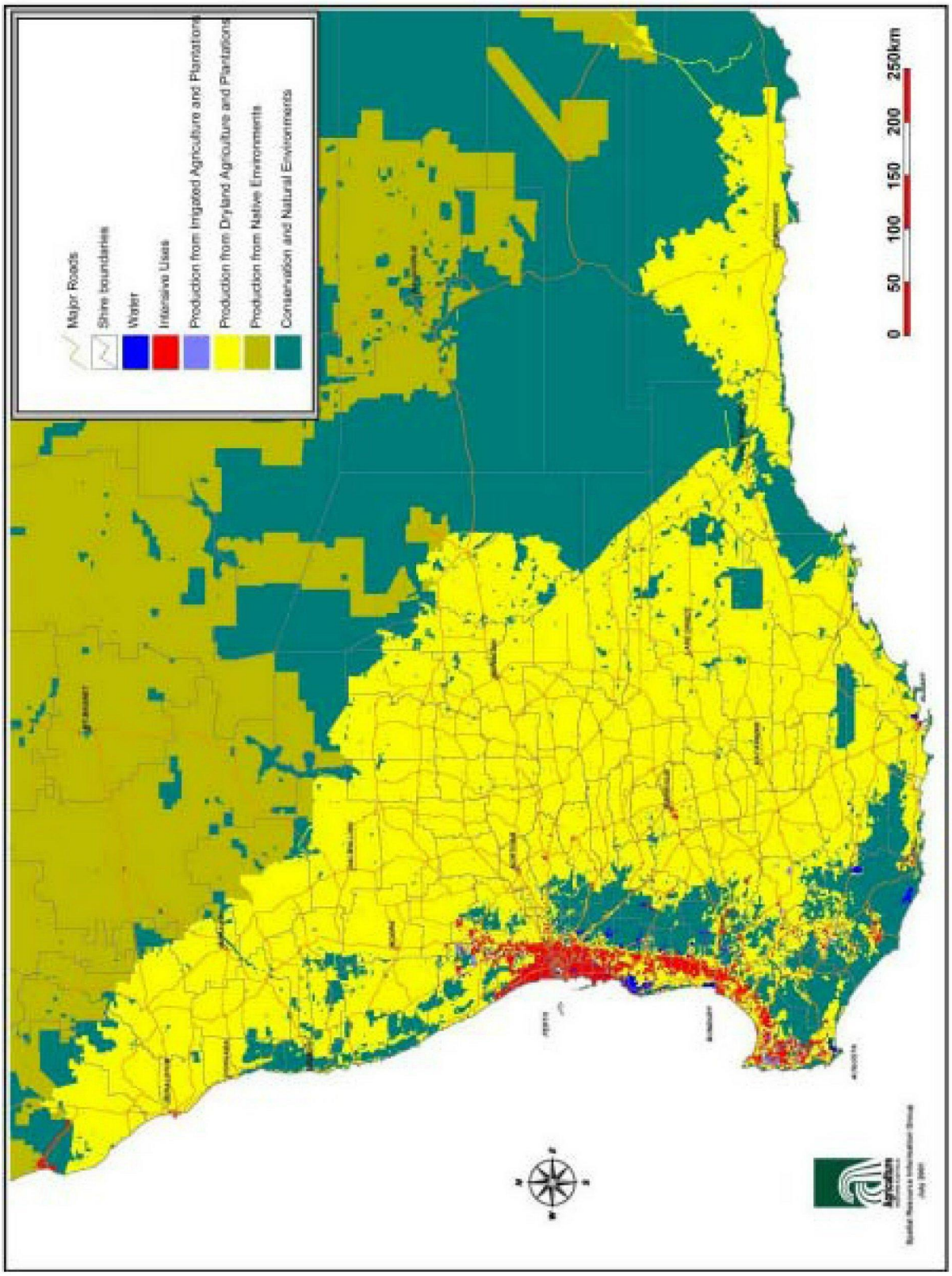

Figure 3. Land use in the Intensive Land-use Zone of Western Australia

Vegetation extent and type datasets

The first inventory of the extent of remaining vegetation in the heavily cleared agricultural region of south-western Australia was published by Beeston *et al*. (1995). This inventory was compiled in GIS format predominantly from airphotos and other imagery acquired during the 1980s. The results from this inventory have been used until recently to formulate guidelines for the assessment of land clearing applications by the Commissioner for Soil and Land Conservation in Western Australia and for numerous other land-use planning activities.

In 1996 the Commonwealth co-ordinated State agencies through the Bureau of Rural Sciences in the Australian Land Cover Change (ALCC) project. This project used Landsat TM satellite imagery to study gross change in vegetation cover in the intensive agricultural regions of Australia between 1990 and 1995. Results from this project were released in September 2000 (Barson *et al*. 2000). The project also produced vegetation cover mapping current to 1995/96. However, the resolution of the Landsat TM-derived dataset is less than that of the previous work undertaken using airphotos. There was a problem with the misclassification of vegetation types that do not have a substantial tree cover e.g. open woodlands and the many shrubland and heath vegetation types that are widespread in south-western Australia. The opportunity was taken in this project to substantially enhance and update present vegetation extent dataset using up-to-date digital aerial photography.

Since 1986, work has been underway to capture to a Geographic Information System (GIS) and associated Relational Database Management System (ORACLE) all of Beard's and Hopkins' pre-European vegetation mapping as Phase 1 of a vegetation database for the State (Hopkins *et al*. in press). This Phase is now complete: there is a seamless map coverage of the whole State at the scale of 1:250,000 with consistent nomenclature. The vegetation associations in the database have been agglomerated in a systematic way to give more general units suitable for mapping at smaller scales (e.g. Beard *et al*. in press a). Work on the pre-European vegetation database will published in detail in a subsequent technical report.

In the present project, the pre-European vegetation type and extent dataset and the present vegetation extent dataset were both substantially upgraded to agreed national standards, and these two datasets were intersected to produce a surrogate map of present vegetation type and extent.

Preparation of datasets for the Land and Water Resources Audit

The starting point for developing the present vegetation extent dataset for the Intensive Land-use Zone (ILZ) was the Australian Land Cover Change (ALCC) data. These data were derived from 1995/96 Landsat TM satellite imagery, with substantial verification from airphotos, during the ALCC project (Shepherd *et al*. 1999, Barson *et al*. 2000). The ALCC mapping has been corrected and improved using digital aerial photography (orthophotos) acquired from 1996 to 1999. The most extensive corrections were made to chenopod-dominated vegetation in the broad saline valley floors of the South West Agricultural Region (Figures 2 and 3). These contain sparse, low but substantial vegetation that was poorly defined in mapping derived

from Landsat imagery. Substantial corrections were also made to heath shrublands in the Agricultural Region, including extensive areas within the Geraldton and Esperance Sandplains Bioregions, and to open woodlands throughout the Agricultural Region.

The Extensive Land-use Zone (ELZ) is presumed to carry native vegetation cover except for the major irrigated areas at Kununurra and Carnarvon. These irrigated areas have been removed from vegetation extent mapping for the ELZ.

During the current project the pre-European database was modified to remove a number of inconsistencies in the original mapping between 1:250,000 scale map sheets. Some detail was also added for particular vegetation types where new information is available. Finally, additional attributes have been compiled to the nationally-agreed National Vegetation Information System (NVIS) standards (National Land and Water Resource Audit 2000).

The pre-European vegetation type and present extent datasets were intersected in a GIS environment to produce a surrogate dataset on present vegetation type and extent.

Plantations were derived from CALM's State Plantations datasets and from the State Sharefarm Inventory dataset held by Transport Western Australia for areas under private ownership. These have been combined in a single theme. The plantation theme is not included in assessments of vegetation extent and status in this report.

Assessment of vegetation status

The availability of comparable datasets for pre-European vegetation type and extent, and present vegetation type and extent, provides opportunity to quantify the impacts of land clearing on individual vegetation types in relation to emerging criteria. The most specific articulation of native vegetation clearing criteria is that of the Western Australian Environmental Protection Authority (EPA 2000), which is based on the Australian and New Zealand Environment and Conservation Council's *National Framework for the Management and Monitoring of Australia's Native Vegetation* (ANZECC 2000):

> From a purely biodiversity perspective and taking no account of any other land degradation issues, there are several key criteria now being applied where clearing is still occurring:
>
> - the threshold level below which species loss appears to accelerate exponentially at an ecosystem level is regarded as being at a level of 30% of the pre-clearing extent of the vegetation type;
> - a level of 10% of the original extent is regarded as being a level representing "endangered". (EPA 2000 p 6)

Similar criteria were applied in the Comprehensive Regional Assessments for various forest regions in southern Australia (JANIS 1997, C&WARFASC 1998) with the ≤30 per cent of original extent remaining vegetation type being referred to as 'vulnerable', and the ≤10 per cent of original extent remaining vegetation type called 'endangered'. The recent conservation assessment of Queensland's bioregional ecosystems

(Sattler and Williams 1999) also used the 10 and 30 per cent criteria, and the terminology of 'endangered' and 'of concern'. It is anticipated that the 10 and 30 per cent threshold levels will be applied in developing criteria for nationwide assessment when the Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth) becomes fully operational.

The datasets from this project have been supplied to the Commonwealth Government via the National Vegetation Information System (NVIS) project (NLWRA 2000a). The NVIS project seeks to develop a nationally consistent vegetation information system to support the State, Territory and Commonwealth agency requirements for vegetation information. For example, it is anticipated that the national NVIS database and associated spatial data will be used as a primary dataset for environmental assessments, monitoring and reporting at both regional and continental scales. Some examples of assessments based on the data from this project are given in Hopkins (2000) and Hopkins *et al*. (2000).

The remainder of this report described the results the results of a series of analyses using the datasets developed in Western Australia for the National Land and Water Resources Audit. Summary statistics and maps describing the native vegetation of Western Australia in relation to commonly used administrative and natural resource management boundaries are presented

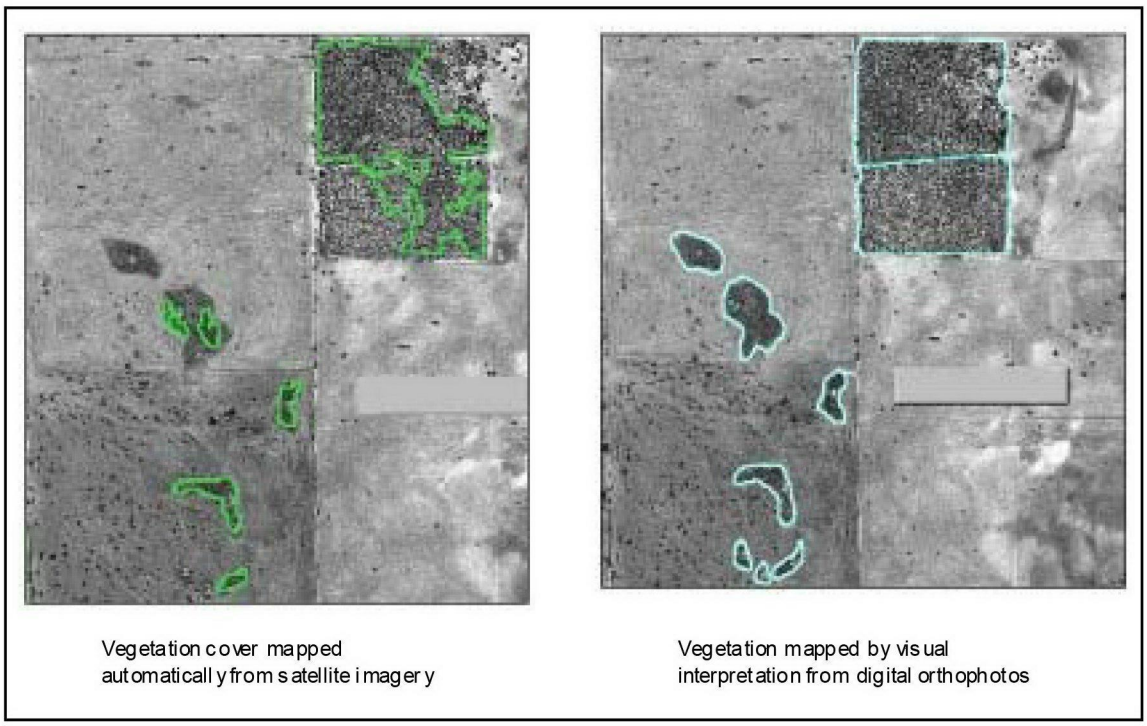

Figure 4. Comparison of vegetation mapping from satellite imagery and digital orthophotos – open woodland and heath

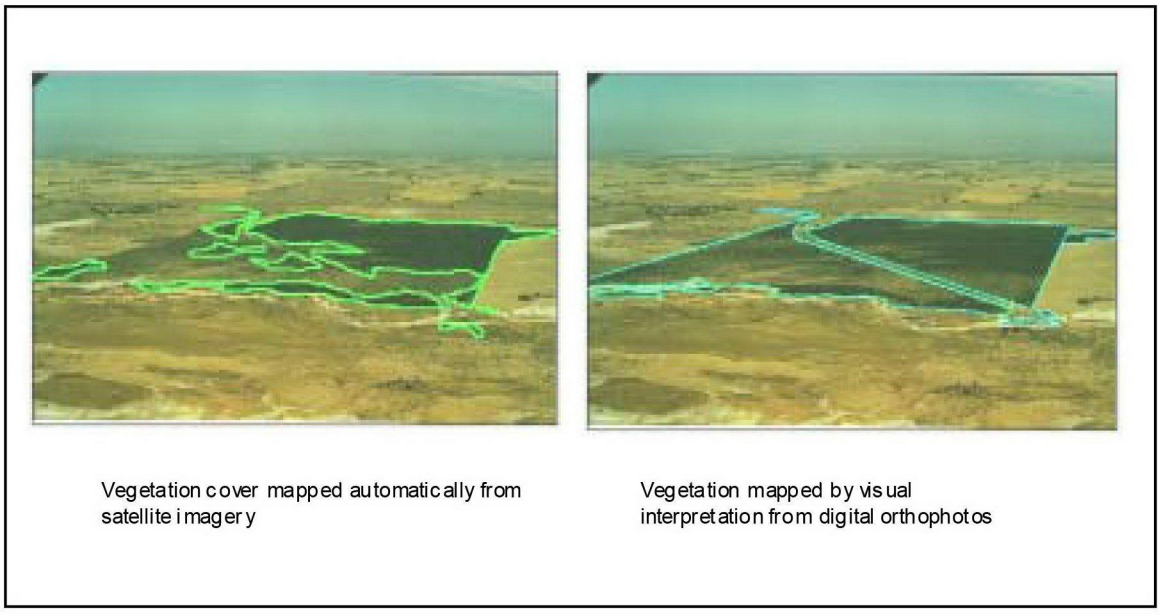

Figure 5. Comparison of vegetation mapping from satellite imagery and digital orthophotos – saline valley floors

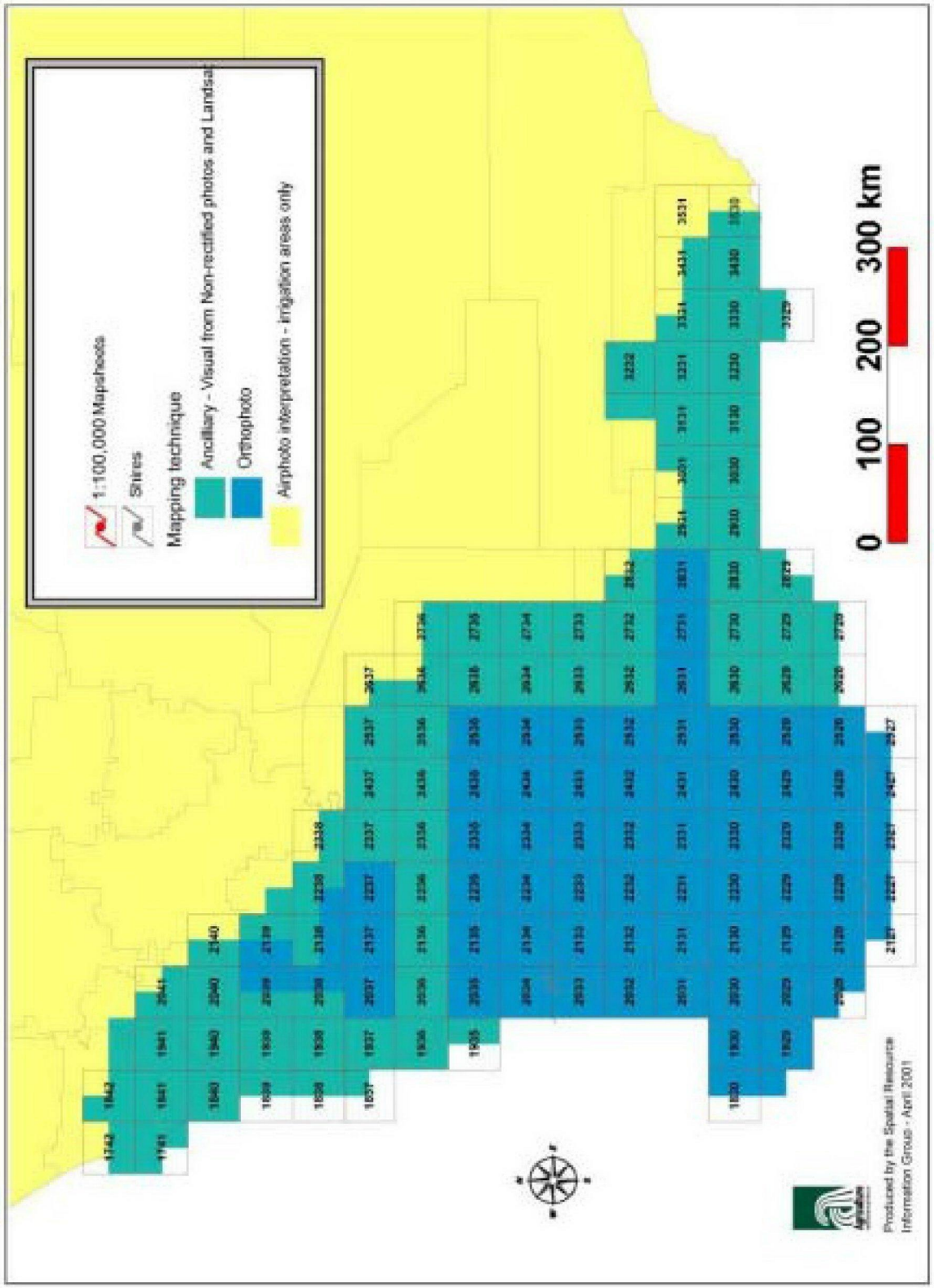

Figure 6. Techniques used for mapping vegetation extent in Western Australia

Present vegetation extent in Western Australia

The Extensive Land-use Zone (ELZ) describes the region of the State in which the land use is dominated by grazing and mining activities. Although the extent of native vegetation remains largely intact (see Figure 7), the structure and floristic composition have been substantially altered since European settlement through grazing by introduced animals such as sheep, cattle, goats and rabbits, and by altered fire regimes.

The Intensive Land-use Zone (ILZ) has been extensively cleared for intensive agricultural activities – principally cropping and grazing on improved pastures, intensive animal production and horticulture. Only the jarrah, marri and karri forests of the extreme south-west remain largely intact. The Swan Coastal Plain, wheatbelt and mallee regions have been largely cleared and only patches of the original vegetation remain (see Figure 8).

A total area of more than 236 million ha of native vegetation was mapped in Western Australia - 93 per cent of the State. This comprised 228.4 million ha in the ELZ (99.9 per cent) and 7.7 million ha in the ILZ (30.3 per cent) - see Figures 7 and 8.

Vegetation extent by Local Government Authority

Of the 142 Local Government Authorities (LGAs) in Western Australia, 26 occur wholly within the Extensive Land-use or Pastoral Zone where the native vegetation remains largely uncleared. Of these LGAs, only Wyndham and Carnarvon have substantial areas cleared for intensive agricultural activities, specifically irrigated horticulture. The respective areas are 17,987 hectares for the Ord River Irrigation Area near Kununurra in Wyndham Shire and 2,997 hectares for Carnarvon.

The remaining 116 LGAs occur at least partly in the ILZ which has been extensively cleared for intensive agricultural activities. Table 1 gives the aerial extent of native vegetation remaining in 87 of these 116 LGAs. The other 29 occur in the built-up part of the Perth Metropolitan area and are not included in this assessment. Of the 87 LGAs assessed, 21 carry less than 10 per cent of the original cover of native vegetation and further 30 LGAs carry less than 30 per cent. Statistics for vegetation extent by LGA are presented in Table 1 and illustrated in Figure 9.

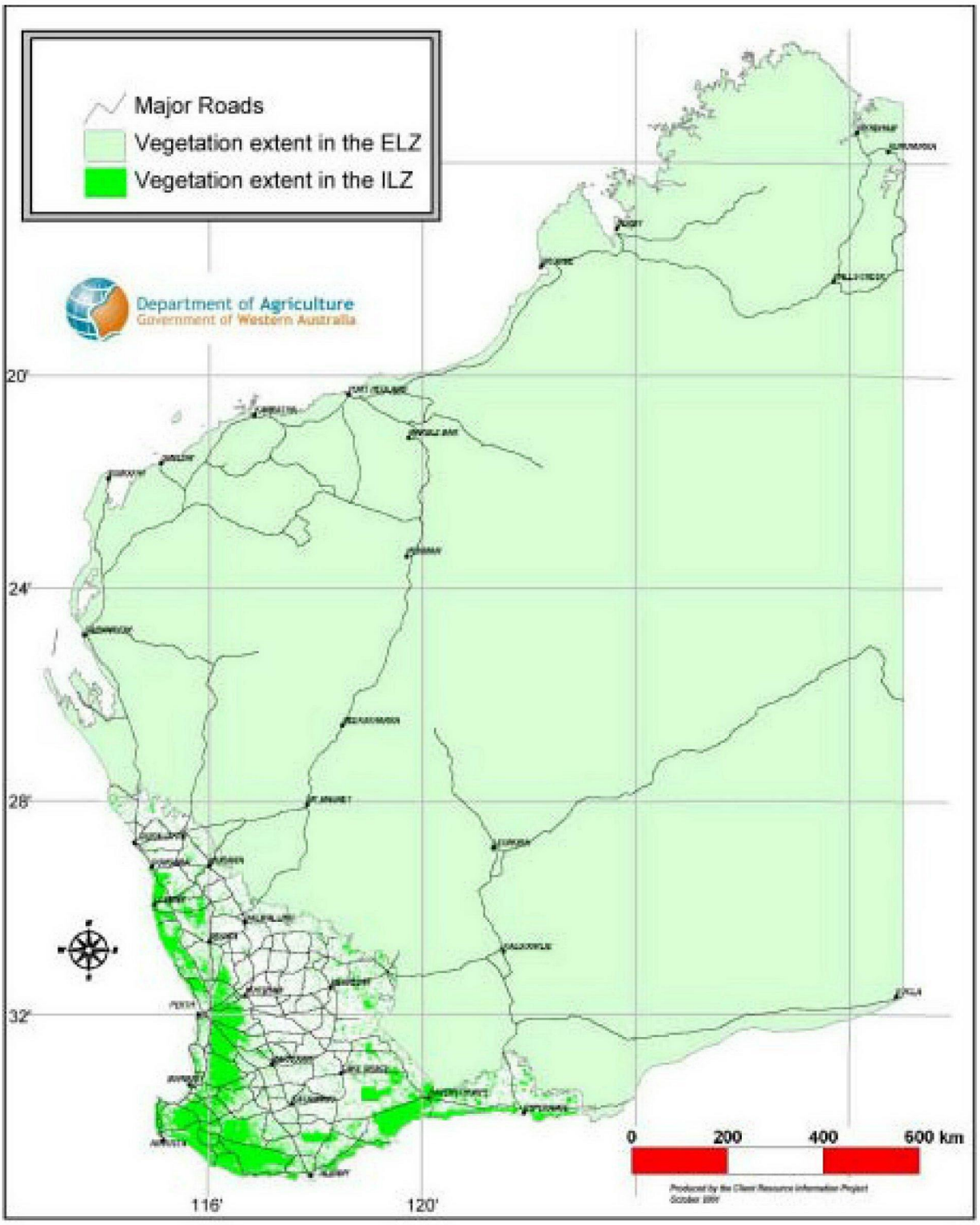

Figure 7. Present vegetation extent in Western Australia

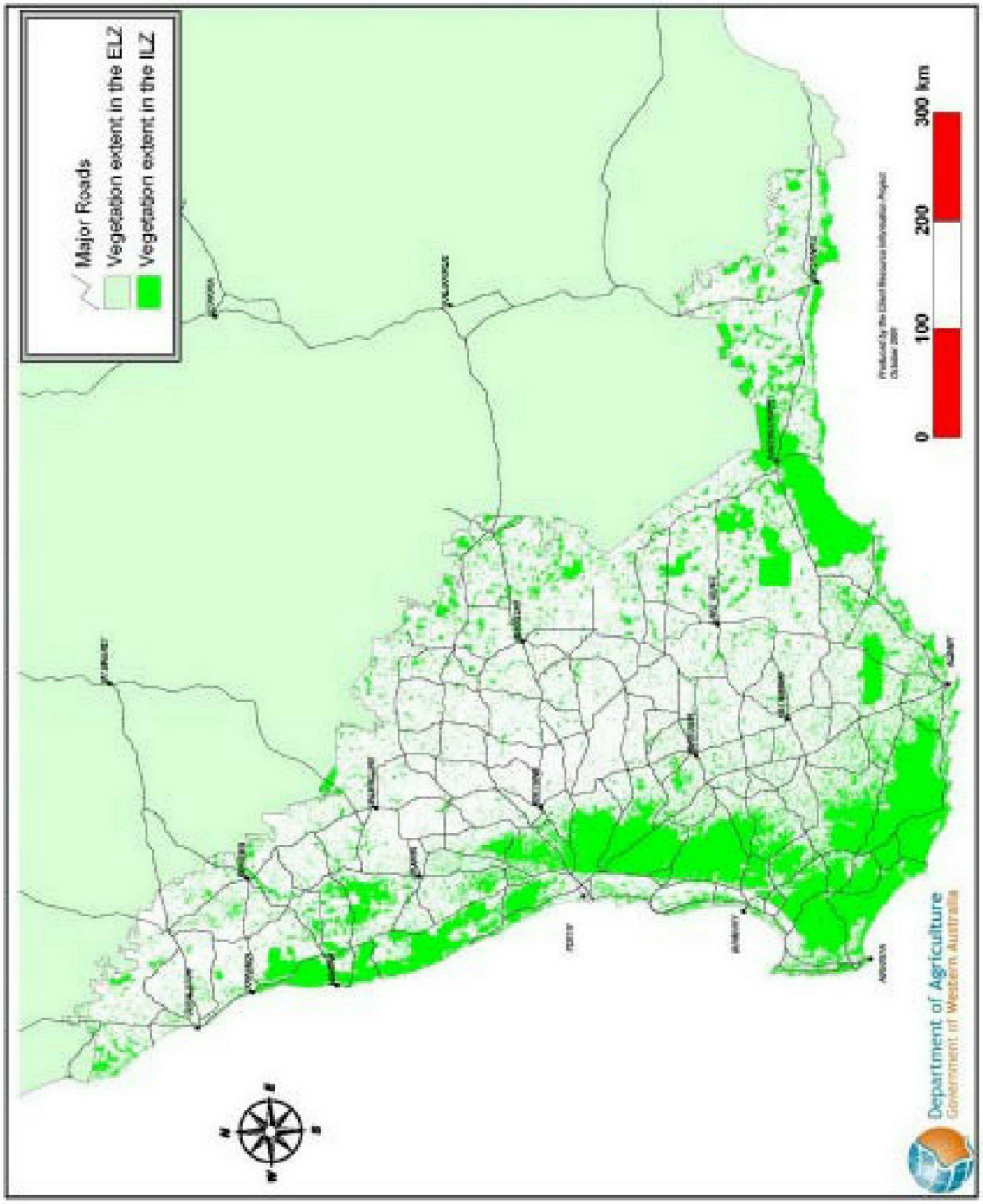

Figure 8. Vegetation extent in the Intensive Land-use Zone

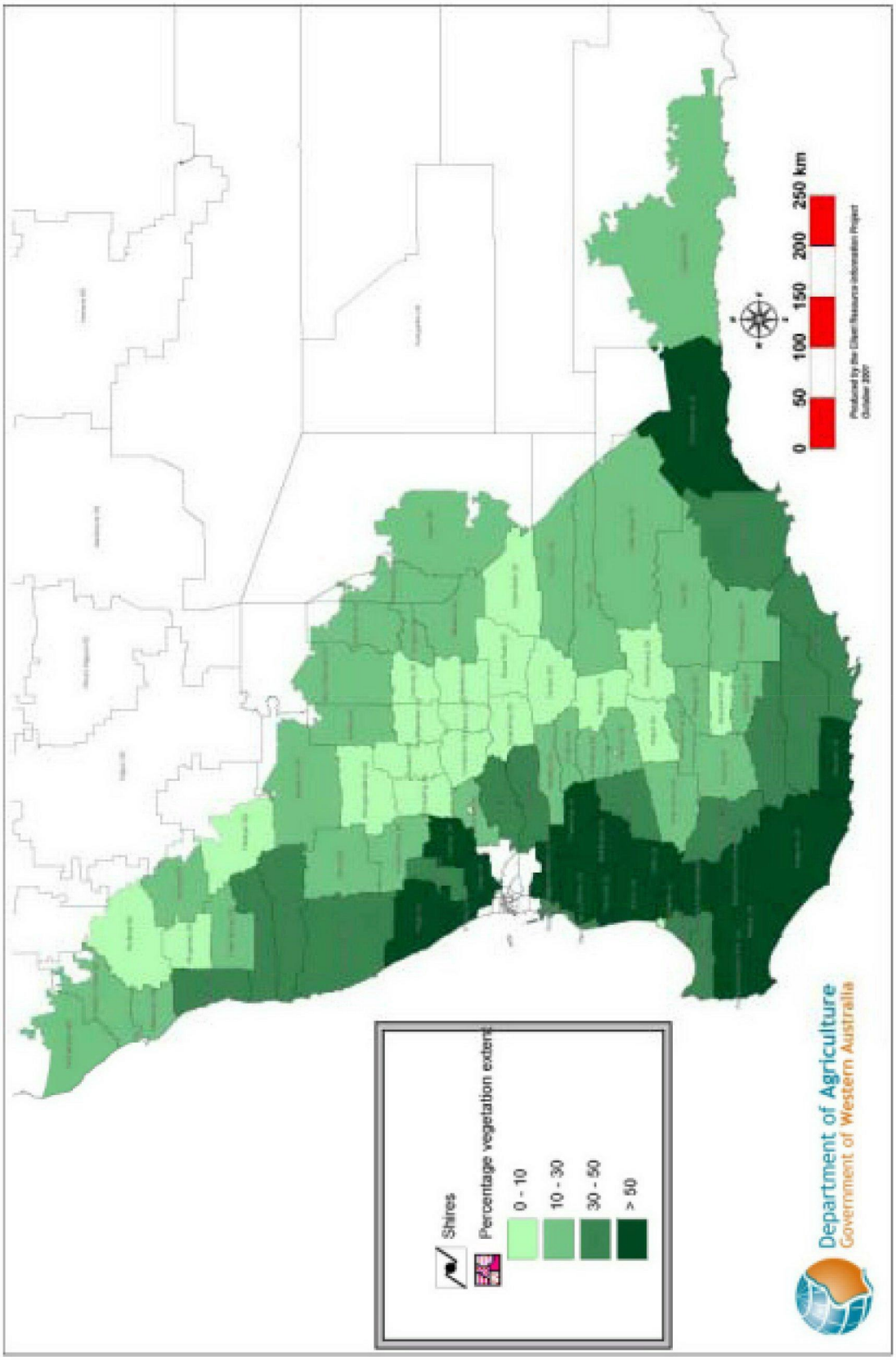

Figure 9. Vegetation extent in the Intensive Land-use Zone of Western Australia by Local Govemment Authority

Table 1. Vegetation extent in the Intensive Land-use Zone by Local Government Authority

Shire	*Total area (ha)*	*Area inside Clearing Line*	*Vegetation cover inside Clearing Line*	
			(ha)	*(%)*
ALBANY	383,843	383,843	149,341	38.9
AUGUSTA-MARGARET RIVER	222,718	222,718	159,679	71.7
BEVERLEY	239,896	239,896	76,566	31.9
BODDINGTON	195,281	195,281	138,327	70.8
BOYUP BROOK	282,638	282,638	127,847	45.2
BRIDGETOWN-GREENBUSHES	135,387	135,387	91,961	67.9
BROOKTON	161,283	161,283	25,207	15.6
BROOMEHILL	119,170	119,170	11,265	9.5
BRUCE ROCK	274,371	274,371	19,503	7.1
Bunbury (City of)	56,300	56,300	1,688	3.0
BUSSELTON	145,966	145,966	64,905	44.5
CAPEL	55,869	55,869	20,059	35.9
CARNAMAH	286,940	286,940	111,632	38.9
CHAPMAN VALLEY	396,565	311,623	32,312	10.4
CHITTERING	123,502	123,502	48,828	39.5
COLLIE	172,072	172,072	161,845	94.1
COOROW	424,583	424,583	164,895	38.8
CORRIGIN	267,786	267,786	13,047	4.9
CRANBROOK	326,719	326,719	123,063	37.7
CUBALLING	117,351	117,351	23,324	19.9
CUNDERDIN	188,696	188,696	3,312	1.8
DALWALLINU	723,681	595,418	71,228	12.0
DANDARAGAN	668,507	668,507	326,283	48.8
DARDANUP	53,995	53,995	28,182	52.2
DENMARK	191,156	191,156	159,071	83.2
DONNYBROOK-BALINGUP	155,143	155,143	111,737	72.0
DOWERIN	188,786	188,786	8,055	4.3
DUMBLEYUNG	253,816	253,816	24,003	9.5
ESPERANCE	4,256,774	1,609,610	440,558	27.4
GINGIN	315,560	315,560	177,688	56.3

Table 1 (continued)

Shire	*Total area (ha)*	*Area inside Clearing Line*	*Vegetation cover inside Clearing Line*	
			(ha)	*(%)*
GNOWANGERUP	454,958*	454,958	83,957	18.5
GOOMALLING	185,768	185,768	8,559	4.6
GREENOUGH	177,404	177,404	26,612	15.0
HARVEY	168,294	168,294	101,085	60.1
IRWIN	238,186	238,186	114,164	47.9
JERRAMUNGUP	657,594*	657,594	287,902	43.8
KATANNING	153,272	153,272	17,149	11.2
KELLERBERRIN	191,970	191,970	14,214	7.4
KENT	575,537	575,537	154,315	26.8
KOJONUP	292,938	292,938	44,482	15.2
KONDININ	737,192	422,966	55,482	13.1
KOORDA	283,746	266,057	21,537	8.1
KULIN	466,712	466,712	55,883	12.0
LAKE GRACE	1,031,972*	1,031,972	225,891	21.9
Mandurah (City of)	18,611	18,611	8,933	48.0
MANJIMUP	705,670	705,670	591,748	83.9
MERREDIN	326,610	326,610	38,551	11.8
MINGENEW	194,452	194,452	12,854	6.6
MOORA	373,148	373,148	50,212	13.5
MORAWA	341,836	289,168	56,051	19.4
MOUNT MARSHALL	1,019,574	444,185	47,071	10.6
MUKINBUDIN	342,575	278,129	39,021	14.0
MULLEWA	1,076,999	496,895	35,336	7.1
MURRAY	181,526	181,526	98,552	54.3
NANNUP	293,198	293,198	275,524	94.0
NARAMBEEN	379,894	379,894	26,993	7.1
NARROGIN SHIRE	164,063	164,063	22,369	13.6
NORTHAM	141,410	141,410	31,229	22.1
NORTHAMPTON	1,354,323	428,156	83,759	19.6
NUNGARIN	117,004	117,004	17,827	15.2
PERENJORI	833,844	377,319	31,564	8.4
PINGELLY	128,552	128,552	14,734	11.5
PLANTAGENET	485,073	485,073	231,912	47.8
QUAIRADING	200,489	200,489	7,307	3.6

Table 1. (continued)

Shire	*Total area (ha)*	*Area inside Clearing Line*	*Vegetation cover inside Clearing Line*	
			(ha)	*(%)*
RAVENSTHORPE	1,355,762	865,382	512,776	59.3
Rockingham (City of)	24,326	24,326	8,534	35.1
SERPENTINE	90,478	90,478	53,038	58.6
SWAN	103,944	103,944	54,792	52.7
TAMBELLUP	141,288	141,288	16,966	12.0
TAMMIN	110,090	110,090	6,067	5.5
THREE SPRINGS	258,882	258,882	51,008	19.7
TOODYAY	173,440	173,440	88,082	50.8
TRAYNING	164,255	164,255	13,811	8.4
VICTORIA PLAINS	255,291	255,291	34,787	13.6
WAGIN	193,910	193,910	15,847	8.2
WANDERING	188,407	188,407	115,462	61.3
Wanneroo (City of)	78,809	78,809	45,361	57.6
WAROONA	83,508	83,508	50,761	60.8
WEST ARTHUR	282,614	282,614	84,226	29.8
WESTONIA	329,601	269,088	57,813	21.5
WICKEPIN	202,347	202,347	15,120	7.5
WILLIAMS	228,482	228,482	75,562	33.1
WONGAN-BALLIDU	333,908	333,908	17,454	5.2
WOODANILLING	111,769	111,769	14,367	12.9
WYALKATCHEM	158004*	158,004	7,814	4.9
YILGARN	3,067,793	727,272	171,915	23.6
YORK	214,963	214,963	66,264	30.8
TOTAL	31,528,091	25,091,622	7,477,552	29.8

* Public Land includes Salt lakes and Saline Flats which are not included in the Total Vegetation Cover at 1995/96

Vegetation extent by Landcare District

Of the 150 Landcare Districts (LCDs) in Western Australia, 23 occur wholly within the Extensive Land-use or Pastoral Zone where the native vegetation remains largely uncleared. Of these, only Ord River and Gascoyne-Wooramel have substantial areas cleared for intensive agriculture, specifically irrigated horticulture: 17,987 hectares for the Ord River and 2,997 hectares for Gascoyne-Wooramel.

The remaining 127 LCDs occur at least partly in the ILZ. This area has been extensively cleared for intensive agriculture. Table 1 gives the aerial extent of native vegetation remaining in 122 of the LCDs in the ILZ. Of the 122 LCDs assessed, 34 carry less than 10 per cent of the original cover of native vegetation, and a further 50 LCDs carry less than 30 per cent of their original native vegetation. Statistics for vegetation extent by LCD are presented in Table 2 and illustrated in Figure 10.

Vegetation extent by drainage basin

Forty-five drainage basins in Western Australia are recognised by the Water & Rivers Commission. Of these, 22 occur at least partially in the ILZ. Areas range between 49 million hectares for the Salt Lake basin and 115,000 hectares for the Ferguson basin. Fifteen of the basins occur entirely within the ILZ. Over 70 per cent of the Avon, Greenough and Esperance Coast basins lie within the ILZ. Less than 25 per cent of the remaining four basins – Yarra Yarra, Ninghan, Murchison and Salt Lake – occur within the ILZ.

Of these drainage basins, seven retain less than 20 per cent of the original native vegetation extent – Ninghan, Avon, Yarra Yarra, Murchison, Greenough, Salt Lake and Blackwood . Six basins retain less than 50 per cent. The Collie, Warren, Donnelly and Shannon basins retain over 70 per cent of their original native vegetation extent. Vegetation extent by drainage basin is presented in Table 3 and illustrated in Figure 11.

Vegetation extent by catchment

There are 485 catchments in Western Australia recognised by the Water & Rivers Commission. Of these, 357 occur at least partially in the ILZ. Areas range between 495,000 square kilometres and 107 hectares.

Of the 357 catchments at least partially in the ILZ, 100 retain less than 10 per cent of their original native vegetation extent. A further 68 retain between 10 and 20 per cent of their original native vegetation extent. A further 68 catchments retain less than 30 per cent. Only 19 catchments retain more than 30 per cent of their original native vegetation extent. Vegetation extent by catchment is presented in Table 4 and illustrated in Figures 12, 13 and 14.

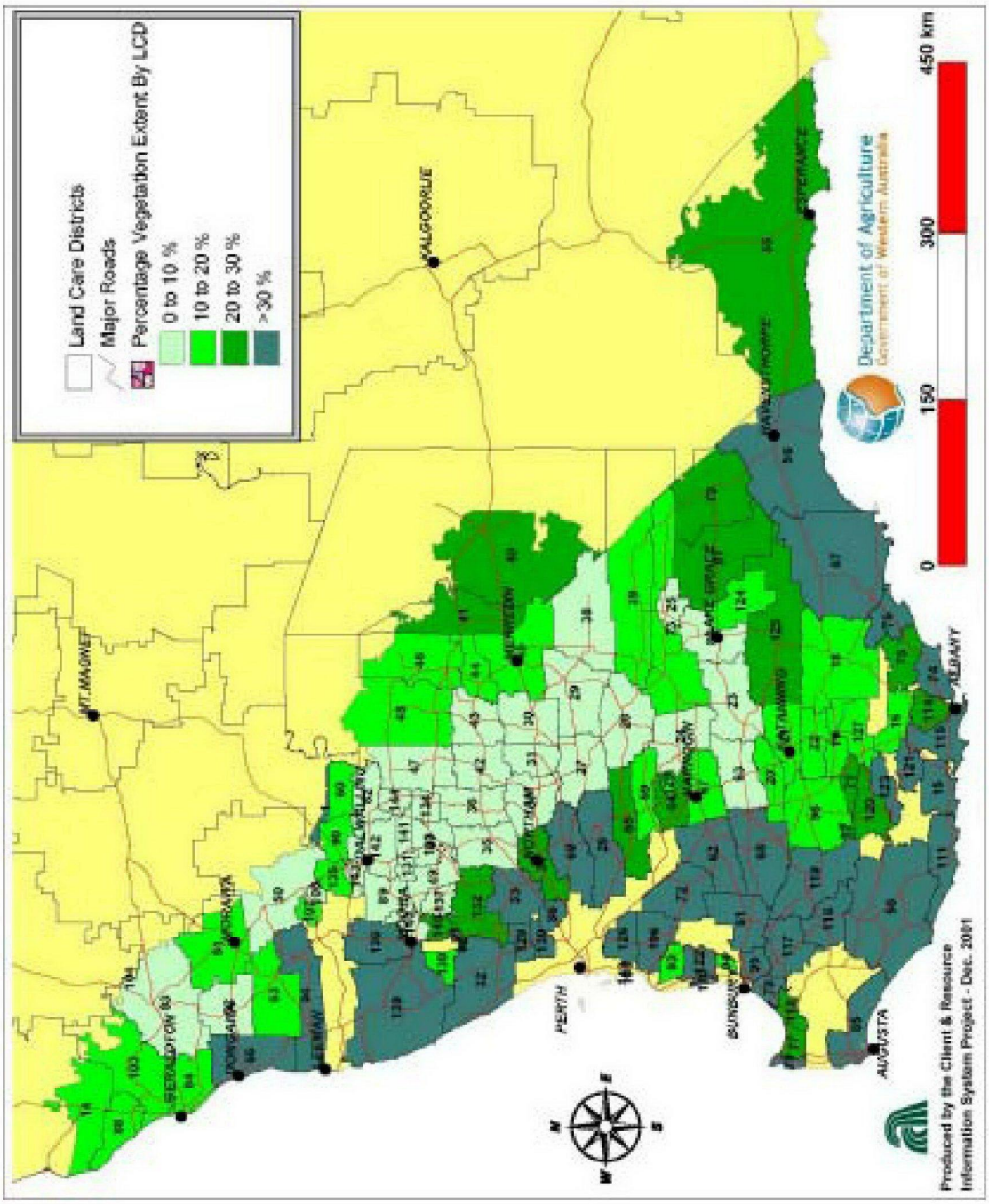

Figure 10. Vegetation extent in the Intensive Land-use Zone by Landcare District

(Numbers on the map refer to the first column in Table 2.)

Table 2. Vegetation extent in the Intensive Land-use Zone by Landcare District

(Map references refer to Figure 10. Areas are in hectares except where indicated.)

Map ref. no.	LCD Name	Area	Area in ILZ		Vegetated area in ILZ	
			ha	%	ha	%
26	BEVERLEY	238,190	238,190	100	77,670	32.6
14	BINNU	1,216,957	274,889	22.6	54,684	19.9
72	BODDINGTON	193,433	193,433	100	141,330	73.1
119	BOYUP BROOK	285,664	285,664	100	131,913	46.2
116	BRIDGETOWN-GREENBUSHES	133,051	133,051	100	93,291	70.1
65	BROOKTON	187,199	187,199	100	43,184	23.1
22	BROOMEHILL	123,163	123,163	100	12,305	10.0
29	BRUCE ROCK	271,535	271,535	100	19,454	7.2
135	BUNTINE-WESTWUBIN	69,052	69,052	100	8,217	11.9
144	BURAKIN -BUNKETCH	51,780	51,780	100	3,129	6.0
134	CADOUX MANMANNING	59,640	59,640	100	3,130	5.2
132	CALINGIRI-NEW NORCIA	207,281	207,281	100	43,059	20.8
78	CAPEL	48,940	48,940	100	18,416	37.6
54	CARNAMAH	290,750	290,750	100	112,511	38.7
103	CHAPMAN VALLEY	405,154	323,175	79.8	34,418	10.6
129	CHITTERING VALLEY	54,528	54,528	100	29,717	54.5
61	COLLIE	177,923	177,923	100	169,470	95.2
93	COOLUP	52,241	52,241	100	9,740	18.6
28	CORRIGIN	266,212	266,212	100	13,152	4.9
64	CUBALLING	102,320	102,320	100	22,597	22.1
37	CUNDERDIN	187,309	187,309	100	3,352	1.8
139	DANDARAGAN	608,440	608,440	100	307,905	50.6
95	DARDANUP	53,837	53,837	100	26,081	48.4
15	DENMARK	112,650	112,650	100	89,342	79.3
117	DONNYBROOK-BALLINGUP	155,826	155,826	100	113,139	72.6
36	DOWERIN	172,876	172,876	100	6,732	3.9
23	DUMBLEYUNG	251,374	251,374	100	23,670	9.4
141	EAST BALLIDU	46,700	46,700	100	2,047	4.4

Table 2 (continued)

Map ref. no.	LCD Name	Area	Area in ILZ		Vegetated area in ILZ	
			ha	%	ha	%
140	EAST MOORA	66,563	66,563	100	6,259	9.4
128	EAST YORNANING	18,564	18,564	100	1,920	10.3
55	ESPERANCE	1,914,343	1,659,581	86.7	452,607	27.3
120	FRANKLAND BELOW GORDON	121,895	121,895	100	35,861	29.4
32	GINGIN	319,182	319,182	100	176,945	55.4
18	GNOWANGERUP	423,822	423,822	100	81,916	19.3
60	GOODLANDS	93,664	93,664	100	10,634	11.4
35	GOOMALLING	182,403	182,403	100	8,587	4.7
84	GREENOUGH	178,674	178,674	100	27,963	15.7
122	HARVEY RIVER	66,539	66,539	100	22,717	34.1
115	HAY RIVER	131,194	131,194	100	50,876	38.8
66	IRWIN	238,088	238,088	100	115,612	48.6
57	JERRAMUNGUP	647,331	647,331	100	278,877	43.1
90	JIBBERDING	85,757	85,757	100	14,495	16.9
82	KALANNIE	114,970	114,970	100	7,691	6.7
16	KALGAN	105,068	105,068	100	19,692	18.7
21	KATANNING	151,384	151,384	100	17,888	11.8
30	KELLERBERRIN	190,154	190,154	100	14,190	7.5
123	KENT RIVER	76,401	76,401	100	30,257	39.6
96	KOJONUP	282,496	282,496	100	42,219	14.9
39	KONDININ	736,570	422,856	100	55,651	13.2
47	KOORDA	249,649	232,278	93.0	18,590	8.0
73	KULIN	426,227	426,227	100	53,105	12.5
124	LAKE BRYDE	163,450	163,450	100	32,670	20.0
80	LAKE GRACE	167,411	167,411	100	14,725	8.8
110	LAKE PRESTON	10,840	10,840	100	4,010	37.0
85	LOWER BLACKWOOD	182,592	182,592	100	124,660	68.3
58	MANJIMUP	615,304	615,304	100	527,931	85.8
74	MANYPEAKS	94,691	94,691	100	44,175	46.7
45	MERREDIN	332,389	332,389	100	38,219	11.5
89	MILING	116,422	116,422	100	4,344	3.7
52	MINGENEW	192,396	192,396	100	12,833	6.7
17	MOBRUP	10,668	10,668	100	2,508	23.5

Table 2 (continued)

Map ref. no.	LCD Name	Area	Area in ILZ		Vegetated area in ILZ	
			(ha)	(%)	(ha)	(%)
91	MOGUMBER	6,992	6,992	100	2,128	30.4
51	MORAWA	337,847	289,564	85.7	55,970	19.3
48	MT. MARSHALL	1,017,255	447,078	43.9	46,869	10.5
46	MUKINBUDIN	340,558	277,994	81.6	38,482	13.8
83	MULLEWA	644,438	497,933	77.3	35,952	7.2
104	MURCHISON-MULLEWA	4,472,436	1,044	0.0*	8	0.8
114	NAPIER KING	77,239	77,239	100	21,957	28.4
38	NAREMBEEN	381,488	381,488	100	26,462	6.9
67	NARROGIN	164,984	164,984	100	22,659	13.7
81	NEWDEGATE	391,045	391,045	100	91,898	23.5
49	NINAN	111,571	111,571	100	6,332	5.7
127	NORTH STIRLINGS	111,834	111,834	100	20,160	18.0
130	NORTH SWAN	46,017	46,017	100	19,730	42.9
34	NORTHAM	141,781	141,781	100	31,757	22.4
88	NORTHAMPTON	146,243	146,243	100	27,165	18.6
143	NUGADONG WEST	39,851	39,851	100	3,410	8.6
44	NUNGARIN	115,332	115,332	100	17,979	15.6
125	NYABING-PINGRUP	488,831	488,831	100	133,606	27.3
50	PERENJORI	781,734	329,236	42.1	27,308	8.3
137	PIAWANNING-YERECOIN	57,980	57,980	100	5,108	8.8
25	PINGARING	69,648	69,648	100	5,226	7.5
59	PINGELLY	128,648	128,648	100	14,449	11.2
142	PITHARA-DALWALLINU	162,233	162,233	100	12,104	7.5
150	PORT KENNEDY	2,653	2,653	100	1,438	54.2
27	QUAIRADING	199,866	199,866	100	7,185	3.6
56	RAVENSTHORPE	681,818	671,735	98.5	416,671	62.0
126	SERPENTINE-JARRAHDALE	91,907	91,907	100	53,769	58.5
92	SOUTH MOGUMBER	1,116	1,116	100	298	26.7
75	STIRLING	121,026	121,026	100	28,991	24.0
77	SUSSEX	43,676	43,676	100	10,120	23.2
19	TAMBELLUP	88,377	88,377	100	11,133	12.6
31	TAMMIN	109,959	109,959	100	6,199	5.6

Table 2 (continued)

Map ref. no.	LCD Name	Area	Area in ILZ		Vegetated area in ILZ	
			(ha)	(%)	(ha)	(%)
70	THE LAKES	354,314	354,314	100	105,754	29.8
53	THREE SPRINGS	264,928	264,928	100	51,557	19.5
33	TOODYAY	166,872	166,872	100	88,596	53.1
43	TRAYNING	164,842	164,842	100	13,599	8.2
71	TUNNEY	46,764	46,764	100	10,300	22.0
118	VASSE-WONNERUP	49,968	49,968	100	10,746	21.5
107	WADDI FORREST	36,195	36,195	100	4,341	12.0
63	WAGIN	194,365	194,365	100	16,511	8.5
111	WALPOLE-TINGLEDALE	145,316	145,316	100	126,772	87.2
149	WARNBRO	356	356	100	29	8.1
136	WATHEROO-COOMBERDALE	169,806	169,806	100	51,738	30.5
94	WELLESLEY	17,355	17,355	100	2,089	12.0
76	WELLSTEAD	103,496	103,496	100	32,460	31.4
68	WEST ARTHUR	283,595	283,595	100	85,551	30.2
131	WEST BALLIDU	33,766	33,766	100	715	2.1
138	WEST KOOJAN-GILLINGARA	52,684	52,684	100	10,097	19.2
108	WEST MAYA	25,279	25,279	100	2,093	8.3
121	WEST MT BARKER	66,716	66,716	100	28,753	43.1
41	WESTONIA	333,136	270,118	81.1	57,152	21.2
24	WICKEPIN	200,924	200,924	100	15,471	7.7
62	WILLIAMS	229,194	229,194	100	76,306	33.3
20	WOODANILLING	110,611	110,611	100	14,306	12.9
86	WOOROLOO	47,988	47,988	100	35,948	74.9
42	WYALKATCHEM	159,450	159,450	100	7,851	4.9
1	YALGOO	3,018,348	25,793	0.9	13,781	53.4
79	YALLINGUP	23,576	23,576	100	11,933	50.6
40	YILGARN	3,060,667	736,015	24.0	171,396	23.3
69	YORK	212,501	212,501	100	69,324	32.6

* Note that this figure has been rounded to zero. Some 1044 hectares of the Murchison-Mullewa LCD fall within the ILZ. Of this, 8 hectares are vegetated.

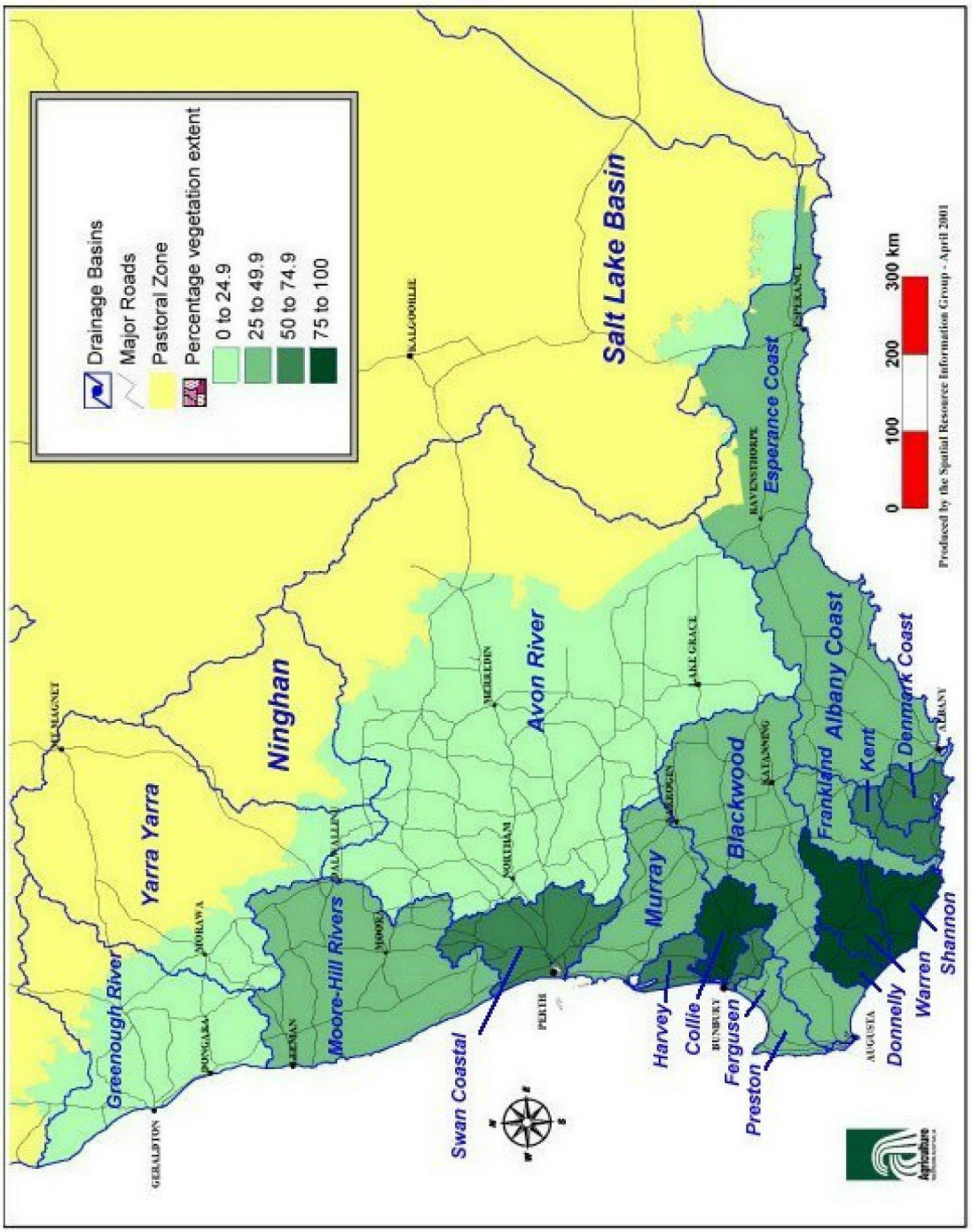

Figure 11. Vegetation in the Intensive Land-use Zone of Western Australia by drainage basin

Table 3. Vegetation in the Intensive Land-use Zone of Western Australia by drainage basin

(Figures are in hectares except where indicated)

Drainage Basin	*Total Basin Area*	*Basin Area inside Clearing Line*	*% Basin Area inside Clearing Line*	*Vegetation Extent inside Clearing Line*	*% Vegetation Cover inside Clearing Line*
Ninghan	2,068,728	255,666	12.4	30,080	11.8
Avon River	11,814,798	8,273,481	70.0	1,120,985	13.5
Yarra Yarra	4,250,660	1,006,252	23.7	137,399	13.7
Murchison River	9,200,888	225,991	2.5	36,499	16.2
Greenough River	2,534,069	1,816,175	71.7	309,645	17.0
Salt Lake Basin	49,492,456	552,907	1.1	123,613	22.4
Blackwood River	2,274,780	2,274,780	100	635,822	28.2
Frankland River	467,999	467,999	100	164,571	35.4
Moore-Hill Rivers	2,480,353	2,480,353	100	875,143	35.7
Esperance Coast	2,011,405	1,768,657	87.9	676,063	38.2
Albany Coast	1,965,647	1,965,647	100	778,010	40.0
Murray River	1,001,262	1,001,262	100	474,791	47.9
Preston River	309,193	309,193	100	151,614	49.7
Harvey River	202,182	202,182	100	102,423	51.4
Denmark Coast	263,188	263,188	100	152,666	58.7
Ferguson River	114,652	114,652	100	67,985	60.0
Kent River	250,851	250,851	100	163,100	65.7
Swan Coastal	829,766	829,766	100	543,683	66.6
Collie River	375,100	375,100	100	286,532	77.2
Warren River	444,429	444,429	100	345,367	78.4
Donnelly River	174,225	174,225	100	156,512	90.8
Shannon River	332,104	332,104	100	301,529	92.1

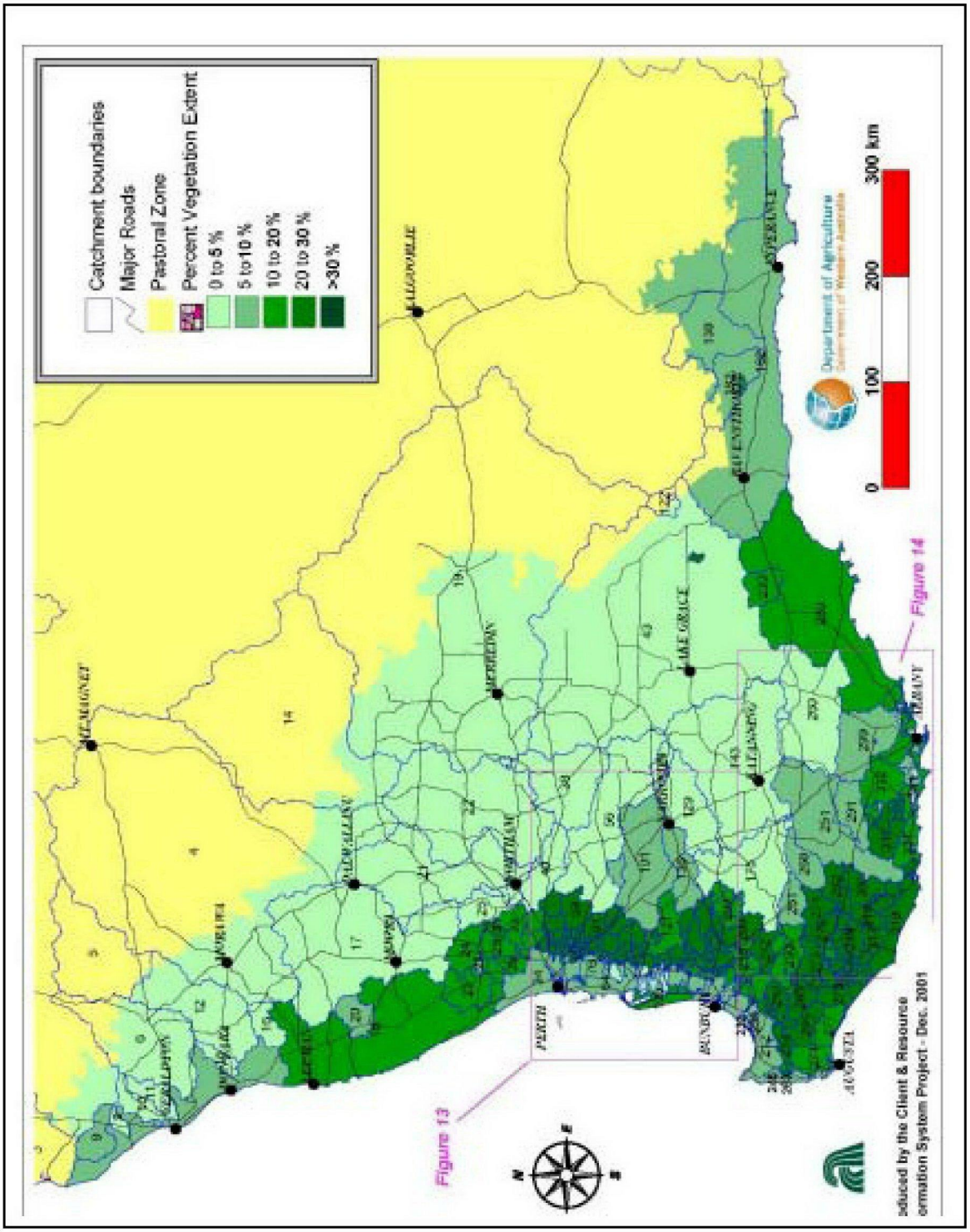

Figure 12. Vegetation in the Intensive Land-use Zone of Western Australia by catchment

(Numbers on the map refer to the first column in Table 4.)

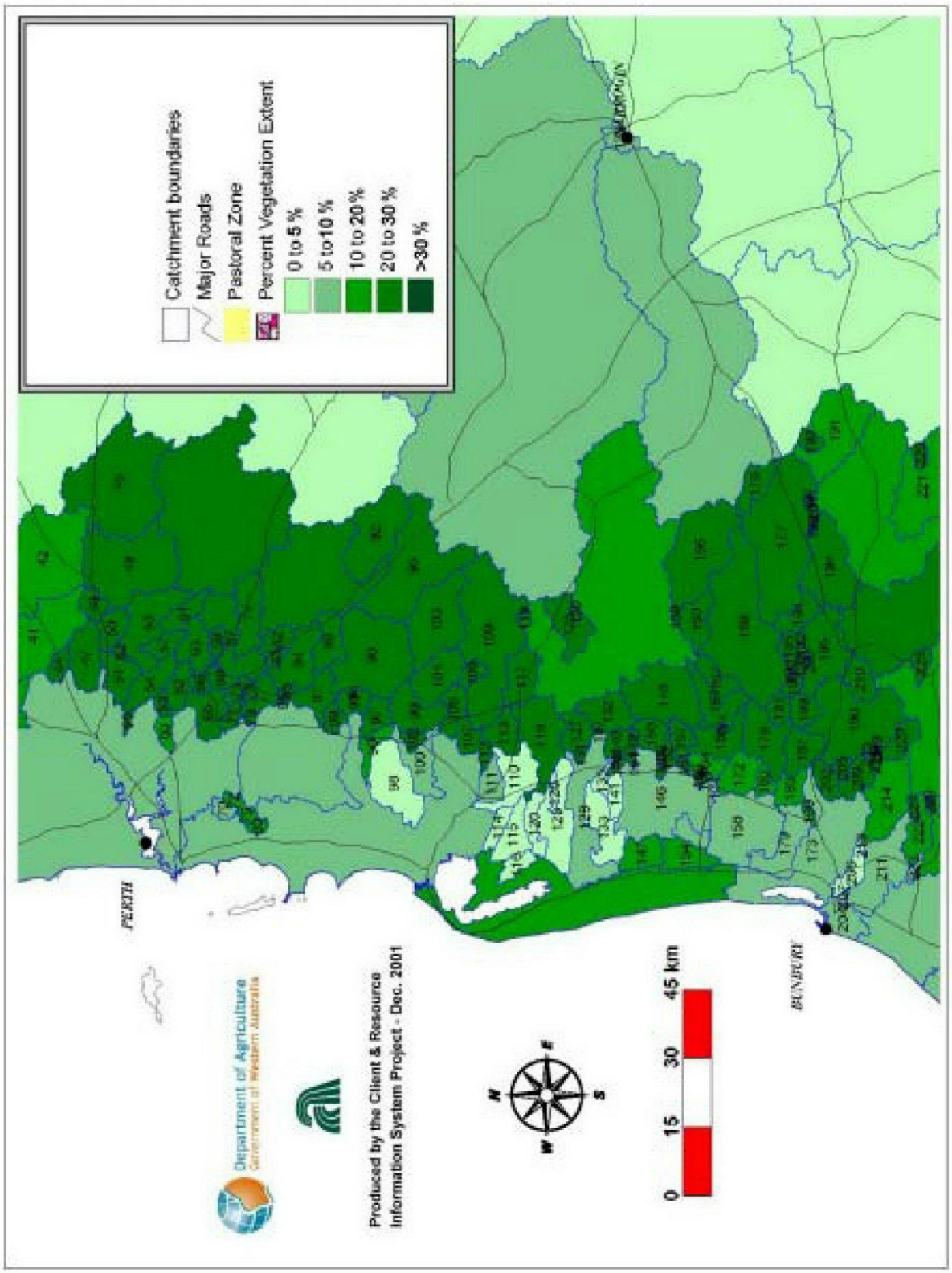

Figure 13. Vegetation in the Intensive Land-use Zone of Western Australia by catchment – Perth-Bunbury area

(Numbers on the map refer to the first column in Table 4.)

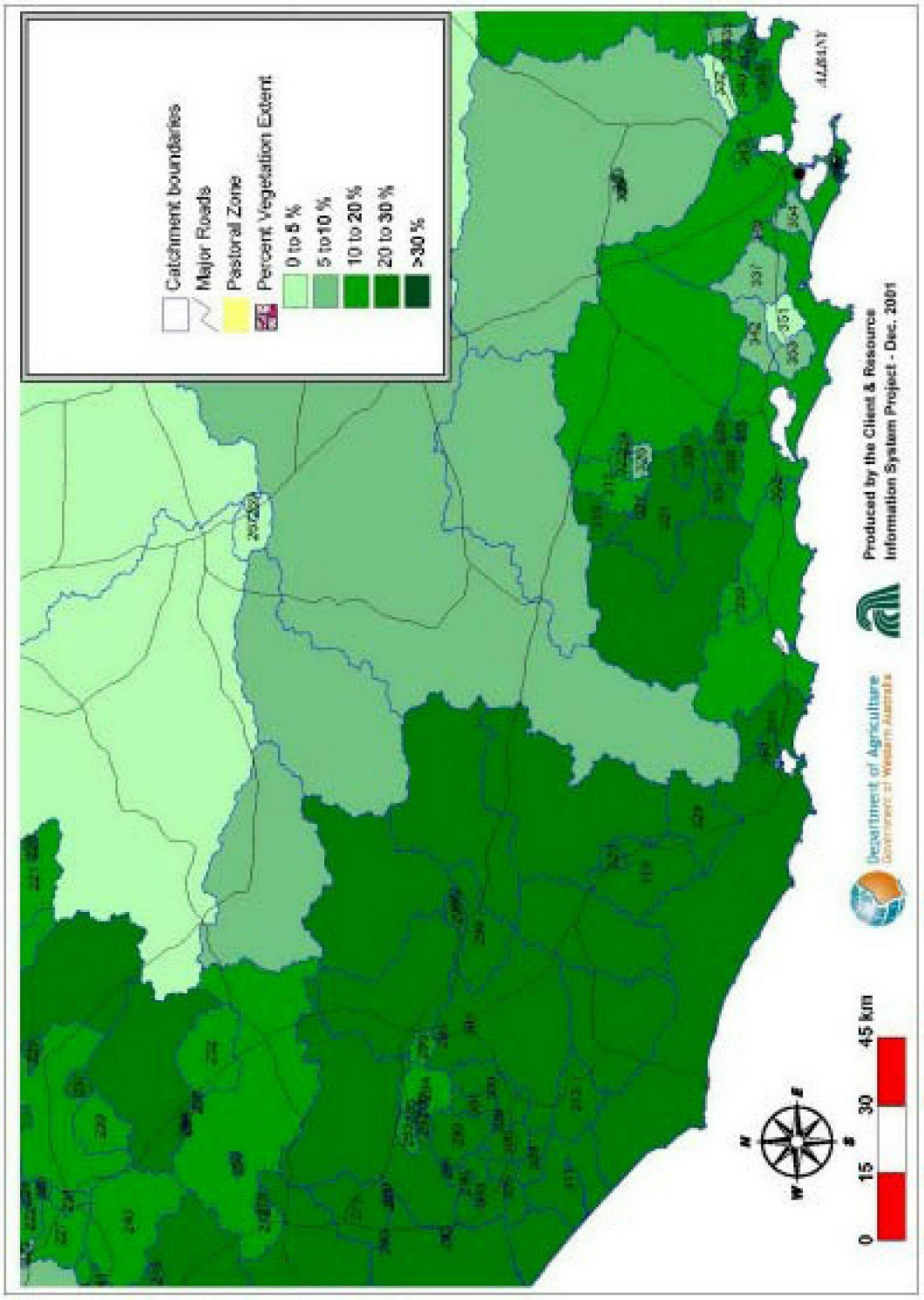

Figure 14. Vegetation in the Intensive Land-use Zone of Western Australia by catchment – Albany area

(Numbers on the map refer to the first column in Table 4.)

Table 4. Vegetation in the Intensive Land-use Zone of Western Australia by catchment

(All areas are in hectares except where indicated. Map reference in Figures 12-14.)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
1		494,842	545,896	29,787	5.5
2	S702001	87,495	213,388	8,330	3.9
3		3,758	8,944	639	7.1
4		42,173	999,015	33,592	3.4
5	S701008	5,422	9,088	73	0.8
6	S701002	6,070	468,235	8,661	1.8
7		4,522	451,542	42,227	9.4
8	S701010	1,079	107,983	5,677	5.3
9	S701003	235	23,521	561	2.4
10	S701007	949	94,965	1,857	2.0
11	S701004	637	63,721	1,075	1.7
12	S701001	4,791	466,391	13,078	2.8
13	S701006	34	3,438	286	8.3
14		20,587	252,275	7,634	3.0
15	S701009	466	46,552	709	1.5
16	S701005	809	80,904	3,168	3.9
17	S617001	12,201	1,219,316	60,573	5.0
18		10,103	1,009,288	133,085	13.2
19	S615015	55,568	2,283,983	90,619	4.0
20	S617002	855	85,503	7,791	9.1
21	S615013	6,824	681,892	9,166	1.3
22	S615020	9,637	962,967	11,162	1.2
23	S617003	1,210	120,918	16,096	13.3
24	S616006	961	96,040	10,861	11.3
25		1,008	100,712	4,667	4.6
26	S617045	38	3,794	399	10.5
27	S617058	68	6,779	563	8.3
28	S616179	543	54,233	8,290	15.3
29	S615021	626	62,548	1,134	1.8
30	S617165	59	5,901	592	10.0
31	S616192	191	19,082	4,149	21.7
32	S616057	214	21,377	3,138	14.7
33	S616011	681	68,050	10,623	15.6
34		1,917	187,136	18,040	9.6
35	S616189	363	36,313	3,996	11.0

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
36	S615011	77	7,677	182	2.4
37	S615019	6	629	6	1.0
38	S615022	3,699	369,644	4,507	1.2
39	S616019	18	1,835	208	11.3
40	S615062	1,631	162,990	4,509	2.8
41	S616001	223	22,271	4,384	19.7
42	S616005	291	29,093	3,855	13.3
43	S615012	31,585	2,958,526	126,538	4.3
44	S616040	23	2,306	479	20.8
45	S615023	19	1,926	17	0.9
46	S616013	327	32,679	7,563	23.1
47	S616178	74	7,347	1,814	24.7
48	S616012	27	2,667	658	24.7
49	S616216	237	23,698	5,767	24.3
50	S616007	39	3,915	986	25.2
51	S616018	53	5,266	1,315	25.0
52	S616003	6	625	159	25.4
53	S616061	115	11,510	2,740	23.8
54	S616014	55	5,525	1,339	24.2
55	S616015	6	645	169	26.2
56	S615014	6,167	616,199	21,219	3.4
57	S616009	29	2,942	752	25.6
58	S616232	13	1,280	303	23.7
59	S616002	665	66,485	16,665	25.1
60	S616047	22	2,156	308	14.3
61	S616010	38	3,780	977	25.8
62	S616063	37	3,686	922	25.0
63	S616066	56	5,558	1,384	24.9
64		901	89,821	6,494	7.2
65	S616027	58	5,840	1,259	21.6
66	S616029	15	1,482	396	26.7
67	S616048	103	10,313	2,479	24.0
68	S616031	20	1,963	537	27.4
69	S616020	17	1,696	477	28.1
70	S614083	15	1,459	129	8.8
71	S616044	19	1,931	464	24.0
72	S614079	11	1,060	107	10.1

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
73	S616069	16	1,570	427	27.2
74	S616025	77	7,651	1,933	25.3
75	S614013	10	1,038	123	11.8
76	S614030	365	36,487	2,744	7.5
77	S616071	32	3,217	776	24.1
78	S616023	9	873	255	29.2
79	S616153	6	622	181	29.1
80	S614078	11	1,050	160	15.2
81	S616024	347	34,704	8,629	24.9
82	S616065	27	2,671	682	25.5
83	S616026	11	1,095	277	25.3
84	S616041	81	8,089	2,019	25.0
85	S616021	7	722	195	27.0
86	S616022	3	326	95	29.2
87	S614073	51	5,081	1,269	25.0
88	S614031	55	5,535	1,415	25.6
89	S614072	22	2,173	576	26.5
90	S614004	217	21,720	5,370	24.7
91	S614074	28	2,795	733	26.2
92	S616039	147	14,644	3,721	25.4
93	S615222	286	28,582	2,634	9.2
94	S614033	0	11	8	76.2
95	S614035	243	24,275	6,066	25.0
96	S614028	29	2,869	331	11.5
97	S614005	35	3,512	917	26.1
98	S614063	115	11,482	361	3.1
99	S614016	72	7,166	1,752	24.4
100	S614070	65	6,510	483	7.4
101	S614224	3,968	396,467	32,587	8.2
102	S614068	15	1,498	319	21.3
103	S614037	149	14,935	3,735	25.0
104	S614036	80	7,969	2,013	25.3
105		503	49,142	6,384	13.0
106	S614233	39	3,874	990	25.6
107	S614022	30	3,002	726	24.2
108	S614059	19	1,865	450	24.1
109	S614186	297	29,654	7,322	24.7

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
110	S614065	79	7,865	379	4.8
111	S614009	35	3,528	289	8.2
112	S614034	13	1,305	313	24.0
113	S614003	45	4,547	1,085	23.9
114	S613029	23	2,295	10	0.4
115	S613030	52	5,166	69	1.3
116	S613032	25	2,460	99	4.0
117	S614047	66	6,565	1,642	25.0
118	S614023	119	11,943	2,440	20.4
119	S614043	7	679	173	25.5
120	S613027	32	3,192	102	3.2
121	S614006	987	98,646	19,339	19.6
122	S615016	468	13,805	394	2.9
123	S613031	103	10,263	290	2.8
124	S609010	429	42,871	819	1.9
125	S614044	67	6,718	1,800	26.8
126	S613054	10	970	12	1.2
127	S613009	41	4,119	955	23.2
128	S613052	147	14,701	1,238	8.4
129	S609014	2,596	259,438	7,290	2.8
130	S614050	5	501	146	29.1
131	S613006	6	621	150	24.2
132	S613010	64	6,382	1,570	24.6
133	S613028	74	7,400	337	4.6
134	S609013	41	4,143	91	2.2
135	S613017	14	1,443	68	4.7
136	S614196	1,408	140,695	7,900	5.6
137	S613109	2	168	57	34.0
138	S601004	3,059	258,680	17,478	6.8
139	S609020	29	2,855	255	8.9
140	S613018	24	2,441	527	21.6
141	S613023	24	2,441	76	3.1
142	S613015	6	645	110	17.1
143	S609015	9,360	935,427	23,166	2.5
144	S613021	3	284	89	31.4
145	S609009	17	1,739	116	6.7
146	S613016	236	23,567	1,196	5.1

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
147	S613053	49	4,866	613	12.6
148	S613002	147	14,712	3,674	25.0
149	S613013	13	1,249	312	25.0
150	S613001	36	3,564	901	25.3
151	S613007	1	107	37	34.5
152	S613146	17	1,710	391	22.9
153	S613012	2	161	30	18.6
154	S613019	54	5,359	899	16.8
155	S613175	0	6	4	63.5
156	S614124	200	19,986	4,942	24.7
157	S613008	29	2,894	731	25.3
158	S612039	204	20,410	1,087	5.3
159	S614123	2	240	64	26.7
160	S614042	55	5,465	1,376	25.2
161	S613004	5	502	136	27.1
162		15,159	1,356,352	132,760	9.8
163	S613051	66	6,624	1,606	24.2
164	S613200	28	2,833	459	16.2
165	S613003	64	6,347	1,371	21.6
166	S613050	1	127	28	22.0
167	S613005	39	3,906	984	25.2
168	S613033	5	474	56	11.8
169	S612040	328	32,760	8,205	25.0
170	S615018	82	8,165	2,176	26.6
171	S613011	1	122	6	4.9
172	S613212	56	5,576	721	12.9
173		279	27,650	2,290	8.3
174	S613049	1	54	22	40.6
175	S609043	4,178	417,517	17,908	4.3
176	S612021	48	4,831	1,178	24.4
177	S612014	312	31,136	7,771	25.0
178	S612022	93	9,264	2,267	24.5
179	S612032	81	8,055	754	9.4
180	S612018	18	1,773	295	16.6
181	S612024	23	2,346	599	25.5
182	s601001	1,805	146,139	11,757	8.0
183	S612152	35	3,504	398	11.4

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
184	S612037	40	4,046	999	24.7
185	S612029	21	2,142	544	25.4
186	S612028	15	1,531	377	24.6
187	S612023	56	5,626	1,283	22.8
188	S612017	9	881	219	24.9
189	S612004	32	3,226	781	24.2
190	S612041	0	5	5	100.0
191	S612230	155	15,496	1,729	11.2
192	S612027	8	800	206	25.8
193	S612016	17	1,686	345	20.5
194	S612001	142	14,166	3,578	25.3
195	S612035	115	11,469	2,911	25.4
196	S612217	8	820	82	10.0
197	S612007	3	350	97	27.8
198	S612033	212	21,155	4,582	21.7
199	S612009	3	346	105	30.3
200	S612036	1	81	30	37.2
201	S612008	3	268	73	27.3
202	S612003	32	3,151	762	24.2
203	S612038	452	45,177	8,973	19.9
204		52	4,997	289	5.8
205	S612005	13	1,287	346	26.9
206	S611007	30	3,036	53	1.7
207	S611003	5	491	49	10.0
208	S612034	661	66,047	13,259	20.1
209	S612006	40	3,974	1,025	25.8
210	S612002	42	4,204	1,121	26.7
211	S611225	124	12,409	811	6.5
212		1,877	186,758	17,822	9.5
213	S611017	2	191	2	1.0
214	S611138	113	11,257	2,064	18.3
215	S612013	2	154	29	18.9
216	S612012	5	545	145	26.6
217	S612011	1	83	22	26.6
218	S611049	453	45,238	7,247	16.0
219	S612010	1	93	30	32.1
220	S612019	36	3,647	919	25.2

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
221	S612025	158	15,773	2,665	16.9
222	S611154	49	4,849	798	16.5
223	S611004	7	738	72	9.8
224	S611039	8	798	199	24.9
225	S611001	19	1,876	526	28.0
226	S612026	13	1,290	319	24.7
227	S611005	117	11,740	1,897	16.2
228	S601005	78	7,807	862	11.0
229	S611221	4	386	120	31.1
230		10,986	1,087,238	133,761	12.3
231	S611006	26	2,563	280	10.9
232	S610010	13	1,325	37	2.8
233	S602002	830	83,015	9,417	11.3
234	S601006	8	807	14	1.7
235	S601600	3	348	4	1.1
236	S610004	45	4,539	692	15.2
237	S611002	24	2,443	618	25.3
238	S610009	99	9,854	869	8.8
239	S611111	102	10,223	1,901	18.6
240	S610219	320	31,952	5,271	16.5
241	S610129	21	2,094	500	23.9
242	S609017	549	54,909	11,862	21.6
243	S610005	100	9,967	2,525	25.3
244	S609018	359	35,835	8,737	24.4
245	S610006	82	8,228	465	5.7
246	S610007	10	950	273	28.7
247	S610003	48	4,777	320	6.7
248	S609008	28	2,754	728	26.4
249	S609004	26	2,602	661	25.4
250	S609007	968	96,693	16,574	17.1
251	S605012	4,524	452,017	36,797	8.1
252	S609016	177	17,644	2,239	12.7
253	S610128	375	37,527	7,769	20.7
254	S610008	16	1,551	411	26.5
255	S609057	0	31	8	26.1
256	S609011	2	172	60	34.9
257	S609003	136	13,551	3,506	25.9

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
258	S609132	4	386	80	20.7
259	S602003	89	8,847	107	1.2
260	S602001	4,811	480,908	22,282	4.6
261	S609012	785	78,487	6,442	8.2
262	S609001	89	8,913	2,176	24.4
263	S610001	51	5,108	571	11.2
264	S609019	688	68,811	17,071	24.8
265	S609025	590	58,936	14,223	24.1
266	S609046	10	953	281	29.5
267	S609005	69	6,904	189	2.7
268	S607007	988	98,709	8,904	9.0
269	S609006	13	1,328	55	4.1
270	S609056	15	1,507	414	27.5
271		796	77,345	11,742	15.2
272	S609174	0	7	8	100.0
273	S608151	756	75,527	15,275	20.2
274	S607004	659	65,826	15,527	23.6
275	S608148	157	15,660	3,994	25.5
276	S607144	462	46,122	10,460	22.7
277	S609002	633	63,292	12,464	19.7
278		601	60,131	15,210	25.3
279	S608004	1	122	34	27.8
280	S608001	0	17	9	54.2
281	S608005	1	88	33	37.7
282	S607150	671	67,046	14,217	21.2
283	S608007	25	2,476	419	16.9
284	S607002	83	8,286	895	10.8
285	S607016	6	563	68	12.1
286	S607017	29	2,928	353	12.1
287	S607014	13	1,310	330	25.2
288	S607052	4	366	86	23.5
289	S607008	621	62,043	14,242	23.0
290	S607015	102	10,210	2,475	24.2
291	S604001	1,127	112,593	10,604	9.4
292	S608003	1	101	38	37.5
293	S607019	1	78	10	12.9
294	S608006	2	242	70	28.9

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
295	S607145	30	2,994	742	24.8
296	S608002	28	2,785	680	24.4
297	S609080	3	249	52	20.9
298	S607003	165	16,492	4,339	26.3
299	S602004	2,377	237,521	23,560	9.9
300	S607001	105	10,470	2,569	24.5
301	S607013	42	4,204	1,143	27.2
302	S607018	1	70	30	42.6
303	S608147	90	8,982	2,358	26.3
304	S607600	1	54	16	29.5
305	S608171	63	6,344	1,660	26.2
306	S607170	59	5,856	1,220	20.8
307	S606001	780	77,946	16,740	21.5
308	S607009	4	428	114	26.7
309	S607220	44	4,373	1,068	24.4
310	S606185	407	40,714	10,192	25.0
311		203	20,360	4,919	24.2
312	S603004	1,161	115,985	12,535	10.8
313	S607155	118	11,809	2,869	24.3
314	S606218	391	39,093	9,569	24.5
315	S603173	100	9,969	1,915	19.2
316	S603177	73	7,273	1,893	26.0
317	S604053	705	70,466	17,237	24.5
318	S606195	226	22,575	5,666	25.1
319		1,302	129,872	30,683	23.6
320	S606002	24	2,422	663	27.4
321	S603002	233	23,330	5,645	24.2
322	S603172	21	2,140	294	13.7
323	S602060	4	391	43	11.0
324	S603017	10	1,037	117	11.3
325	S602040	3	313	61	19.5
326	S603190	25	2,525	241	9.5
327	S603003	10	1,033	301	29.2
328	S602031	231	23,078	3,032	13.1
329	S606032	163	16,317	4,312	26.4
330	S603005	51	5,131	1,352	26.3
331		606	58,791	11,252	19.1

Table 4 (continued)

Map ref. no.	WRC Catchment	Area (km^2)	Area in ILZ (ha)	Vegetated area in ILZ	
				(ha)	(%)
332	S602005	49	4,926	239	4.9
333	S603011	31	3,104	804	25.9
334	S603136	59	5,925	1,481	25.0
335	S602188	25	2,528	128	5.1
336	S602030	21	2,149	228	10.6
337	S603001	122	12,145	966	8.0
338	S603014	40	4,043	1,021	25.3
339	S604010	55	5,482	955	17.4
340	S602199	49	4,909	710	14.5
341		465	45,212	6,955	15.4
342	S603007	76	7,592	607	8.0
343	S602008	17	1,700	276	16.2
344		127	12,593	3,151	25.0
345	S603006	7	708	208	29.4
346	S602191	16	1,647	369	22.4
347	S602187	4	434	130	29.9
348	S602042	27	2,654	660	24.9
349	S603018	4	433	37	8.5
350	S606143	0	41	18	44.3
351	S603012	53	5,258	176	3.3
352	S603015	16	1,609	228	14.2
353	S603013	58	5,844	327	5.6
354	S602007	45	4,450	414	9.3
355	S602019	1	106	4	3.8
356	S602041	6	650	198	30.5

Vegetation extent by IBRA Region

Of the 26 Interim Biogeographic (IBRA) Regions in Western Australia, nine occur at least partly within the ILZ. Their areas range between nearly 13 million hectares for the Coolgardie Region to 850,000 hectares for the Warren Region. Less than 5 per cent of the Yalgoo and Coolgardie Regions lie within the ILZ but more than 50 per cent of the other seven regions.

The 51,000 hectares of the Yalgoo Region in the ILZ carry only 5 per cent of the original native vegetation extent. The Avon Wheatbelt and Mallee Regions carry less than 20 per cent of the original extent within the ILZ. Less than 30 per cent remains in the Coolgardie and Geraldton Sandplains Regions within the ILZ. The Swan Coastal Plain, Esperance and Jarrah Forest Regions retain between 40 and 60 per cent of their original vegetation extent while the Warren Region retains 87 per cent.

Vegetation extent by IBRA Region is summarised in Table 5, and illustrated in Figures 15 and 16.

Vegetation extent by IBRA Sub-region

Of the 52 Interim Biogeographic (IBRA) Sub-regions in Western Australia, 16 occur at least partly within the ILZ. Their areas range between nearly 24 million hectares for MUR1 to 450,000 hectares for SWA1. Of the 16 Sub-regions in the ILZ, less than 5 per cent of YAL and COO2 lie within the ILZ. Around 25 per cent of the MAL1 lies within the ILZ. Over 50 per cent of the other 13 Sub-regions lie within the ILZ.

The two Avon Wheatbelt Sub-regions and SWA1 retain less than 30 per cent of the original native vegetation extent, while five – ESP2, GS2, GS3, MAL2 and SWA2 - retain less than 50 per cent. Statistics for vegetation extent by IBRA Sub-region are presented in Table 6 and illustrated in Figure 17.

Reservation Status by IBRA Sub-region

Five Biogeographic (IBRA) Sub-regions do not have any IUCN Class I-IV Reserves: CK1, GAS2, GD2, TAN and CR. Of these, only GAS2 contains reserves in other classes (pastoral leases managed by CALM for conservation). A further 14 Sub-regions have less than 5 per cent of their native vegetation extent in IUCN class I-IV reserves. In five of these there are no other reserves. Seven Sub-Regions have between 5 and 10 per cent of native vegetation extent in IUCN class I-IV reserves. Twelve Sub-regions have between 10 and 30 per cent in these reserves; and six have between 30 and 50 per cent in IUCN class I-IV reserves.

A summary of the reservation status of each IBRA Sub-region is provided in Table 6, and is illustrated in Figure 18.

Table 5. Vegetation extent in Western Australia by IBRA Region

(All figures are in hectares except where indicated)

IBRA Region	Total area	Area of vegetation		Area in ILZ		Area of vegetation in ILZ	
		(Ha)	(%)	(Ha)	(%)	(Ha)	(%)
Avon Wheatbelt	9,578,995	1,536,296	16.0	8,967,527	94	924,828	10.3
Carnarvon	8,523,963	8,523,963	100	0	0	0	0
Central Kimberley	7,700,436	7,700,436	100	0	0	0	0
Central Ranges	5,132,641	5,132,641	100	0	0	0	0
Coolgardie	12,917,718	12,719,084	98.5	266,911	2	68,278	25.6
Dampierland	8,368,692	8,368,692	100	0	0	0	0
Esperance	2,909,675	1,534,396	52.7	2,520,106	87	1,144,827	45.4
Gascoyne	18,169,908	18,169,908	100	0	0	0	0
Geraldton Sandplain	4,026,769	2,215,659	55.0	2,474,401	61	663,290	26.8
Gibson Desert	15,655,411	15,655,411	100	0	0	0	0
Great Sandy Desert	29,584,681	29,584,681	100	0	0	0	0
Great Victoria Desert	21,829,016	21,829,016	100	0	0	0	0
Hampton	1,046,790	1,046,790	100	0	0	0	0
Jarrah Forest	4,544,335	2,665,480	58.7	4,503,156	99	2,624,301	58.3
Little Sandy Desert	11,085,805	11,085,805	100	0	0	0	0
Mallee	7,404,398	4,081,089	55.1	4,130,281	56	806,971	19.5
Murchison	28,206,195	28,206,195	100	0	0	0	0
North Kimberley	8,408,380	8,408,380	100	0	0	0	0
Nullarbor	13,769,665	13,769,665	100	0	0	0	0
Ord-Victoria Plain	5,528,653	5,528,653	100	0	0	0	0
Pilbara	17,944,694	17,944,694	100	0	0	0	0
Swan Coastal Plain	1,529,235	657,450	43.0	1,498,297	98	626,512	41.8
Tanami	3,037,974	3,037,974	100	0	0	0	0
Victoria-Bonaparte	1,888,102	1,870,115	99	0	0	0	0
Warren	851,529	739,273	86.8	836,270	98	724,014	86.6
Yalgoo	4,293,913	4,244,964	98.9	51,591	1	2,642	5.1

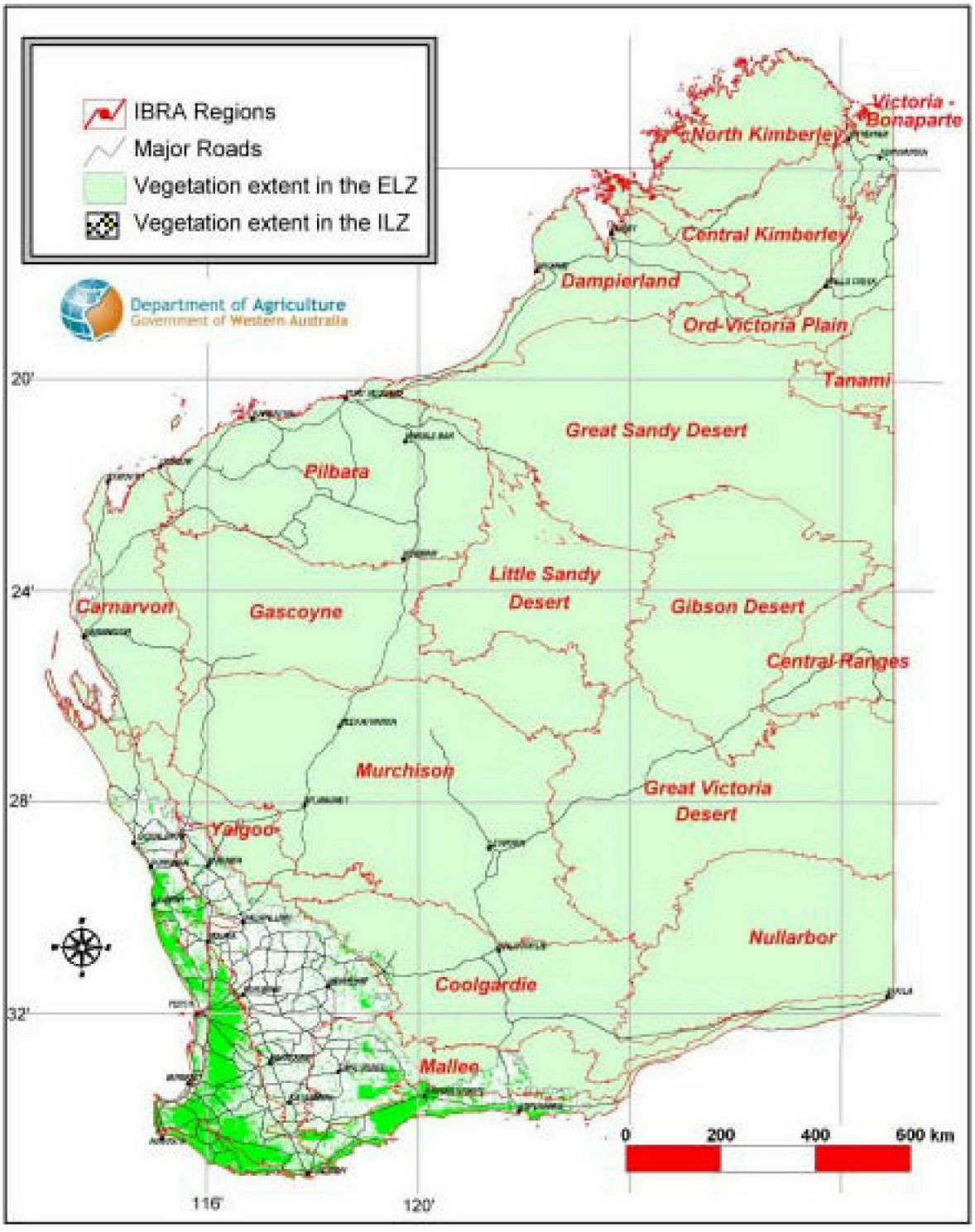

Figure 15. Vegetation in Western Australia by IBRA Region

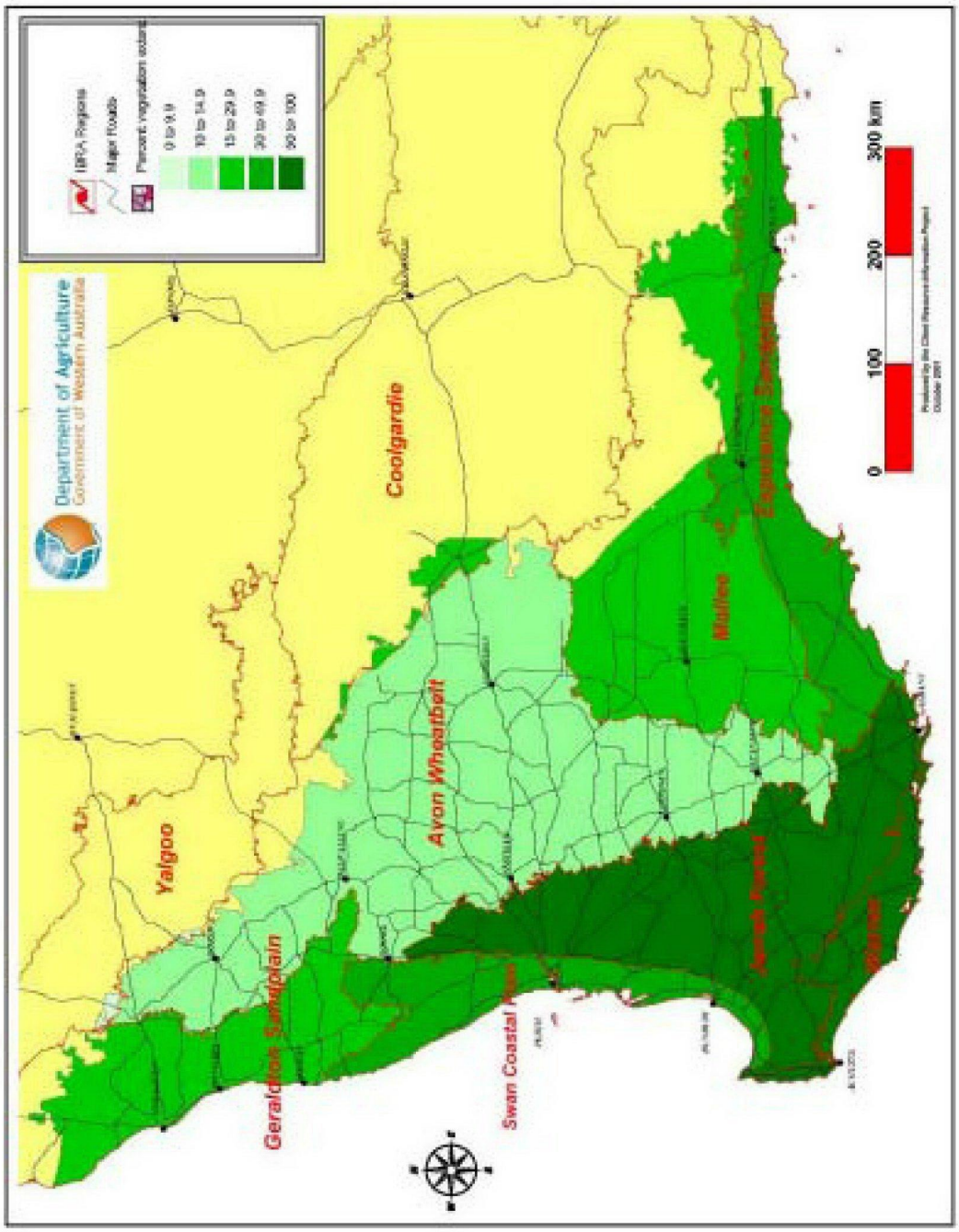

Figure 16. Remaining vegetation extent in the Intensive Land-use Zone of Western Australia by IBRA Region

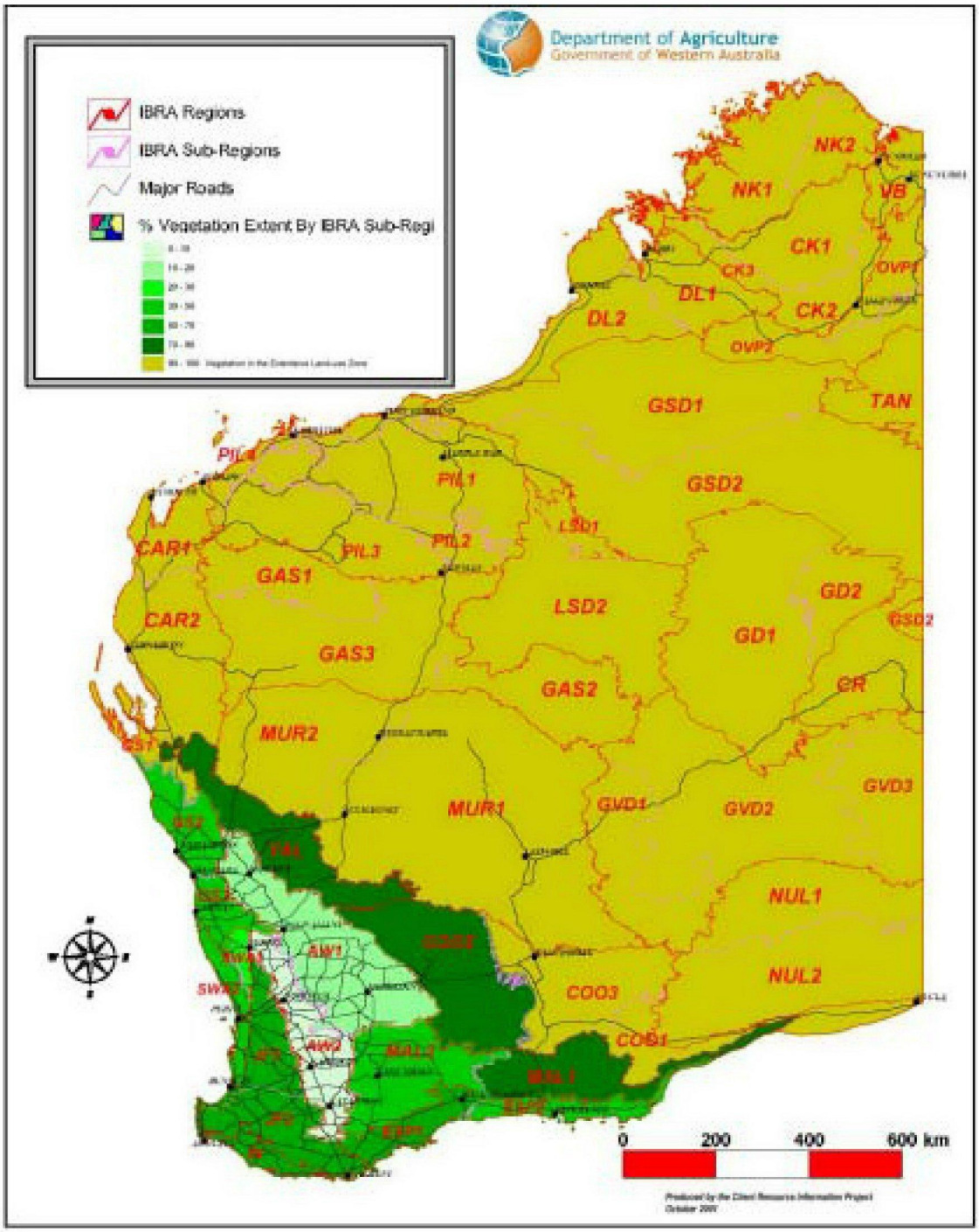

Figure 17. Remaining vegetation extent in the Intensive Land-use Zone of Western Australia by IBRA Sub-region

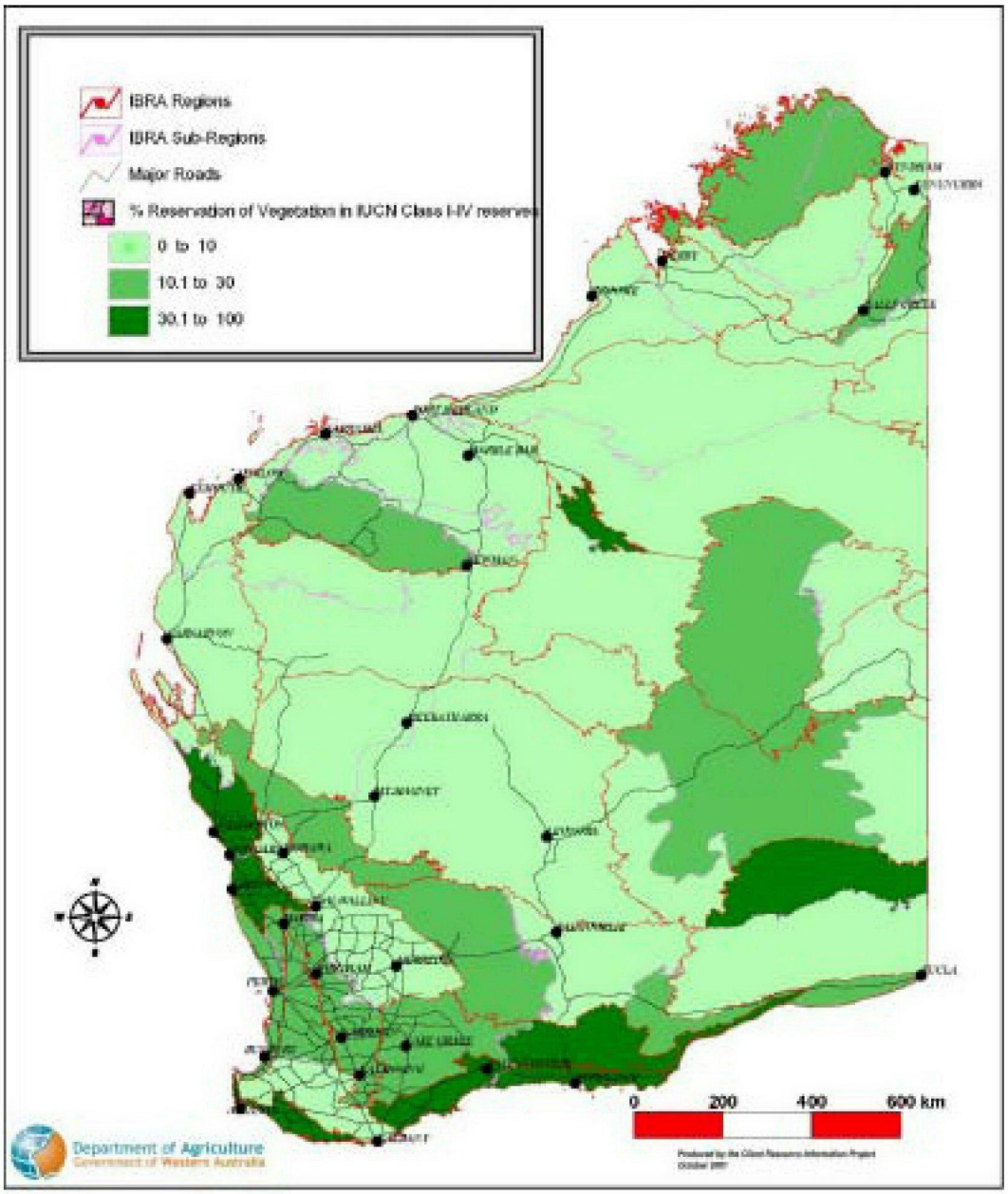

Figure 18. Reservation status of vegetation in Western Australia by IBRA Sub-region

Table 6. Vegetation extent and reservation status in Western Australia by IBRA Sub-region

IBRA Region	Sub-region Code	Sub-region Area	Area of Vegetation in IBRA Sub-region	% Vegetation in IBRA Sub-region	% in CALM Estate	% in IUCN Class I-IV Reserves
Avon Wheatbelt	AW1	9,566,023	1,307,467	19.9	8.2	9.6
	AW2	3,012,978	257,931	8.9	18.0	17.9
Carnarvon	CAR1	2,547,912	2,547,912	100.0	4.7	2.2
	CAR2	9,667,540	9,667,540	100.0	9.6	3.9
Central Kimberley	CK1	4,620,577	4,620,577	100.0	6.0	6.0
	CK2	2,406,607	2,406,607	100.0	0.0	0.0
	CK3	1,003,959	1,003,959	100.0	7.9	7.9
Central Ranges	CR	5,221,498	5,221,498	100.0	0.0	0.0
Coolgardie	COO1	2,190,246	2,085,884	95.2	13.5	13.5
	COO2	7,041,232	5,895,916	83.7	19.9	14.2
	COO3	5,102,428	5,102,428	100.0	6.6	4.4
Dampierland	DL1	3,614,096	3,614,096	100.0	1.7	1.7
	DL2	5,198,904	5,198,904	100.0	0.6	0.6
Esperance Sandplains	ESP1	1,903,949	964,918	50.7	53.6	53.5
	ESP2	1,606,517	787,795	49.0	57.6	57.1
Gascoyne	GAS1	4,039,387	4,039,387	100.0	2.8	2.8
	GAS2	5,250,969	5,250,969	100.0	19.4	0.0
	GAS3	10,687,739	10,687,739	100.0	8.8	2.5
Gibson Desert	GD1	14,038,333	14,038,333	100.0	14.7	14.7
	GD2	3,198,464	3,198,464	100.0	0.0	0.0
Geraldton Sandplains	GS1	928,297	906,941	97.1	27.0	8.9
	GS2	2,242,033	880,712	39.3	31.3	31.1
	GS3	1,358,915	558,331	40.5	41.2	41.2
Great Sandy Desert	GSD1	13,173,266	13,173,266	100.0	0.1	0.1
	GSD2	18,636,686	18,202,606	98.0	4.5	4.5
Great Victoria Desert	GVD1	5,442,741	5,442,741	100.0	7.8	7.8
	GVD2	14,286,995	14,286,995	100.0	19.3	19.3
	GVD3	5,051,155	5,051,155	100.0	8.4	8.4
Hampton	HAM	1,229,189	1,229,072	100.0	19.9	19.9
Jarrah Forest	JF1	2,255,904	1,373,527	60.9	68.2	16.9
	JF2	3,160,122	1,683,668	53.3	61.3	5.0
Little Sandy Desert	LSD1	1,078,071	1,078,071	100.0	37.3	37.3
	LSD2	11,114,705	11,114,705	100.0	1.4	1.4
Mallee	MAL1	4,081,435	3,215,853	78.8	34.3	34.3
	MAL2	4,783,963	1,519,929	31.8	25.8	25.8

Vegetation extent by type

A total of 831 vegetation types is recognised in Western Australia. Of these, 704 are individual units and 127 are mosaics consisting of one or more of the individual units. Included with the individual units are 11 that occur only as components of mosaics, and five sparsely vegetated units such as bare ground and granite rock that are considered to support unique vegetation but in relatively limited amounts.

The pre-European and present aerial extents of each of the vegetation associations are listed in the Appendix. Many have been substantially reduced by clearing over the past 170 years. A total of 119 associations have been reduced to below 30 per cent of their pre-European extent and, of these, 48 have ≤10 per cent remaining and two are probably extinct. These are listed in Table 7 and illustrated in Figure 19.

Data limitations

The present vegetation extent data were derived through air photo interpretation without on-ground checking; for this reason there may be minor errors in the data. The dataset has been archived as 1997 vegetation extent. However, the mapping was derived from orthophotos acquired between 1995 and 1998, so that, in practice, there may be minor inconsistencies. The dataset will require regular updating at periods not more than five years to remain reliable. In areas where vegetation is still being cleared, mainly the Perth metropolitan and urban-rural fringes, the mapping should be updated at more regular intervals. It is recommended that the current extent dataset not be used at scales finer than 1:25,000.

The authors also note the difference in scales and reliability between the pre-European vegetation mapping (type and extent) and the present mapping (extent only). The combined type and extent mapping should be used at scales no finer than that of the pre-European mapping, 1:250,000.

Table 7. Vegetation types with less than 30 per cent of original distribution remaining

Vegetation Association	Pre-European Extent	Current Extent	% Remaining	Description
16	3,463	253	7.3	Low forest; bushy yate (E. cornuta) & Bald Is. marlock (E. lehmannii)
1154	46,176	3,305	7.3	Shrublands; Acacia thicket with patches of heath
939	142	10	7.3	Succulent steppe with woodland; yorkgum, sparse teatree scrub & samphire
1093	9,924	759	7.9	Succulent steppe with open woodland & thicket; eucalypts & Allocasuarina obesa over teatree & samphire
960	190,025	15,215	8.0	Shrublands; mallee scrub; redwood & black marlock
949	1,707	139	8.1	Medium woodland; York gum & river gum
1044	1,678	137	8.2	Mosaic: Medium woodland; York gum & salmon gum / Shrublands; Melaleuca thyoides thicket
1136	68,752	5,049	8.8	Medium woodland; mern with some jarrah, wandoo, river gum and casuarina
1024	854,342	77,994	9.1	Shrublands; mallee & casuarina thicket
48	57,809	5,484	9.5	Shrublands; scrub-heath
371	37,651	3,703	9.8	Low forest; Acacia rostellifera
999	29,772	2,930	9.8	Shrublands; Allocasuarina campestris thicket with scattered wandoo
1156	1,996	197	9.9	Shrublands; Allocasuarina campestris thickets with scattered jam & casuarina
7	287,299	28,838	10.0	Medium woodland; York gum (E. loxophleba) & wandoo
35	213,689	21,972	10.3	Shrublands; jam scrub with scattered York gum
1055	148,790	15,924	10.7	Shrublands; York gum & Eucalyptus sheathiana mallee scrub
1021	1,458	158	10.8	Mosaic: Medium open woodland; wandoo / Shrublands; dryandra heath
999	275,380	32,451	11.8	Medium woodland; mern
25	10,747	1,287	12.0	Low woodland; Allocasuarina huegeliana & York gum
961	37,131	4,604	12.4	Mosaic: Shrublands; scrub-heath (SE Avon) / Shrublands; Allocasuarina campestris thicket
998	13,115	1,772	13.5	Mosaic: Shrublands; scrub-heath Dryandra-Calothamnus assoc. with B. prionotes on limestone in the northern Swan Region / Sparse low woodland; wandoo & powderbark wandoo
1057	127,479	18,251	14.3	Mosaic: Shrublands; Medium woodland; salmon gum & gimlet / York gum & Eucalyptus sheathiana mallee scrub
4801	70,179	10,182	14.5	Shrublands; heath with scattered Nuytsia floribunda on sandplain
1056	24,475	3,570	14.6	Shrublands; thicket; acacia & Allocasuarina campestris
953	11,519	1,718	14.9	Succulent steppe with thicket; teatree over samphire (m57)
952	70,253	10,573	15.1	Shrublands; dryandra heath
352	874,652	133,256	15.2	Medium woodland; York gum
6048	135,614	20,728	15.3	Shrublands; banksia scrub-heath on sandplain in the Esperence Plains Region
954	6,846	1,052	15.4	Shrublands; thicket, Jam & Allocasuarina huegeliana
1053	16,300	2,587	15.9	Shrublands; Melaleuca uncinata thicket with scattered York gum
1000	21,730	3,469	16.0	Mosaic: Medium sparse woodland; salmon gum & morrel / Succulent steppe; samphire
1048	13,353	2,192	16.4	Mosaic: Shrublands; melaleuca patchy scrub / Succulent steppe; samphire
1026	1,999	333	16.7	Medium open woodland, eucalypts (e27); with low woodland; Banksia attenuata & B. menziesii

Table 7 (continued)

Vegetation Association	Pre-European Extent	Current Extent	% Remaining	Description
694	403 915	68 872	17.1	Shrublands; scrub-heath on yellow sandplain: banksia-xylomelum alliance in the Geraldton Sandplain & Avon-Wheatbelt Regions
1089	12 705	2 199	17.3	Succulent steppe with open woodland & scrub: wandoo, salmon gum & Allocasuarina obesa over teatree & samphire
997	60 397	10 556	17.5	Shrublands; bowgalla & jam scrub with scattered Allocasuarina heugeliana & York gum
938	92 552	16 438	17.8	Medium woodland; York gum & yate
945	97 259	17 377	17.9	Medium woodland; wandoo
1006	5 369	967	18.0	Medium open woodland; marri
3041	7 294	1 313	18.1	Mosaic; Low woodland; Allocasuarina huegeliana & jam around granite rocks
1067	30 961	5 693	18.4	Medium woodland; wandoo, yate & river gum
1095	1 469	282	19.2	Medium woodland; York gum, yate & salmon gum
970	2 446	488	20.0	Succulent steppe with low woodland; myoporum over samphire
379	633 325	128 007	20.2	Shrublands; scrub-heath on laterite sandplain in the central Geraldton Sandplain Region
1048	3 298	682	20.7	Medium woodland; York gum & Casuarina obesa
1012	547	114	20.9	Mosaic; Medium open woodland; marri / Shrublands; teatree thicket
984	146 457	30 397	20.9	Mosaic; Shrublands; Shrublands; jam scrub with scattered York gum in the valleys / Allocasuarina campestris thicket
209	51 008	10 702	21.1	Shrublands; acacia & banksia scrub
1048	81 022	17 315	21.4	Low woodland
988	115 458	24 698	21.4	Succulent steppe with thicket; Melaleuca thyoides over samphire
413	9 822	2 116	21.5	Shrublands; Acacia neuraphylla & A. species thicket
675	59 708	12 986	21.7	Shrublands; mixed thicket (melaleuca & hakea?)
942	40 453	8 993	22.2	Mosaic; Medium woodland; yate / Shrublands; mallee scrub; black mallock
997	50 179	11 174	22.3	Medium woodland; wandoo & yate
992	147 246	33 046	22.4	Medium forest; jarrah & wandoo (E. wandoo)
1018	15 612	3 743	22.5	Mosaic; Medium forest; jarrah-marri / Low woodland; banksia / Low forest; teatree / Low woodland; Casuarina obesa
1079	12 002	2 749	22.9	Mosaic; Medium open woodland; salmon gum & morrel / Succulent steppe; saltbush
6	79 001	18 398	23.3	Medium woodland; tuart & jarrah
4	1,247 834	292 993	23.5	Medium woodland; marri & wandoo
979	9 434	2 218	23.5	Mosaic; Medium forest; jarrah-marri / Low forest; jarrah & casuarina (probably Allocasuarina fraseriana)
1074	5 489	1 306	23.8	Succulent steppe with open woodland & thicket; wandoo & Allocasuarina obesa over teatree & samphire
1002	26 226	6 313	24.1	Succulent steppe with open woodland & thicket; york gum over Melaleuca thyoides & samphire
561	422 337	102 167	24.2	Shrublands; Allocasuarina campestris thicket
1005	936	228	24.3	Low woodland; Allocasuarina huegeliana
91	3 292	808	24.6	Shrublands; Melaleuca thyoides thicket with scattered York gum
1000	119 340	29 396	24.6	Mosaic; Medium forest; jarrah-marri / Low woodland; banksia / Low forest; teatree (Melaleuca Spp.)

Table 7 (continued)

Vegetation Association	Pre-European Extent	Current Extent	% Remaining	Description
142	1,134,389	291,579	24.8	Medium woodland; York gum & salmon gum
993	2,723	694	25.5	Medium woodland; York gum & Allocasuarina huegeliana
947	38,193	9,735	25.5	Medium woodland; powderbark & mallet
1949	132,958	34,012	25.6	Low woodland
1041	5,592	1,437	25.7	Low woodland; Allocasuarina huegeliana & Jam
912	286,047	73,974	25.9	Shrublands; mallee scrub; Eucalyptus eremophila & Forrest's marlock, (E. forrestiana)
999	15,917	4,147	26.0	Succulent steppe with sparse woodland & thicket; yorrell & Kondinin blackbutt over teatree & samphire
1142	3,869	1,059	27.2	Shrublands; Acacia ligulata & Melaleuca uncinata dominated thicket on dark brown loamy soil
1029	1,319	358	27.4	Medium woodland; river gum
1051	17,924	4,922	27.5	Shrublands; teatree thicket with scattered wandoo & yate
1001	68,475	18,907	27.6	Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina
1137	1,325	369	27.9	Shrublands; Melaleuca incana, Hakea tuberculata, Viminaria juncea scrub on ironstone, south coast.
1152	28,206	7,908	28.0	Medium woodland; Eucalyptus rudis & Melaleuca rhaphiophylla
1012	598	170	28.4	Mosaic: Medium open woodland; tuart / Low woodland; banksia
3048	14,575	4,184	28.7	Shrublands; scrub-heath on the Swan Coastal Plain
1073	21,208	6,164	29.0	Medium woodland; wandoo & mallet
1001	49,690	14,460	29.0	Mosaic: Medium sparse woodland; salmon gum & yorrell / Succulent steppe; saltbush & samphire
999	33,806	9,983	29.5	Mosaic: Medium forest; jarrah-marri / Low forest; jarrah
994	20,738	6,141	29.6	Low forest; jarrah & casuarina (probably Allocasuarina fraseriana)
1015	21,378	6,368	29.8	Mosaic: Shrublands; scrub-heath on the Swan Coastal Plain / Shrublands; dryandra heath

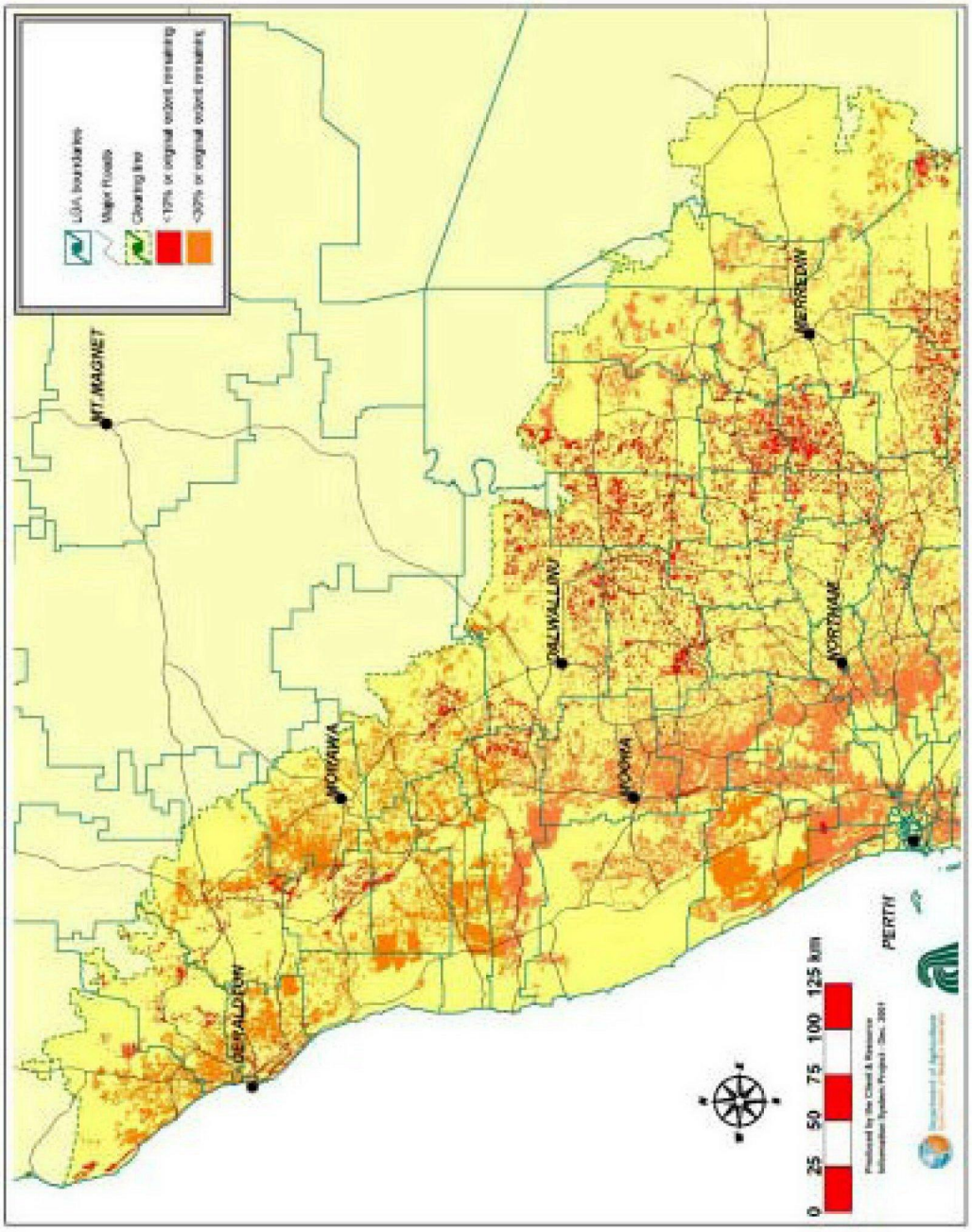

Figure 19. Vegetation types in the Intensive Land-use Zone with less than 30 per cent of their original distribution remaining – northern

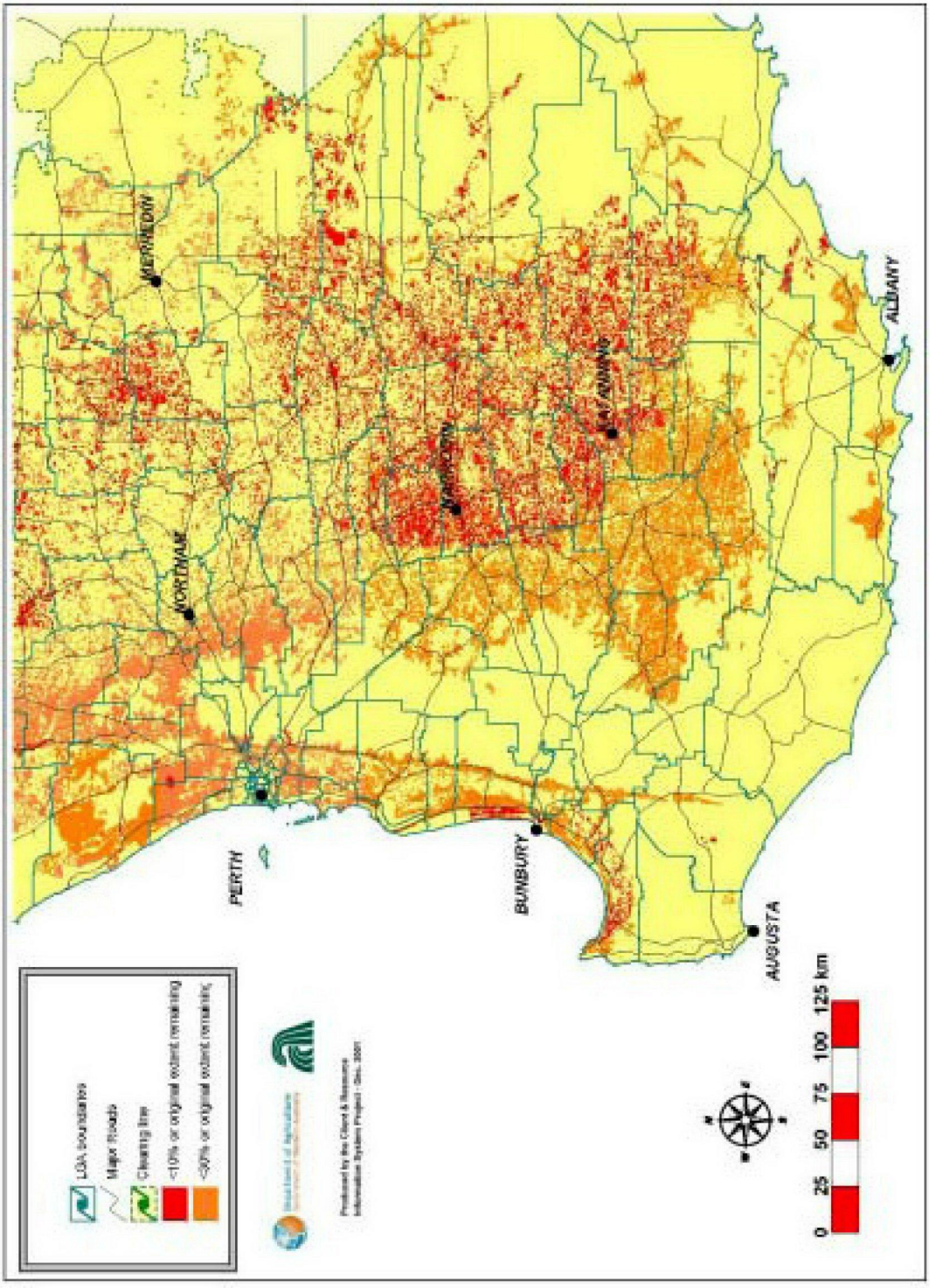

Figure 20. Vegetation types in the Intensive Land-use Zone with less than 30 per cent of their original distribution remaining – southern

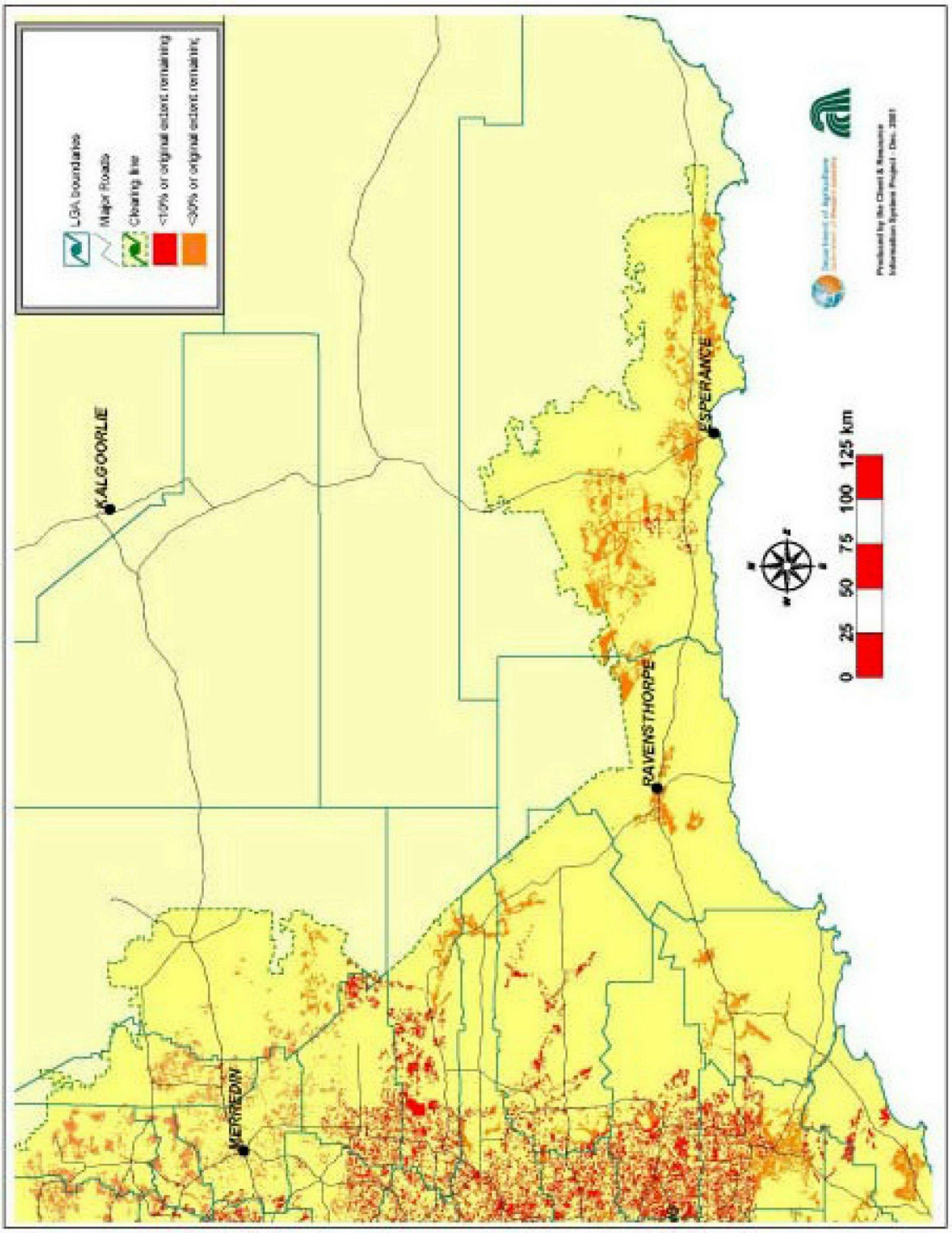

Figure 21. Vegetation types in the Intensive Land-use Zone with less than 30 per cent of original distribution remaining – south-east

Conclusions and recommendations

Clearing of native vegetation is very pronounced in the Intensive Land-use Zone, and only 30 per cent remains. More than 20 per cent is in contiguous forested land managed by the Department of Conservation and Land Management. All of the vegetation associations cleared to the point of concern i.e. ≤30 per cent remaining, are predominantly in the wheatbelt, along the Swan Coastal Plain and in the Blackwood Plateau/Leeuwin-Naturaliste/Scott Plain area.

The vegetation database, with both pre-European and present extent of each vegetation association, is a potentially powerful tool for land-use planning and management at regional or catchment scale. At this scale, the database can be used to identify priorities for acquisition for conservation and management across the landscape. Protocols for using the database have been developed, and are being used in the acquisition of land for conservation e.g. McNamara *et al*. (2000), unpublished reports by A.J.M. Hopkins (1998-2001), and catchment management (Hopkins *et al*. 2000). In addition, the vegetation data have been intersected with data on the spatial extent of saline components of the landscape in the South West Agricultural Region to identify vegetation types at risk from rising watertables and associated salinisation (Hopkins 2000) to provide a further assessment of threat. Further applications of the vegetation database await development.

The limitations of 1:250,000 scale vegetation mapping have become apparent through the development of new applications, and projects such as one at Dongolocking (Beecham *et al*. 1998). At the scale of the individual parcel of land in the South West Agricultural Region, existing mapping is too general to provide accurate and reliable data on the vegetation present. This creates a dilemma: there is urgent need for vegetation mapping at a scale relevant to the individual land parcel in this region, for example, for planning community response to rising groundwater and salinisation; the data are not available, so the small scale data are used. Where the data are used naively, the inevitable outcome appears to be poor planning, and criticism of the data as inaccurate.

The National Land and Water Resources Audit has highlighted the value of the vegetation mapping data compiled thus far and the limitations of existing data. The apparent demand for vegetation mapping that is accurate at the land parcel scale will need to be addressed – it is clear that a program of large-scale vegetation mapping is required if land-use planning and management is to progress.

The project has developed a map coverage on the Intensive Land-use Zone of present native vegetation that is considerably more accurate and reliable than pre-existing mapping. The dataset is available as the first authorised digital data on present native vegetation extent. The data will be date stamped 2000. Questions of data maintenance i.e. custodial duties, and of maintaining the currency of the data will need to be addressed. Both of these will require commitment and resources.

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Appendix 1. Pre-European extent, current extent and reservation status of vegetation types in Western Australia

(Areas are in hectares except where indicated. Vegetation Associations are described on pp 76-93)

Vegetation association	Pre-European extent	Current extent	Remaining	IUCN Class I-IV Reserves	Other Reserves (%)	In pastoral leases managed by CALM (%)
1	87,394	57,843	66.2	41.9	52.6	0.0
2	3,789	2,291	60.5	77.0	23.0	0.0
3	3,046,385	2,197,837	72.1	10.1	67.9	0.0
4	1,247834	292,993	23.5	14.8	11.0	0.0
5	62,051	30,076	48.5	79.4	0.0	0.0
6	79,001	18,398	23.3	14.5	23.2	0.0
7	287,299	28,838	10.0	1.8	0.0	0.0
8	1,238,672	675,472	54.5	16.7	21.1	0.0
9	250,894	250,183	99.7	3.0	2.7	0.0
10	175,839	172,830	98.3	1.0	2.1	0.0
11	39,165	39,165	100.0	0.0	0.0	0.0
12	8,950	8,950	100.0	0.0	0.0	0.0
13	7,741	5,462	70.6	96.8	3.2	0.0
14	115,161	87,643	76.1	3.9	33.5	0.0
16	3,463	253	7.3	11.6	86.4	0.0
17	86,758	74,098	85.4	9.4	3.1	0.0
18	24,675,970	24,659,110	99.9	2.0	0.3	2.5
19	4,888,643	4,885,387	99.9	0.0	0.5	0.0
20	1,558,296	1,552,012	99.6	13.1	3.9	0.0
21	88,304	88,304	100.0	0.0	0.0	0.0
22	4,915	3,232	65.8	45.7	0.0	0.0
23	50,127	33,700	67.2	57.4	14.0	0.0
24	298,364	297,860	99.8	0.3	0.0	0.0
25	10,747	1,287	12.0	5.1	0.0	0.0
27	161,222	106,631	66.1	39.9	29.9	0.0
28	355,797	355,797	100.0	0.0	0.0	0.0
29	7,782,264	7,782,264	100.0	0.3	0.0	2.4
31	3,292	808	24.6	49.7	0.0	0.0
32	35,673	35,673	100.0	0.0	0.0	0.0
34	3,293	3,293	100.0	0.0	0.0	0.0
35	213,685	21,972	10.3	2.3	0.0	0.0
36	429,445	177,262	41.3	10.8	0.0	0.0
37	44,215	24,725	55.9	13.6	6.1	0.0
38	2,902	2,371	81.7	98.8	1.2	0.0
39	5,382,170	5,380,712	100.0	8.2	0.0	3.6
40	486,949	451,464	92.7	32.3	0.0	0.0
41	219,356	201,662	91.9	10.5	0.0	0.0
42	370,327	357,275	96.5	46.8	0.0	0.0
43	194,818	194,818	100.0	12.7	1.8	0.0
45	358,724	358,724	100.0	4.7	0.0	0.0
46	502,462	502,462	100.0	0.0	0.0	0.0
47	1,272,406	455,429	35.8	54.0	0.0	0.0
48	57,809	5,484	9.5	28.4	0.0	0.0

49	59,113	23,904	40.4	45.5	0.2	0.0
50	6,620	4,557	68.8	1.7	0.6	0.0
51	70,336	36,354	51.7	69.4	7.8	0.0
52	204,589	204,589	100.0	5.8	0.0	0.0
53	1,017,982	1017,978	100.0	14.5	0.5	0.0
59	128,603	128,603	100.0	9.8	0.0	0.0
60	173,583	173,583	100.0	0.0	0.0	0.0
61	141,322	141,322	100.0	0.5	0.0	0.0
64	460,411	460,411	100.0	0.0	0.0	0.0
65	72,668	72,668	100.0	0.1	0.0	0.0
67	28,779	28,779	100.0	0.0	0.0	0.0
72	275,400	275,400	100.0	20.0	0.0	0.0
73	258,672	258,672	100.0	0.0	0.0	0.0
75	1,795,272	1,795,272	100.0	0.0	0.0	0.0
77	431,256	431,256	100.0	0.0	0.0	0.0
78	697,222	697,222	100.0	0.0	0.0	0.0
80	172,057	172,057	100.0	0.0	0.0	0.0
81	115,181	115,181	100.0	0.0	0.0	0.0
82	2,920,910	2,920,910	100.0	8.9	0.2	1.0
84	1903,436	1,903,436	100.0	13.5	0.0	0.0
85	3,094,217	3,094,217	100.0	19.8	0.0	0.0
86	110,933	110,933	100.0	2.9	0.0	0.0
91	463,487	463,487	100.0	11.0	0.0	0.0
92	169,760	169,760	100.0	0.0	0.0	0.0
93	3,376,354	3,376,354	100.0	0.4	0.0	1.7
94	9,698	9,698	100.0	0.0	0.0	0.0
95	1,363,428	1,363,428	100.0	1.5	0.0	4.3
96	1,070,789	1,070,789	100.0	2.0	0.0	0.0
97	45,506	45,506	100.0	0.0	0.0	64.4
98	517,812	517,806	100.0	29.8	0.0	10.6
99	575,753	575,753	100.0	26.9	0.0	0.0
100	61,731	61,731	100.0	0.0	0.0	0.0
101	1,307,019	1,307,019	100.0	0.0	0.0	0.0
102	1,022,468	1,022,468	100.0	0.0	0.0	0.0
103	646,291	646,291	100.0	2.0	0.0	3.2
104	95,890	95,890	100.0	0.0	0.0	0.0
105	2,914	2,914	100.0	0.0	0.0	0.0
106	451,606	451,606	100.0	0.0	0.0	0.0
107	3,348,249	3,348,249	100.0	3.1	0.0	0.1
109	1,088,371	1,088,371	100.0	10.9	0.7	0.0
110	596,081	596,081	100.0	22.6	0.0	0.0
111	814,103	814,103	100.0	5.8	0.6	0.0
112	29,440	29,257	99.4	2.9	0.0	0.0
116	122,862	122,862	100.0	12.1	0.0	0.0
117	917,087	917,087	100.0	13.3	1.0	0.0
118	352	352	100.0	0.0	0.0	0.0
120	537,988	536,335	99.7	95.7	0.0	0.0
122	2,948,956	2,948,956	100.0	25.8	0.0	0.0
123	9,194	9,194	100.0	0.0	0.0	0.0

125	3,940,746	3,536,992	89.8	5.8	1.2	0.4
126	224,442	207,137	92.3	2.2	0.0	0.0
127	778,381	778,153	100.0	7.0	4.0	0.0
128	412,121	325,830	79.1	12.3	4.5	0.0
129	95,663	51,747	54.1	51.0	2.3	0.1
131	387,141	27,707	7.2	10.3	0.0	0.0
133	50,789	50,789	100.0	0.0	0.0	0.0
134	28,339,332	28,339,332	100.0	3.3	0.0	0.0
136	326,770	326,770	100.0	0.0	0.0	0.0
137	217,620	217,620	100.0	0.0	0.0	0.0
138	1,084,978	1,084,978	100.0	0.0	0.0	0.0
139	7,850,974	7,850,974	100.0	16.1	0.0	0.0
141	676,791	250,256	37.0	5.8	0.0	0.0
142	1,134,385	281,570	24.8	14.5	0.0	0.0
143	20,462	17,778	86.9	96.0	0.0	0.0
144	535,130	465,663	87.0	5.7	22.2	0.0
145	9,482	402	4.2	0.0	0.0	0.0
147	35,868	29063	81.0	3.3	0.0	0.0
148	26,753	26753	100.0	2.5	0.0	0.0
151	181,037	181037	100.0	0.0	0.0	0.0
152	331,930	331930	100.0	2.4	0.0	1.6
155	6,373,734	6373734	100.0	0.0	0.0	0.0
157	542,861	542861	100.0	17.6	0.0	0.0
158	180,361	180361	100.0	6.7	0.0	10.0
160	1,266,103	1266103	100.0	0.0	0.0	11.4
161	69,166	69166	100.0	0.0	0.0	0.0
162	599,944	599944	100.0	11.4	0.0	14.5
163	704,872	704872	100.0	0.0	0.0	1.4
165	594,076	594076	100.0	0.0	0.0	2.6
166	386,418	386418	100.0	1.9	0.0	0.3
167	134,185	134185	100.0	0.0	0.0	0.0
168	62,183	62183	100.0	0.0	0.0	0.0
169	441,012	440986	100.0	7.4	0.0	0.0
171	200,150	200150	100.0	0.0	0.0	4.5
173	1,856,728	1856728	100.0	7.5	0.0	6.2
174	1,220,936	1220936	100.0	0.0	0.0	0.0
175	558,002	558002	100.0	4.1	0.1	0.0
177	183,227	183227	100.0	0.0	0.0	0.9
178	679,426	679426	100.0	0.3	0.0	0.0
179	81,385	81385	100.0	0.0	0.0	0.0
180	30,464	30464	100.0	0.0	0.0	0.0
181	1,922,170	1922170	100.0	1.9	0.0	2.0
182	105,877	105877	100.0	3.4	0.0	1.1
183	355,999	355999	100.0	0.0	0.0	34.2
184	83,702	83702	100.0	0.0	0.0	2.4
185	234,237	234237	100.0	31.1	0.0	0.0
186	23,284	23,284	100.0	0.0	0.0	0.0
187	4,829	4,829	100.0	0.0	0.0	0.0
188	28,093	28,093	100.0	0.0	0.0	0.0

190	182,967	182,967	100.0	0.0	0.0	0.0
191	36,996	36,996	100.0	0.0	0.0	0.0
192	298,170	298,170	100.0	0.0	0.0	9.3
194	64,838	64,838	100.0	0.0	0.0	0.0
196	95,006	95,006	100.0	1.5	0.0	0.0
197	61,279	61,279	100.0	0.0	0.0	0.0
198	311,198	311,198	100.0	0.0	0.0	0.0
199	69,068	69,068	100.0	0.0	0.0	0.0
200	2,576	2,576	100.0	0.0	0.0	0.0
202	413191	405,532	98.1	0.0	1.1	1.5
204	234,593	232,975	99.3	0.0	0.0	5.6
205	329,024	328,057	99.7	0.8	3.0	7.0
206	23,670	22,176	93.7	52.2	0.0	4.5
207	42,031	42,031	100.0	0.0	0.0	0.0
208	31,792	31,792	100.0	0.0	0.0	0.0
209	48,275	48,275	100.0	0.5	2.7	0.0
214	581,155	581,155	100.0	0.0	0.0	0.0
215	20,751	20,751	100.0	0.0	0.0	0.0
216	298,549	298,549	100.0	0.0	0.0	0.0
217	92,163	92,163	100.0	0.0	0.0	0.0
218	1,933,892	1,933,892	100.0	0.0	0.0	0.0
219	64,583	64,583	100.0	0.0	0.0	0.0
221	65,168	61,783	94.8	5.7	10.3	0.0
222	250,536	250,536	100.0	27.7	0.0	0.0
223	2,927	2,927	100.0	0.0	0.0	0.0
224	92,773	92,773	100.0	0.1	0.8	0.0
225	10,890	10,890	100.0	0.0	0.0	0.0
226	6,805	6,805	100.0	0.0	0.0	0.0
228	12,122	11,735	96.8	0.0	0.0	0.0
229	9,015	9,015	100.0	0.0	0.0	5.3
230	1,567,508	1,567,508	100.0	8.8	0.0	0.0
233	119,656	119,656	100.0	0.0	0.0	0.0
234	16,577	16,577	100.0	0.0	0.0	0.0
236	1,821,069	1,821,069	100.0	0.0	0.0	0.0
239	5,842,963	5,842,963	100.0	9.0	0.0	0.0
240	134,601	132,867	98.7	0.0	0.0	32.7
242	2,660	2,660	100.0	0.0	0.0	0.0
243	129,827	124,816	96.1	0.0	0.2	0.0
244	98,426	98,426	100.0	0.0	0.0	0.0
245	2,437	2,437	100.0	0.0	0.0	0.0
246	16176	16,176	100.0	0.0	0.0	0.0
248	42,004	37,405	89.1	0.0	0.0	0.0
251	206,446	206,446	100.0	64.5	5.0	0.0
252	157,898	157,898	100.0	0.0	0.0	0.0
254	416	166	39.8	0.0	0.0	0.0
255	3,648	3,414	93.6	50.1	0.0	0.0
256	78,551	67,890	86.4	52.3	0.0	0.0
260	21,582	21,581	100.0	45.0	30.1	0.0
261	9,977	9,977	100.0	0.0	0.0	29.8

262	6,723	6,723	100.0	94.8	0.0	0.0
264	926,791	926,791	100.0	0.1	0.0	2.2
265	24,273	24,273	100.0	0.0	0.0	0.0
266	151,419	150,756	99.6	0.0	0.0	5.7
267	36,030	36,030	100.0	0.0	0.0	0.0
268	17,591	17,256	98.1	0.0	0.0	0.0
269	202,522	196,839	97.2	0.0	0.0	0.7
281	879	879	100.0	0.0	0.0	0.0
282	13,355	13,355	100.0	0.0	0.0	0.0
283	79,411	79,411	100.0	0.0	0.0	12.9
284	55,815	55,815	100.0	0.0	0.0	0.0
285	16,668	16,668	100.0	0.0	0.0	0.0
288	6,798	6,798	100.0	0.0	0.0	0.0
289	118,796	118,796	100.0	3.5	0.0	0.0
300	2,164	2,164	100.0	0.0	0.0	0.0
301	126,892	126,892	100.0	68.8	0.0	17.9
303	115,094	115,094	100.0	0.0	0.0	0.8
304	13,768	13,768	100.0	0.0	0.0	0.0
305	8,121	8,121	100.0	0.0	0.0	0.0
306	185	185	100.0	0.0	0.0	0.0
307	52,5102	52,5102	100.0	0.0	0.0	10.0
308	496,965	491,901	99.0	0.3	0.0	0.1
311	657	657	100.0	0.0	0.0	0.0
312	47,258	47,258	100.0	0.0	0.0	0.0
313	77,838	77,838	100.0	0.0	0.0	0.0
314	8,668	7,661	88.4	16.9	0.0	0.0
320	8,318	8,318	100.0	0.0	0.0	0.7
321	165,466	165,323	99.9	0.0	0.0	0.0
323	6,291	6,291	100.0	0.0	0.0	0.0
325	71,884	61,602	85.7	0.0	0.0	0.0
326	1,123,149	1,051,647	93.6	0.0	0.0	3.1
327	35,096	35,096	100.0	0.0	0.0	7.8
328	11,267	11,267	100.0	0.0	0.0	0.0
329	29,421	29,421	100.0	0.0	0.0	0.0
337	34,294	29,669	86.5	83.0	0.0	0.0
338	112,454	112,454	100.0	0.0	0.0	0.0
339	30,482	30,482	100.0	0.0	0.0	0.0
340	2812	2,812	100.0	0.0	0.0	0.0
341	11,618	11,618	100.0	0.0	0.0	0.0
342	328,192	328,192	100.0	0.0	0.0	20.6
344	248,561	248,561	100.0	0.0	0.0	0.0
345	62,536	62,536	100.0	0.0	0.0	0.0
346	68,324	68,324	100.0	0.5	0.0	0.0
347	77,742	77,742	100.0	1.6	0.0	0.0
349	144,388	144,388	100.0	0.0	0.0	0.3
351	9,552	434	4.5	6.7	0.0	0.0
352	874,652	133,255	15.2	3.0	5.5	0.0
353	103,631	4,656	4.5	17.1	0.0	0.0
354	105,533	6,029	5.7	13.1	0.1	0.0

355	71,182	59,522	83.6	0.0	5.1	0.0
356	5,080	2,362	46.5	2.9	0.0	0.0
357	42,707	38,146	89.3	0.0	0.0	0.0
358	67,832	61,680	90.9	0.0	0.0	0.4
359	51,008	10,762	21.1	0.0	0.0	0.0
360	267	267	100.0	0.0	0.0	0.0
361	286,300	258,395	90.3	0.0	0.0	0.7
362	45,130	45,112	100.0	1.0	0.0	0.0
363	278,802	247,652	88.8	84.5	0.0	1.4
364	578,167	498,522	86.2	36.5	1.4	6.0
365	63,107	54,037	85.6	0.6	3.0	3.7
368	371,418	371,418	100.0	10.9	39.4	0.0
371	37,651	3,703	9.8	3.7	0.0	0.0
372	93,635	28,141	30.1	84.8	0.0	0.0
374	8,905	5,196	58.4	1.8	18.8	0.0
377	72,964	72,491	99.4	74.0	0.0	0.0
378	109,796	68,049	62.0	21.1	0.0	0.0
379	633,325	128,007	20.2	20.3	0.0	0.0
380	607,325	317,763	52.3	31.5	0.0	0.0
383	15,050	13,000	86.4	19.4	0.0	0.0
384	4,476	4,476	100.0	0.0	0.0	0.0
385	53,451	32,594	61.0	0.0	0.1	0.0
386	2,544	2,544	100.0	0.0	0.0	0.0
387	16,780	13,700	81.6	0.0	0.0	0.0
389	739,637	739,292	100.0	0.3	0.7	0.0
391	3,570	1,810	50.7	31.6	0.0	0.0
392	3,646	1,554	42.6	16.4	0.0	0.0
393	5,845	4,961	84.9	83.3	0.0	0.0
395	116,400	116,400	100.0	0.0	0.0	0.0
400	220,852	220,852	100.0	0.0	0.0	0.0
401	36,874	36,874	100.0	0.9	0.0	0.0
402	47,822	46,780	97.8	17.7	0.0	0.0
403	13,068	11,442	87.6	19.4	0.0	0.0
404	229,731	203,522	88.6	0.0	0.0	0.0
405	28,970	22,827	78.8	0.0	0.0	0.0
406	172,951	167,570	96.9	8.8	0.0	0.0
407	36,343	33,216	91.4	48.7	0.0	0.0
408	382,507	154,708	40.4	62.6	0.0	0.0
411	50,902	49,035	96.3	0.0	0.0	0.0
412	10,807	5,838	54.0	0.0	0.0	0.0
413	9,822	2,116	21.5	1.3	0.0	0.0
414	53,312	46,340	86.9	0.0	0.0	0.0
415	119,249	114,610	96.1	0.0	0.0	3.4
416	259,509	224,900	86.7	6.4	0.0	0.0
417	24,166	24,166	100.0	12.1	84.4	0.0
418	5,060	5,060	100.0	0.0	100.0	0.0
419	359,230	309,598	86.2	0.0	30.8	28.7
420	844,073	741,110	87.8	0.1	0.3	2.7
423	32,108	20,115	62.6	45.2	0.0	0.0

424	3,156	3,007	95.3	99.6	0.0	0.0
427	43,980	16,821	38.2	6.5	0.0	0.0
431	4,953	3,891	78.5	1.6	0.0	0.0
432	6,615	5,691	86.0	62.4	0.0	0.0
433	37,257	15,234	40.9	11.7	0.0	0.0
434	1,595	1,386	86.9	0.0	0.0	0.0
435	1,376,961	969,376	70.4	8.8	4.8	0.0
436	1,239	1,061	85.6	0.0	100.0	0.0
437	415,944	346,177	83.2	20.5	2.8	0.0
438	378	178	47.2	0.0	0.0	0.0
440	6,670	3,977	59.6	3.8	0.0	0.0
441	3,257,346	3,257,346	100.0	10.5	0.0	0.0
442	61,802	61,802	100.0	11.3	0.0	0.0
444	13,003	13,003	100.0	39.2	0.0	0.0
448	493,114	493,114	100.0	0.0	0.0	0.0
449	1,129,184	1,129,184	100.0	0.0	0.0	0.0
460	5,078	5,078	100.0	0.0	20.9	0.0
461	909,410	909,410	100.0	0.0	0.0	0.0
467	285,340	285,340	100.0	0.0	0.0	0.0
468	476,124	476,120	100.0	0.2	1.4	0.0
479	42,538	41,580	97.7	97.8	0.0	0.0
480	135,039	135,039	100.0	0.0	6.5	0.0
481	816,242	816,242	100.0	0.0	6.0	0.0
482	1,935,796	1,811,444	93.6	9.5	0.0	0.0
483	588,606	546,359	92.8	0.3	2.2	0.4
484	80,740	80,557	99.8	0.5	1.6	0.0
485	264,234	264,234	100.0	0.0	8.9	0.0
486	481,704	286,882	59.6	7.0	0.0	0.0
487	590,222	590,222	100.0	22.5	0.0	0.0
488	38,335	38,335	100.0	0.0	0.0	0.0
489	79,073	79,073	100.0	0.0	0.0	0.0
491	79,779	67,365	84.4	0.0	0.0	0.0
493	23,366	231,88	99.2	6.1	0.0	0.0
494	3,097	3,097	100.0	97.6	0.0	0.0
495	9,835	9,774	99.4	0.0	0.0	0.0
500	99,485	99,485	100.0	1.2	0.0	0.0
501	48,381	48,212	99.7	0.0	15.8	0.0
502	48,474	48,474	100.0	0.0	0.0	0.0
504	9,675	9,601	99.2	0.0	23.1	0.0
505	7,894	7,894	100.0	0.0	0.0	0.0
506	106,401	106,401	100.0	1.9	8.8	0.0
507	8,969	8,540	95.2	0.0	0.0	0.0
508	67,354	66,130	98.2	11.8	16.2	0.0
509	146,503	146,503	100.0	13.3	0.0	0.0
510	3,819	3,818	100.0	100.0	0.0	0.0
511	409,458	219324	53.6	22.7	0.0	0.0
512	285,547	73,974	25.9	9.2	0.0	0.0
513	16,039	16,039	100.0	42.5	0.0	0.0
514	172,899	172,899	100.0	83.3	0.0	0.0

515	86,1683	860,958	99.9	23.9	0.0	0.0
516	1,541,361	666,416	43.2	35.9	0.0	0.0
518	784,912	784,912	100.0	56.1	0.0	0.0
519	2,221,704	1,346,958	60.6	18.9	0.0	0.0
520	39,236	36,048	91.9	4.9	9.9	0.0
521	129,642	127,489	98.3	0.9	5.4	0.0
522	759,523	680,641	89.6	1.0	0.6	0.0
524	353,477	353,477	100.0	50.4	0.2	0.0
525	236629	236,629	100.0	0.0	0.0	0.0
529	91,871	91,871	100.0	0.0	1.3	0.0
532	24,562	24,562	100.0	0.0	0.0	0.0
533	170,444	169,373	99.4	0.0	1.9	0.0
535	20,895	20,895	100.0	0.0	0.0	0.0
536	23,414	13,467	57.5	12.0	0.0	0.0
537	820	686	83.6	0.0	0.0	0.0
538	177,284	157,652	88.9	10.2	15.3	0.0
540	182,232	182,232	100.0	35.6	0.1	0.0
542	4,919	4,919	100.0	0.0	22.5	0.0
545	505	505	100.0	0.0	0.0	0.0
546	11756	11,756	100.0	0.0	0.0	100.0
547	44893	44,893	100.0	0.0	0.0	0.0
551	422337	102,167	24.2	18.7	0.1	0.0
552	40252	36,688	91.1	1.0	0.7	0.0
554	1202	1,038	86.4	100.0	0.0	0.0
555	64,316	60,849	94.6	27.3	7.6	0.0
560	93,558	93,558	100.0	0.0	0.0	0.0
561	5,544	5,544	100.0	0.0	0.0	0.0
562	112,469	112,469	100.0	0.0	0.0	0.0
563	1,011	1,011	100.0	0.0	0.0	0.0
565	154,848	154,848	100.0	0.0	0.0	0.0
567	848,590	848,590	100.0	22.3	0.2	0.0
568	36,962	36,962	100.0	0.0	0.0	0.0
569	73,232	73,232	100.0	1.0	0.0	0.0
580	24,634	24,634	100.0	0.0	0.0	0.0
583	263,535	263,535	100.0	41.1	0.0	0.0
584	782	782	100.0	100.0	0.0	0.0
585	157,794	157,794	100.0	23.9	0.0	40.2
587	627,733	627,733	100.0	20.9	0.0	0.0
588	95,108	95,108	100.0	0.0	0.0	0.0
589	848,201	848,201	100.0	1.6	0.0	0.0
600	71,929	71,929	100.0	0.0	1.4	0.0
601	118,334	118,334	100.0	0.0	2.0	0.0
603	61,265	61,265	100.0	0.0	0.0	0.0
604	16,945	16,945	100.0	0.0	1.2	0.0
605	107,978	107,978	100.0	0.3	0.0	0.0
606	34,795	34,795	100.0	0.0	0.0	0.0
607	130,597	130,597	100.0	12.4	0.0	0.0
608	340,503	340,503	100.0	0.0	0.0	0.7
609	80,396	80,396	100.0	0.0	0.0	0.0

612	514	514	100.0	0.0	0.0	0.0
619	114,362	114,211	99.9	0.2	0.0	0.0
620	43,259	43,259	100.0	0.0	0.0	0.0
624	97,669	97,669	100.0	26.2	0.0	0.0
625	17,676	17,676	100.0	6.2	0.0	0.0
626	125,699	125,699	100.0	15.7	0.0	0.0
629	63,746	63,746	100.0	1.2	0.0	0.0
631	125,212	46,336	37.0	5.7	4.7	0.0
640	18,792	18,792	100.0	0.0	0.0	0.0
641	39,012	39,012	100.0	2.9	0.0	0.0
644	29,306	29,306	100.0	0.0	0.0	0.0
645	91,586	91,586	100.0	0.0	0.0	0.0
646	51,600	51,600	100.0	1.4	0.0	24.5
647	210,926	210,926	100.0	0.0	0.0	0.0
649	43,345	43,345	100.0	0.0	0.0	0.0
658	218,835	218,835	100.0	0.0	0.0	0.0
662	308,549	308,549	100.0	2.3	0.0	0.0
663	31,419	31,419	100.0	22.4	4.6	0.0
664	90,905	90,905	100.0	41.3	0.0	0.0
667	19,949	19,949	100.0	100.0	0.0	0.0
670	160,295	160,295	100.0	0.0	0.0	1.9
674	3,528	3,528	100.0	0.0	0.0	0.0
675	59,708	12,985	21.7	2.8	0.2	0.0
676	2,110,508	2,087,974	98.9	6.5	0.3	13.4
678	6,491	6,491	100.0	0.0	0.0	0.0
680	98,465	98,465	100.0	3.1	0.0	0.0
681	6,239	6,239	100.0	4.3	0.0	0.0
683	52,611	48,432	92.1	0.0	0.0	0.0
684	145,457	30,397	20.9	1.2	0.0	0.0
686	14,842	8,685	58.5	5.5	0.0	3.9
687	60,397	10,556	17.5	27.3	0.0	0.0
691	55,727	43,044	77.2	83.0	0.0	0.0
692	3,320	2,070	62.3	3.5	0.0	0.0
693	5,037	3,494	69.4	0.0	0.0	0.0
694	403,915	68,872	17.1	52.5	0.3	0.0
695	762	52	6.9	0.0	0.0	0.0
696	3,521	1,262	35.8	22.9	5.8	0.0
697	84,759	37,105	43.8	39.9	0.0	0.0
698	13,115	1,772	13.5	4.4	0.0	0.0
699	2,153,432	2,153,432	100.0	0.0	0.0	0.0
700	1,076,941	1,076,941	100.0	0.0	0.0	0.0
701	115,506	115,506	100.0	0.0	0.0	0.0
702	25,551	25,551	100.0	0.0	0.0	0.0
703	112,078	112,078	100.0	7.5	0.0	0.0
704	65,445	65,445	100.0	0.0	0.0	0.0
705	105,419	105,419	100.0	0.0	0.0	0.0
706	306,887	306,887	100.0	0.1	0.0	0.0
707	290,982	290,982	100.0	0.0	0.0	0.0
709	64,508	64,508	100.0	1.6	0.0	0.0

710	27,073	27,073	100.0	0.0	0.0	0.0
712	258,746	258,746	100.0	0.0	0.0	0.0
713	3,770,062	3,770,062	100.0	0.2	0.0	0.0
716	12,276	12,276	100.0	0.0	0.0	0.0
717	4,212	4,212	100.0	2.3	3.5	0.0
718	52,600	52,600	100.0	0.5	0.0	0.0
720	6,874	6,874	100.0	21.4	0.0	0.0
721	55,049	55,049	100.0	0.0	0.0	0.0
722	22,615	22,615	100.0	0.0	0.0	0.0
724	13,100	13,100	100.0	0.0	0.0	0.0
725	129,346	129,346	100.0	0.0	0.0	0.0
726	77,372	77,372	100.0	0.1	0.0	0.0
727	122,210	122,210	100.0	0.0	0.0	0.0
728	9,287	9,287	100.0	0.0	0.0	0.0
729	16,344	16,344	100.0	0.0	0.0	0.0
730	16,840	16,840	100.0	0.0	0.0	0.0
731	183,487	183,487	100.0	0.0	0.0	0.0
733	8,640	8,640	100.0	0.0	0.0	0.0
735	42,228	42,228	100.0	48.9	0.0	0.0
736	629,420	629,420	100.0	12.1	0.0	0.0
737	38,160	38,160	100.0	0.0	0.0	0.0
738	530,784	530,784	100.0	16.4	0.0	0.0
739	2,068,043	2,068,043	100.0	10.3	0.5	0.0
740	100,318	100,318	100.0	75.0	0.0	0.0
741	71,382	71,382	100.0	2.2	0.0	0.0
742	8,365	8,365	100.0	0.0	0.0	0.0
743	19,906	19,906	100.0	0.0	0.0	0.0
744	150,547	150,547	100.0	1.1	0.0	0.0
745	246	246	100.0	0.0	0.0	0.0
746	140,496	140,496	100.0	9.0	0.0	0.0
748	392	312	79.7	48.9	0.0	0.0
750	1,294,465	1,294,465	100.0	2.3	0.0	0.0
751	13,411	13,411	100.0	0.0	0.0	0.0
752	7,129	7,129	100.0	0.0	0.0	0.0
754	205,699	205,699	100.0	0.0	0.0	0.0
755	19,881	19,881	100.0	0.0	0.0	0.0
756	2,838	2,838	100.0	0.0	0.0	0.0
757	16,926	16,926	100.0	0.0	0.0	0.0
759	55,510	55,510	100.0	0.0	0.0	0.0
760	228,622	228,622	100.0	0.5	0.0	0.0
761	27,575	27,575	100.0	0.0	0.0	0.0
762	7,939	7,939	100.0	0.0	0.0	0.0
764	581,958	581,958	100.0	0.0	0.0	0.0
765	185,199	185,199	100.0	0.0	0.0	0.0
767	599	599	100.0	0.0	0.0	0.0
770	878	878	100.0	0.0	0.0	0.0
771	36,173	36,173	100.0	0.0	0.0	0.0
772	5,054	5,054	100.0	82.4	0.0	0.0
773	10,672	10,672	100.0	0.0	0.0	0.0

774	36,521	36,521	100.0	1.3	0.0	0.0
800	283,911	283,911	100.0	0.0	0.0	0.0
802	393,782	393,782	100.0	0.4	0.0	0.0
804	77,959	77,959	100.0	0.0	0.0	0.0
805	6,334	6,334	100.0	0.0	0.0	0.0
806	145,235	145,235	100.0	3.1	0.0	0.0
807	2,035	2,035	100.0	0.0	0.0	0.0
808	1,386,839	1,386,839	100.0	0.8	0.0	0.0
809	12,733	12,733	100.0	0.0	0.0	0.0
810	97,707	97,707	100.0	1.0	0.0	0.0
811	101,097	101,097	100.0	0.0	0.0	0.0
812	269,496	269,496	100.0	0.0	0.0	0.0
813	10,648	10,648	100.0	0.0	0.0	0.0
814	178,746	178,746	100.0	0.5	0.0	0.0
815	50,507	50,507	100.0	0.0	0.0	0.0
816	140,554	140,554	100.0	0.0	0.0	0.0
817	6,192	6,192	100.0	0.0	0.0	0.0
818	34,880	34,880	100.0	0.0	0.0	0.0
819	61,644	61,644	100.0	0.0	0.0	0.0
820	62,437	62,437	100.0	0.0	0.0	0.0
825	66,341	66,341	100.0	0.0	0.0	0.0
826	712	712	100.0	0.0	0.0	0.0
827	91,292	91,292	100.0	0.0	0.0	0.0
829	12,574	12,574	100.0	0.0	0.0	0.0
830	175,560	175,560	100.0	0.0	0.0	0.0
831	404,316	404,316	100.0	3.3	0.0	0.0
833	40,472	40,472	100.0	0.0	0.0	0.0
834	33,840	33,840	100.0	0.0	0.0	0.0
835	123,411	123,411	100.0	0.0	0.0	0.0
837	182,774	182,774	100.0	0.0	0.0	0.0
838	14,627	14,627	100.0	15.8	0.0	0.0
839	9,370	9,370	100.0	0.0	0.0	0.0
840	39,471	39,471	100.0	0.0	0.0	0.0
842	367,094	367,094	100.0	3.5	0.0	0.0
843	22,413	22,413	100.0	0.0	0.0	0.0
844	2,734	2,734	100.0	0.0	0.0	0.0
846	95,905	95,905	100.0	88.5	0.0	0.0
847	74,989	74,989	100.0	8.0	0.0	0.0
848	237,812	237,812	100.0	0.0	0.0	0.0
849	512,320	512,320	100.0	0.3	0.0	0.0
850	331,815	331,815	100.0	0.0	0.0	0.0
851	116,346	116,346	100.0	0.0	0.0	0.0
852	6,834	6,834	100.0	0.0	0.0	0.0
854	58,338	58,338	100.0	0.8	0.0	0.0
855	4,425	4,425	100.0	0.0	0.0	0.0
856	3,602	3,602	100.0	0.0	0.0	0.0
858	332,894	332,894	100.0	0.0	0.0	0.0
861	118,346	118,346	100.0	99.9	0.0	0.0
862	44,492	44,492	100.0	0.0	0.0	0.0

863	64,022	64,022	100.0	0.0	0.0	0.0
864	25,902	25,902	100.0	0.0	0.0	0.0
865	74,450	74,450	100.0	0.0	0.0	0.0
866	28,700	28,700	100.0	0.0	0.0	0.0
867	121,443	121,443	100.0	0.0	0.0	0.0
868	244,688	244,688	100.0	0.0	0.0	0.0
869	10,349	10,349	100.0	0.0	0.0	0.0
870	11,639	11,639	100.0	0.0	0.0	0.0
871	246,091	246,091	100.0	0.0	0.0	0.0
872	3,574	3,574	100.0	0.0	0.0	0.0
873	80,306	80,306	100.0	0.0	0.0	0.0
875	251,754	251,754	100.0	0.0	0.0	0.0
876	54,369	54,369	100.0	0.0	0.0	0.0
877	50,687	50,687	100.0	0.0	0.0	0.0
878	68,717	68,717	100.0	0.0	0.0	0.0
879	69299	69,299	100.0	0.0	0.0	0.0
881	25,729	25,729	100.0	0.0	0.0	0.0
882	37,799	37,799	100.0	0.0	0.0	0.0
883	29,003	29,003	100.0	0.0	0.0	0.0
884	45,113	45,113	100.0	0.0	0.0	0.0
887	46,244	46,244	100.0	0.0	0.0	0.0
888	169,955	169,955	100.0	0.0	0.0	0.0
894	44,700	44,700	100.0	0.0	0.0	0.0
895	105,971	105,971	100.0	0.0	0.0	0.0
897	2,824	2,824	100.0	0.0	0.0	0.0
899	51,028	51,028	100.0	0.0	0.0	0.0
901	4,750,841	4,750,841	100.0	17.1	0.6	0.0
902	11,322	11,322	100.0	0.0	0.0	0.0
904	147,929	147,929	100.0	4.1	2.1	0.0
905	58,672	58,672	100.0	6.4	0.0	0.0
906	8,437	8,437	100.0	1.3	0.0	0.0
907	10,954	10,954	100.0	0.0	0.0	0.0
908	8,415	8,415	100.0	0.3	0.0	0.0
909	288,752	288,752	100.0	0.5	0.0	0.0
911	43,183	43,183	100.0	0.0	0.0	0.0
914	51,621	51,621	100.0	7.3	0.0	0.0
915	1,460	1,460	100.0	0.0	0.0	0.0
916	78,745	78,745	100.0	0.1	0.0	0.0
918	1,503	1,503	100.0	0.0	0.0	0.0
922	17,411	17,411	100.0	0.0	0.0	0.0
923	24,281	24,281	100.0	0.0	0.0	0.0
924	98,575	39,924	40.5	2.1	0.0	0.0
925	37,081	35,330	95.3	79.5	0.0	0.0
929	12,570	9,447	75.2	3.0	0.0	0.0
931	38,861	15,174	39.0	13.3	0.0	0.0
934	78,095	65,971	84.5	2.0	0.0	0.0
936	1,016,210	906,826	89.2	2.3	1.7	0.0
938	92,552	16,438	17.8	10.4	0.0	0.0
939	142	10	7.3	0.0	0.0	0.0

940	315,804	125,139	39.6	50.4	0.0	0.0
941	40,971	15,375	37.5	14.9	0.0	0.0
942	40,453	8,993	22.2	3.3	0.0	0.0
945	9,704	9,704	100.0	24.1	0.0	0.0
946	97,259	17,377	17.9	39.7	5.5	0.0
947	38,193	9,735	25.5	55.8	0.0	0.0
948	1,707	139	8.1	0.0	0.0	0.0
949	116,545	96,277	82.6	22.3	29.8	0.0
950	594	225	37.8	0.8	0.0	0.0
951	32,427	10,020	30.9	21.6	0.0	0.0
952	70,253	10,575	15.1	42.9	0.0	0.0
953	11,519	1,718	14.9	14.1	0.0	0.0
954	6,846	1,052	15.4	21.7	0.0	0.0
955	155,719	11,316	7.3	9.6	0.0	0.0
956	29,772	2,930	9.8	34.1	0.0	0.0
959	15,617	4,147	26.6	52.1	0.0	0.0
960	190,026	15,215	8.0	33.2	2.5	0.0
961	37,131	4,604	12.4	56.5	9.2	0.0
962	4,878	208	4.3	0.0	0.0	0.0
963	215,755	2,464	1.1	18.1	0.7	0.0
964	4,113	1,477	35.9	97.7	0.0	0.0
965	114,948	5,415	4.7	36.0	10.2	0.0
966	3,844	157	4.1	0.0	0.0	0.0
967	50,176	11,174	22.3	11.3	0.0	0.0
968	200,651	78,150	38.9	19.6	24.3	0.0
969	33,806	9,983	29.5	0.7	7.2	0.0
970	1,684	1,385	82.3	100.0	0.0	0.0
971	474	206	43.4	16.9	0.0	0.0
972	28,377	10,640	37.5	5.0	0.0	0.0
973	6,104	1,884	30.9	4.8	1.9	0.0
974	8,679	584	6.7	0.0	0.0	0.0
975	20,924	15,971	76.3	83.5	12.1	0.0
976	2,444	488	20.0	35.7	0.0	0.0
977	28,765	21,033	73.1	0.3	64.2	0.0
978	66,468	26,010	39.1	14.0	0.1	0.0
979	9,434	2,218	23.5	0.0	0.0	0.0
980	121,431	80,012	65.9	66.8	0.0	0.0
981	1,037	1,037	100.0	0.0	0.0	0.0
982	1,936	637	32.9	100.0	0.0	0.0
984	20,580	20,580	100.0	6.6	0.0	0.0
986	36,450	15,253	41.8	99.9	0.0	0.0
987	4,356	1,436	33.0	54.7	0.0	0.0
988	115,458	24,698	21.4	5.4	13.1	0.0
989	11,002	7,404	67.3	29.3	0.0	0.0
990	22,303	13,558	60.8	80.4	0.2	0.0
991	378	255	67.4	100.0	0.0	0.0
992	147,246	33,046	22.4	4.3	5.4	0.0
993	2,723	694	25.5	0.0	0.0	0.0
994	20,738	6,141	29.6	29.5	0.0	0.0

995	3,904	3,051	78.2	84.9	0.0	0.0
997	3,458	1,333	38.5	64.1	0.0	0.0
998	51,094	18,320	35.9	32.9	3.0	0.0
999	275,380	32,451	11.8	8.1	10.2	0.0
1000	119,340	29,396	24.6	13.0	8.9	0.0
1001	68,475	18,907	27.6	4.2	1.3	0.0
1002	19,360	18,450	95.3	10.2	87.7	0.0
1003	98,353	63,530	64.6	33.4	40.4	0.0
1004	11,768	3,960	33.7	44.2	3.6	0.0
1005	936	228	24.3	0.0	0.0	0.0
1006	53,123	26,929	50.7	13.0	30.2	0.0
1008	5,369	967	18.0	0.0	0.8	0.0
1009	8,792	2,673	30.4	0.1	5.1	0.0
1010	1,423	93	6.5	0.0	0.0	0.0
1011	1,270	984	77.4	30.7	13.4	0.0
1012	598	170	28.4	0.0	0.0	0.0
1013	547	114	20.9	0.0	0.0	0.0
1014	48,359	25,871	53.5	39.7	10.8	0.0
1015	21,378	6,368	29.8	3.8	0.0	0.0
1016	1,789	595	33.3	0.0	0.0	0.0
1017	20,716	13542	65.4	0.0	71.0	0.0
1018	16,612	3743	22.5	0.4	0.0	0.0
1019	928	404	43.5	0.0	0.0	0.0
1020	6,607	2120	32.1	5.9	0.0	0.0
1021	1,458	158	10.8	0.0	0.0	0.0
1022	534	212	39.6	0.0	0.0	0.0
1023	1,698,453	92,709	5.5	16.2	0.0	0.0
1024	854,342	77984	9.1	9.0	0.0	0.0
1025	2,261	42	1.9	0.0	0.0	0.0
1026	124,905	85076	68.1	46.3	0.0	0.0
1027	46,748	26423	56.5	30.1	0.0	0.0
1028	1,310	358	27.4	32.0	0.0	0.0
1029	82,795	62440	75.4	32.6	2.4	0.0
1030	162,086	103154	63.6	14.9	0.0	0.0
1031	312,772	109127	34.9	38.6	0.0	0.0
1032	9,641	7763	80.5	78.2	0.0	0.0
1034	2,119	1288	60.8	54.7	0.0	0.0
1035	5,839	393	6.7	4.2	0.0	0.0
1036	100,496	37146	37.0	43.2	0.0	0.0
1037	2,752	2502	90.9	98.8	0.0	0.0
1038	1,999	333	16.7	0.0	0.0	0.0
1039	2,368	1522	64.3	72.2	0.0	0.0
1040	3,298	682	20.7	1.4	0.0	0.0
1041	5,592	1437	25.7	20.1	0.0	0.0
1042	313	14	4.3	0.0	0.0	0.0
1043	4,434	1795	40.5	0.0	0.0	0.0
1044	1,678	137	8.2	93.3	0.0	0.0
1046	1,009	65	6.4	0.0	0.0	0.0
1047	265,409	239983	90.4	60.3	0.0	0.0

1048	13,393	2192	16.4	1.6	0.0	0.0
1049	759,623	23779	3.1	12.0	0.0	0.0
1051	17,924	4922	27.5	6.1	0.0	0.0
1053	16,300	2,587	15.9	28.9	0.0	0.0
1055	148,790	15,924	10.7	7.4	0.0	0.0
1056	24,475	3,570	14.6	20.9	9.1	0.0
1057	127,479	18,251	14.3	20.4	0.6	0.0
1058	11,040	296	2.7	0.0	0.0	0.0
1059	2,650	16	0.6	0.0	0.0	0.0
1061	49,890	14,480	29.0	35.3	0.0	0.0
1062	26,224	6,313	24.1	8.7	0.0	0.0
1063	146,944	127,941	87.1	94.7	0.0	0.0
1065	8,878	641	7.2	60.2	0.0	0.0
1067	17,922	15,648	87.3	11.6	0.0	0.0
1068	293,053	137,171	46.8	7.9	0.0	0.0
1071	1131	853	75.4	35.2	54.7	0.0
1073	21,268	6,164	29.0	52.4	0.0	0.0
1074	5,489	1,306	23.8	65.7	0.0	0.0
1075	405,629	27,253	6.7	20.6	0.2	0.0
1076	11	11	100.0	100.0	0.0	0.0
1077	3,071	1,280	41.7	3.9	0.0	0.0
1078	892	758	85.0	100.0	0.0	0.0
1079	12,002	2,740	22.8	88.5	0.0	0.0
1080	4,562	92	2.0	0.0	0.0	0.0
1081	17	16	94.6	42.8	0.0	0.0
1083	12,705	2,195	17.3	30.0	0.0	0.0
1085	62,528	4,505	7.2	0.9	0.0	0.0
1087	907	298	32.8	22.6	0.0	0.0
1088	479	159	33.2	0.0	0.0	0.0
1091	864	262	30.3	5.0	0.0	0.0
1092	93,999	5,222	5.6	3.7	0.0	0.0
1093	9,924	759	7.6	30.9	0.0	0.0
1094	87,192	4,130	4.7	2.4	0.0	0.0
1095	1,469	282	19.2	0.0	0.0	0.0
1096	427	177	41.5	0.0	0.0	0.0
1098	21,730	3,469	16.0	62.8	0.0	0.0
1099	58,888	55,606	94.4	9.1	0.0	0.0
1100	41,593	40,037	96.3	9.6	4.5	0.0
1101	21,338	20,514	96.1	66.7	26.0	0.0
1102	14,520	14,402	99.2	0.0	6.5	0.0
1103	19,141	19,132	100.0	99.9	0.0	0.0
1104	14,866	14,282	96.1	0.7	0.0	0.0
1105	460	460	100.0	100.0	0.0	0.0
1106	3,189	3,189	100.0	0.4	0.0	0.0
1107	790	790	100.0	0.0	0.0	0.0
1108	10,823	7,208	66.6	78.8	0.0	0.0
1109	41,508	28,942	69.7	89.3	0.0	0.0
1111	981	704	71.8	97.8	0.0	0.0
1112	13,030	10,296	79.0	29.8	70.2	0.0

1113	9,613	5,830	60.6	100.0	0.0	0.0
1114	23,869	17,938	75.2	23.1	40.1	0.0
1115	1,561	1,269	81.3	100.0	0.0	0.0
1116	5,643	4,267	75.6	1.4	98.6	0.0
1121	23,593	23,593	100.0	0.0	0.0	0.0
1125	73,884	73,884	100.0	0.0	0.0	0.0
1126	3,602	3,602	100.0	0.0	0.0	0.0
1127	78,286	78,286	100.0	0.0	0.0	0.0
1128	21,008	21,008	100.0	0.0	0.0	0.0
1130	1,321	1,018	77.0	100.0	0.0	0.0
1131	344	272	78.9	100.0	0.0	0.0
1132	334	269	80.5	0.0	79.0	0.0
1134	46,367	38,543	83.1	24.3	55.3	0.0
1136	68,762	6,048	8.8	13.5	2.7	0.0
1137	1,325	369	27.9	41.2	6.9	0.0
1138	835	523	62.6	6.2	0.0	0.0
1139	18,438	14,131	76.6	19.7	80.3	0.0
1140	929	761	81.9	100.0	0.0	0.0
1141	12,593	6,293	50.0	0.0	0.0	0.0
1142	3,880	1,055	27.2	73.3	0.0	0.0
1143	76,026	4,812	6.3	2.9	0.0	0.0
1144	201,257	140,235	69.7	24.6	75.4	0.0
1147	51,705	2,683	5.2	2.8	0.0	0.0
1148	320,705	271,706	84.7	19.5	0.1	0.0
1149	8,724	580	6.7	39.6	0.0	0.0
1150	6,658	5,244	78.8	57.4	42.6	0.0
1151	2,668	2,099	78.7	22.7	77.3	0.0
1152	8,990	7,303	81.2	22.9	77.1	0.0
1153	1,441	1,096	76.1	73.8	26.2	0.0
1154	45,176	3,306	7.3	7.6	0.0	0.0
1155	8,967	3,300	36.8	0.0	0.0	0.0
1156	1996	197	9.9	0.0	0.0	0.0
1157	1,497	1,220	81.5	0.0	96.8	0.0
1158	120	97	80.3	100.0	0.0	0.0
1162	78,153	78,153	100.0	0.0	0.0	0.0
1164	2,316	23	1.0	0.0	0.0	0.0
1180	3,511	2,624	74.7	79.0	0.0	0.0
1181	23,300	10,551	45.3	0.0	61.0	0.0
1182	28,208	7,908	28.0	0.2	57.2	0.0
1183	10,959	9,643	88.0	0.0	78.7	0.0
1184	76,322	39,423	51.7	7.7	43.5	0.0
1185	18,248	17,114	93.8	0.0	90.5	0.0
1195	400,568	400,568	100.0	0.0	0.0	0.0
1198	20,860	17,458	83.7	0.0	14.3	0.0
1200	184,057	9,316	5.1	13.4	0.0	0.0
1217	68,632	68,632	100.0	0.0	0.0	0.0
1239	2,298,641	2,298,641	100.0	12.9	0.0	0.0
1241	5,977,205	5,977,182	100.0	7.9	0.4	0.0
1271	94,142	93,861	99.7	0.0	0.0	0.1
1294	6,181	6,181	100.0	2.1	0.1	0.0

1322	268,473	268,473	100.0	0.0	0.0	0.0
1325	10,938	10,938	100.0	0.0	0.0	0.0
1413	2,296,506	1,390,609	60.6	14.7	1.1	0.0
1423	31,719	31,685	99.9	2.3	0.0	0.0
1446	191,706	191,706	100.0	0.0	0.0	5.9
1515	256,798	256,798	100.0	20.7	0.0	0.0
1516	152,266	66,206	43.5	41.3	0.0	0.0
1519	3,952	3,756	95.0	0.0	0.0	0.0
1550	2,557	1,727	67.5	23.7	75.5	0.0
1601	140,701	140,701	100.0	0.0	0.0	0.0
1602	107,070	107,070	100.0	0.0	0.0	0.0
1684	63,537	63,537	100.0	0.0	0.0	0.0
1948	81,022	17,315	21.4	15.6	37.8	0.0
1949	132,958	34,012	25.6	24.4	0.0	0.0
1967	30,961	5,693	18.4	6.1	0.0	0.0
2003	59,261	50,939	86.0	8.1	24.1	0.0
2009	57,606	57,135	99.2	0.0	21.2	0.0
2016	434	0	0.0	0.0	0.0	0.0
2041	460,939	460,939	100.0	6.8	0.0	0.0
2047	1,684	1,236	73.3	52.2	0.0	0.0
2048	383,125	176,608	46.1	13.6	0.0	0.0
2051	12,746	9,074	71.2	8.4	70.7	0.0
2081	1,477,161	1,471,859	99.6	4.4	2.7	7.8
2093	11,134	4,459	40.0	47.8	0.0	0.0
2097	56,332	56,332	100.0	19.8	0.0	0.0
2121	141,528	141528	100.0	0.0	0.0	0.0
2151	9,771	9,771	100.0	71.7	0.0	0.0
2175	103,549	103,549	100.0	0.0	0.0	0.0
2245	1,468	1,468	100.0	100.0	0.0	0.0
2675	383,039	383,039	100.0	0.0	0.0	0.0
2685	64,514	64,501	100.0	0.7	0.0	0.0
2736	82,582	82,582	100.0	1.0	0.0	0.0
2901	36,103	36,103	100.0	0.0	0.0	0.0
2902	1,086	1,086	100.0	0.0	0.0	0.0
2903	32,933	32,933	100.0	0.0	0.0	0.0
2904	60,490	54,840	90.7	0.0	0.0	0.0
3003	78,358	51,943	66.3	5.9	36.4	0.0
3041	7,264	1,313	18.1	6.9	0.0	0.0
3048	14,575	4,184	28.7	19.2	0.0	0.0
3432	182,088	182,088	100.0	0.0	0.0	0.0
4048	80,710	53,764	66.6	75.8	0.0	0.0
4621	58,354	58,354	100.0	83.7	0.0	0.0
4623	269,578	269,578	100.0	58.1	0.0	0.0
4641	182,033	182,033	100.0	0.0	0.0	0.0
4801	70,176	10,182	14.5	21.8	0.0	0.0
6048	135,614	20,728	15.3	5.8	19.5	0.0
7001	110,506	110,506	100.0	0.0	0.0	0.0
7048	143,128	118,188	82.6	78.9	0.0	0.0
8001	211,004	211,004	100.0	0.0	0.0	0.0
8002	19,892	19,892	100.0	1.0	0.0	0.0
8003	123,265	123,265	100.0	0.0	0.0	0.0

Appendix 2. Vegetation types in Western Australia

Vegetation Association	Description
1	Tall forest; karri (*Eucalyptus diverscolor*)
2	Tall woodland; tuart (*E. gomphocephala)*
3	Medium forest; jarrah-marri
4	Medium woodland; marri & wandoo
5	Medium woodland; wandoo & powderbark (*E. accedens*)
6	Medium woodland; tuart & jarrah
7	Medium woodland; York gum (*E. loxophleba*) & wandoo
8	Medium woodland; salmon gum & gimlet
9	Medium woodland; coral gum (*E. torquata*) & Goldfields blackbutt (*E. lesouefii*)
10	Medium woodland; red mallee group
11	Medium woodland; coolabah (*E. microtheca*)
12	Medium woodland-tropical; stringybark (*E. tetrodonta*) & woollybutt (*E. miniata)*
13	Medium open woodland; wandoo
14	Low forest; jarrah
16	Low forest; bushy yate (*E. cornuta*) & Bald Island marlock (*E. lehmanni*)
17	Shrublands; *Acacia rostellifera* thicket
18	Low woodland; mulga (*Acacia aneura*)
19	Low woodland; mulga between sand ridges
20	Low woodland; mulga mixed with *Allocasuarina cristata* & *Eucalyptus* sp.
21	Low woodland; waterwood
22	Low woodland; *Agonis flexuosa*
23	Low woodland; jarrah-banksia
24	Low woodland; *Allocasuarina cristata*
25	Low woodland; *Allocasuarina huegeliana* & York gum
27	Low woodland; paperbark (*Melaleuca* sp.)
28	Open low woodland; mulga
29	Sparse low woodland; mulga, discontinuous in scattered groups
31	Shrublands; *Melaleuca thyoides* thicket with scattered York gum
32	Shrublands, pindan; acacia shrubland with scattered low trees over *Plectrachne* sp. & *Triodia* spp.
34	Shrublands; acacia scrub with scattered mulga
35	Shrublands; jam scrub with scattered York gum
36	Shrublands; thicket, acacia-casuarina alliance species
37	Shrublands; tea-tree thicket
38	Shrublands; thicket, mixed
39	Shrublands; mulga scrub
40	Shrublands; acacia scrub, various species
41	Shrublands; tea-tree scrub
42	Shrublands; mallee & acacia scrub on south coastal dunes
43	Low forest; mangroves (Kimberley) or thicket; mangroves (Pilbara)
45	Shrublands; mallee scrub (Great Victoria Desert)
46	Shrublands; mallee scrub
47	Shrublands; tallerack mallee-heath
48	Shrublands; scrub-heath
49	Shrublands; mixed heath
50	Shrublands; dwarf scrub on granite (south coast)

51	Sedgeland; reed swamps, occasionally with heath
52	Grasslands, high grass savanna woodland; bloodwood & stringybark over upland tall grass & curly spinifex
53	Mosaic: Grasslands/pindan; Medium woodland with mixed tree scrub over tall upland grass and plectrachne
59	Grasslands, high grass savanna sparse tree; bauhinia & coolabah over Mitchell, blue & tall upland grasses
60	Grasslands, tall bunch grass savanna woodland, grey box & cabbage gum over ribbon grass
61	Grasslands, tall bunch grass savanna woodland, coolabah over ribbon grass (*Crysopogon* spp.)
64	Grasslands, tall bunch grass savanna low tree; baobabs (*Adansonia gregorii*) , bauhinia & beefwood (*Grevillea striata)* over ribbon grass
65	Grasslands, tall bunch grass savanna, sparse low tree, terminalia; Mitchell grass (Astrebla pectinata & spp)
67	Grasslands, tall bunch grass savanna, sparse low tree; ribbon grass & paperbarks
72	Grasslands, short bunch grass savanna, grass; arid short grasses on dry plains
73	Grasslands, short bunch grass savanna, grass; salt water grassland (*Sporobolus virginicus*)
75	Grasslands, curly spinifex, low tree savanna woodland; gnaingar (*E. phoenicea*) & *Eucalyptus ferrruginea* over *Plectrachne pungens*
77	Grasslands, curly spinifex & short grass low tree savanna; snappy gum over enneapogon & curley spinifex
78	Hummock grasslands, low tree steppe; eucalypts over soft spinifex soft spinifex
80	Hummock grasslands, low tree steppe; desert walnut over soft spinifex between sandridges
81	Hummock grasslands, low tree steppe; snappy gum over soft spinifex
82	Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*
84	Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*Eucalyptus youngiana*) over hard spinifex *Triodia basedowii* between sandhills
85	Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*Eucalyptus youngiana*) over hard spinifex on sandplain
86	Hummock grasslands, open low tree steppe; mulga, *Allocasuarina cristata* & hard spinifex between sand ridges
91	Hummock grasslands, sparse tree steppe; snappy gum over soft spinifex
92	Hummock grasslands, sparse tree steppe; bloodwood over hard spinifex *Triodia basedowii*
93	Hummock grasslands, shrub steppe; kanji over soft spinifex
94	Hummock grasslands, shrub steppe; kanji over soft spinifex between sand ridges
95	Hummock grasslands, shrub steppe; acacia & grevillea over *Triodia basedowii*
96	Hummock grasslands, shrub steppe; Acacia sp. (+grevillea) over *Triodia basedowii* often between sand ridges
97	Hummock grasslands, shrub steppe; acacia species over *Plectrachne melvillei*
98	Hummock grasslands, shrub steppe; kanji over soft spinifex & *T. basedowii*
99	Hummock grasslands, shrub steppe; *Acacia coriacea* & hakea over hard spinifex *Triodia basedowii*
100	Hummock grasslands, shrub steppe; *Acacia delibrata* over soft spinifex
101	Hummock grasslands, shrub steppe; *Acacia pachycarpa* over soft spinifex
102	Hummock grasslands, shrub steppe; *Acacia pachycarpa* over *Triodia basedowii*
103	Hummock grasslands, shrub steppe; snakewood over soft spinifex & *T. wiseana*
104	Hummock grasslands, shrub steppe; *Grevillea refracta* & hakea over soft spinifex soft spinifex
105	Hummock grasslands, shrub steppe; mulga over soft spinifex
106	Hummock grasslands, shrub steppe; hakea over soft spinifex soft spinifex
107	Hummock grasslands, shrub steppe; mulga and *Eucalyptus kingsmillii* over hard spinifex
109	Hummock grasslands, shrub steppe; *Eucalyptus youngiana* over hard spinifex
110	Hummock grasslands, shrub steppe; red mallee over spinifex *Triodia scariosa*
111	Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex
112	Hummock grasslands, shrub steppe; *Acacia ligulata* over *Triodia plurinervata*
116	Hummock grasslands, sparse low tree steppe; mixed low trees over *Triodia wiseana*
117	Hummock grasslands, grass steppe; soft spinifex
118	Hummock grasslands, grass steppe; spinifex Triodia wiseana, *T. basedowii* & *Plectrachne pungens*
120	Succulent steppe with open low woodland; mulga & sheoak
122	Succulent steppe with open low woodland; *Acaia papyrocarpa* over saltbush & bluebush
123	Succulent steppe with open low woodland; sheoak over saltbush & bluebush

125	Bare areas; salt lakes
126	Bare areas; freshwater lakes
127	Bare areas; mudflats
128	Bare areas; rock outcrops
129	Bare areas; drift sand
131	Mosaic: Medium woodland; salmon gum & gimlet / Shrublands; mallee scrub, redwood & black marlock
133	Mixed short grass and spinifex
134	Mosaic: Hummock grasslands, open low tree steppe; desert bloodwood and feathertop spinifex(on) sandhills / Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills
136	Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills
137	Hummock grasslands, low tree steppe; desert walnut over (soft) spinifex/plectrachne on sandplain
138	Mosaic: Hummock grasslands, low tree steppe; eucalypts over feathertop between dunes / Hummock grasslands, patchy shrub steppe; *Acacia pachycarpa* over soft spinifex on lateritic rises
139	Hummock grasslands, patchy shrub steppe; mulga over hard spinifex on laterite
141	Medium woodland; York gum, salmon gum & gimlet
142	Medium woodland; York gum & salmon gum
143	Medium woodland; York gum, salmon gum & *Allocasuarina cristata*
144	Medium woodland; wandoo, salmon gum, morrel, gimlet & rough fruited mallee
145	Mosaic: Medium woodland; York gum & salmon gum / Shrublands; thicket, acacia-casuarina-melaleuca alliance
147	Succulent steppe with scrub; acacia species over saltbush
148	Medium woodland; gimlet
151	Sedgeland; sedges with open low trees; coolabah over various sedges
152	Hummock grasslands, grass steppe; soft & hard spinifex soft spinifex
155	Hummock grasslands, low tree steppe; eucalypts over soft and feathertop spinifex between sandhills
157	Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana*
158	Hummock grasslands, shrub steppe; kanji over *Triodia basedowii*
160	Shrublands; snakewood & *Acacia victoriae* scrub
161	Hummock grasslands, low open tree & shrub steppe; scattered eucalypts, *Acacia pachycarpa* over *Triodia basedowii*
162	Shrublands; snakewood scrub
163	Shrublands; eremophila and cassia dwarf scrub
165	Low woodland; mulga & snakewood (*A. eremaea*)
166	Low woodland; mulga & *Acacia victoriae*
167	Shrublands; Acacia victoriae & snakewood open scrub
168	Shrublands; mulga, *Acacia victoriae* & snakewood scrub
169	Shrublands; mulga & minniritchie scrub
171	Hummock grasslands, low tree steppe; snappy gum over soft spinifex & *T. brizioides*
173	Hummock grasslands, shrub steppe; kanji over soft spinifex & *T. wiseana* on basalt
174	Hummock grasslands, shrub steppe; mixed shrubs over soft spinifex
175	Short bunch grassland - savanna/grass plain (Pilbara)
177	Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* over hard spinifex Triodia brizioides
178	Hummock grasslands, grass steppe; hard spinifex *Triodia basedowii*
179	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & *A. victoriae* over soft spinifex & *T. wiseana*
180	Shrublands; mulga open scrub
181	Shrublands; mulga & snakewood scrub
182	Low woodland; mulga & bowgada (*A. ramulosa*)
183	Low woodland; mulga, *Acacia victoriae* & snakewood
184	Shrublands; mulga & bowgada scrub
185	Sedgeland; sedges with medium woodland; sedges with coolabah over various sedges
186	Shrublands; *Acacia sclerosperma* & *A. victoriae* open scrub

187	Succulent steppe with open scrub; scattered *Acacia victoriae* & snakewood over various species
188	Shrublands; mulga & *Acacia sclerosperma* scrub
190	Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* & *A. trachycarpa* over hard spinifex *Triodia wiseana*, very poor rocky country on gneiss
191	Hummock grasslands, low open tree & shrub steppe; sparse snappy gum, *Acacia pachycarpa* & *A. victoriae* over *T. pungens* & *T. brizioides*
192	Hummock grasslands, shrub steppe; kanji over *Triodia pulchella* & *T. brizioides* on basalt
194	Hummock grasslands, tree steppe; desert oak & hard spinifex between sandhills
196	Hummock grasslands, shrub steppe; kanji over *Triodia wiseana* on hills of dolerite and shale
197	Sedgeland; sedges with scattered medium trees; coolabah over various sedges & forbes
198	Hummock grasslands, low open tree & shrub steppe; sparse snappy gum, *Acacia pachycarpa* & *A. victoriae* over *Triodia brizioides* on chert
199	Hummock grasslands, shrub steppe; mulga over soft spinifex on rises
200	Mosaic: Low woodland over scrub; mulga over bowgada scrub / Shrublands; bowgada & grevillea scrub on sandhills
202	Shrublands; mulga & *Acacia quadrimarginea* scrub
204	Succulent steppe with open scrub; scattered mulga & *Acacia sclerosperma* over saltbush & bluebush
205	Shrublands; *Acacia sclerosperma* & bowgada scrub
206	Shrublands; bowgada & grevillea scrub
207	Hummock grasslands, shrub steppe; red mallee over hard spinifex
208	Mosaic: Shrublands; *Acacia sclerosperma* & bowgada scrub / Shrublands; bowgada & grevillea scrub
209	Shrublands; *Acacia sclerosperma* & minniritchie scrub
214	Mosaic: Medium woodland; Goldfields eucalypts / Succulent steppe with open low woodland; myoporum over saltbush
215	Low woodland; mulga on dolerite
216	Low woodland; mulga (with spinifex) on rises
217	Hummock grasslands, steppe woodland; desert oak (*Allocasuarina decaisneana*) & soft spinifex
218	Hummock grasslands, shrub steppe; corkwood (*Hakea suberea*) & acacia species over soft spinifex
219	Hummock grasslands, grass steppe; soft & hard spinifex & *T. basedowii*
221	Succulent steppe; saltbush
222	Sparse low woodland; mulga & *Acacia victoriae* in scattered groups
223	Succulent steppe with open scrub; scattered mulga over saltbush & bluebush
224	Shrublands; waterwood & *Acacia victoriae* scrub
225	Shrublands; snakewood & minniritchie scrub
226	Mosaic: Shrublands; *Acacia sclerosperma* & bowgada scrub / Succulent steppe; samphire
228	Shrublands; *Acacia quadrimarginea* scrub
229	Mosaic: Shrublands; bowgada and associated spp. scrub / Shrublands; bowgada & grevillea scrub
230	Mosaic: Medium sparse woodland; desert oak between sand dunes / Hummock grasslands, grass steppe; hard spinifex *Triodia basedowii*
233	Shrublands; *Acacia bivenosa*
234	Shrublands; Acacia cyperophylla scrub
236	Hummock grasslands, shrub steppe; mulga and mallee (marble gum) over hard spinifex
239	Hummock grasslands, open meduim tree & mallee steppe; marble gum (*E. gonglocarpa)* & mallee (*Eucalyptus youngiana*) over hard spinifex *Triodia basedowii* between sandhills
240	Succulent steppe with open scrub; scattered *Acacia sclerosperma* & bowgada over saltbush & bluebush
242	Succulent steppe with scrub; snakewood over saltbush
243	Shrublands; bowgada & minniritchie scrub
244	Shrublands; *Acacia sclerosperma* & *A. victoriae* scrub
245	Mosaic: Shrublands; bowgada & minniritchie scrub / Succulent steppe; saltbush & bluebush
246	Hummock grasslands, low tree steppe; *Eucalyptus dongarraensis* & *E. foecunda* over *Triodia plurinervata*
248	Shrublands; bowgada scrub with scattered red mallee & Eucalyptus sp.
251	Low woodland; mulga & *Allocasuarina cristata*

252	Hummock grasslands, shrub steppe; mulga and mallee over soft spinifex
254	Shrublands; *Melaleuca uncinata* thicket with scattered wandoo and powderbark wandoo
255	Shrublands; mallee scrub, *Eucalyptus dongarrensis*
256	Low woodland; York gum, and cypress pine (adjacent to e6pMLi)
260	Mosaic: Shrublands tree-heath between sandhills; *Banksia ashbyi*, *Grevillea gordoniana*, *Acacia* spp., Melaleuca and mallee / Shrublands; scrub-heath
261	Succulent steppe with low woodland; snakewood over saltbush & bluebush
262	Shrublands; acacia & other spp. on Mt Augustus
264	Low woodland; *Acacia victoriae* & snakewood
265	Low woodland; *Acacia sclerosperma* & A. victoriae
266	Mosaic: Shrublands; bowgada scrub / Succulent steppe; saltbush & bluebush
267	Succulent steppe with open scrub; scattered *Acacia sclerosperma* & *A. victoriae* over saltbush & bluebush
268	Succulent steppe with open scrub; scattered *Acacia sclerosperma* over saltbush & bluebush
269	Low woodland over scrub; mulga over bowgada scrub
281	Shrublands; mulga & bowgada open scrub
282	Shrublands; Acacia sclerosperma & *A. victoriae* sparse scrub
283	Shrublands; *Acacia sclerosperma*, bowgada & *A. victoriae* scrub
284	Mosaic: Shrublands; *Acacia sclerosperma* & bowgada scrub / Shrublands; snakewood & *A. victoriae* scrub
285	Mosaic: Shrublands; *Acacia victoriae* & snakewood scrub patches / Scattered groups of succulents
288	Mosaic: Scattered low trees; mulga / Succulent steppe; sparse saltbush & bluebush on greenstone
289	Succulent steppe; saltbush & bluebush
300	Mosaic: Low woodland; mulga / Succulent steppe; saltbush & bluebush
301	Hummock grassland; shrub steppe; mixed scrub, hard spinifex (*Triodia basedowii*) with dwarf shrubs
303	Sparse succulent steppe; bluebush with very sparse snakewood shrubs
304	Sparse low woodland; *Acacia victoriae* & snakewood in scatttered groups
305	Medium woodland over scrub; coolabah over bowgada
306	Low woodland; *Casuarina obesa* (salt lake)
307	Low woodland; bowgada & *Acacia subtressarogona*
308	Mosaic: Shrublands; *Acacia sclerosperma* sparse scrub / Succulent steppe; saltbush & bluebush
311	Succulent steppe with open low woodland; mulga & *Acacia sclerosperma* with saltbush & bluebush
312	Succulent steppe with very open shrubs; very sparse mulga and *Acacia sclerosperma* over saltbush & bluebush
313	Succulent steppe with open scrub; scattered *Acacia sclerosperma* & *A. victoriae* over bluebush
314	Succulent steppe with open woodland; York gum over saltbush
320	Shrublands; bowgada & *Acacia victoriae* scrub
321	Mosaic: Shrublands; *Acacia sclerosperma* & bowgada scrub / Succulent steppe; saltbush & bluebush
323	Shrublands; *Acacia sclerosperma*, bowgada & snakewood scrub
325	Succulent steppe; saltbush & samphire
326	Low woodland over scrub; mulga over bowgada & minniritchie scrub
327	Shrublands; mulga, bowgada, *Acacia quadrimarginea* & minniritchie scrub
328	Succulent steppe with scrub; waterwood & Acacia sclerosperma over saltbush & samphire
329	Shrublands; dwarf waterwood (*Acacia coriacea*) shrubs on recent dunes
337	Mosaic: Shrublands; bowgada scrub / Hummock grasslands, mixed sandplain - open red mallee & mixed sparse dwarf shrubs over *Triodia basedowii*
338	Hummock grasslands, mixed sandplain; bowgada, sugarbrother, mallee, *Triodia basedowii*
339	Hummock grasslands, mixed sandplain; bowgada, sugarbrother, mallee, *Triodia scariosa*
340	Succulent steppe with scrub; bowgada scrub over various species
341	Low woodland over scrub; mulga over *Acacia sclerosperma* bowgada, *A. victoriae* & minniritchie (*A. grasbyi)*
342	Mosaic: Low woodland; waterwood / Shrublands; *Acacia sclerosperma* & bowgada
344	Mosaic: Shrublands; bowgada scrub and associated spp / Shrublands; *Acacia sclerosperma*, bowgada & *A. victoriae* scrub

345	Mosaic: Shrublands; *Acacia sclerosperma* & *A. victoriae* patchy scrub, barren / Succulent steppe; saltbush & bluebush
346	Mosaic: Shrublands; *Acacia sclerosperma*, *A. victoriae* & snakewood scrub / Shrublands; patches of low mixed scrub
347	Mosaic: Shrublands; *Acacia sclerosperma*, *A. victoriae* & snakewood scrub patches / Succulent steppe; bluebush
349	Mosaic: Shrublands; bowgada scrub with scattered mulga / Shrublands; bowgada & grevillea scrub
351	Shrublands; mallee & acacia scrub with scattered York gum & red mallee
352	Medium woodland; York gum
353	Shrublands; mallee & acacia scrub with scattered York gum
354	Shrublands; jam and *Acacia rostellifera* (+hakea) scrub with scattered York gum
355	Shrublands; bowgada & jam scrub with scattered York gum & red mallee
356	Succulent steppe with open woodland; eucalypts over saltbush
357	Medium woodland over scrub; York gum over bowgada & jam (*Acacia acuminata*)
358	Shrublands; bowgada & *Acacia quadrimarginea* on stony ridges
359	Shrublands; acacia & banksia scrub
360	Shrublands; bowgada scrub with scattered mulga
361	Shrublands; bowgada & minniritchie scrub with scattered mulga
362	Mosaic: Shrublands; bowgada & minniritchie scrub with scattered mulga / Scattered groups of saltbush/bluebush
363	Shrublands; bowgada scrub with scattered cypress pine
364	Shrublands; bowgada scrub with scattered eucalypts & cypress pine
365	Shrublands; bowgada & jam scrub with scattered York gum & red mallee
368	Shrublands tree-heath between sandhills; *Banksia ashbyi*, *Grevillea gordoniana*, *Acacia* spp., Melaleuca and mallee
371	Low forest; *Acacia rostellifera*
372	Mosaic: Shrublands; scrub-heath on deep sandy flats /Shrublands; thicket, acacia-casuarina alliance
374	Shrublands; bowgada scrub with scattered York gum
377	Mosaic: Shrublands; scrub-heath on limestone in the northern Swan Region / Sparse low woodland; illyarrie
378	Shrublands; scrub-heath with scattered *Banksia* spp., *E. todtiana* & *Xylomelum angustifolium* on deep sandy flats in the Geraldton Sandplain Region
379	Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region
380	Shrublands; scrub-heath on sandplain
383	Shrublands; *Acacia rostellifera* scrub-heath
384	Shrublands; mallee & acacia thicket on coastal dunes (central west)
385	Shrublands; bowgada & jam scrub with scattered York gum
386	Low woodland; York gum
387	Shrublands; Melaleuca cardiophylla thicket
389	Succulent steppe with open low woodland; mulga over saltbush
391	Shrublands; *Melaleuca* uncinata thicket
392	Shrublands; *Melaleuca thyioides* thicket
393	Shrublands; *Melaleuca thyoides* thicket with scattered *Casuarina obesa*
395	Hummock grasslands, mixed sandplain; bowgada, mallee, heath and spinifex
400	Succulent steppe with open low woodland; mulga over bluebush
401	Mosaic: Shrublands; scrub-heath on coastal association on yellow sandplain / Shrublands; acacia patchy scrub
402	Shrublands; heath on coastal limestone
403	Shrublands; *Acacia ligulata* scrub-heath
404	Shrublands; bowgada & *Acacia murrayana* scrub
405	Shrublands; *Acacia sclerosperma*, bowgada & jam scrub
406	Shrublands; acacia, casuarina, *Eucalyptus eudesmioides*, *Banksia ashbyi* & other mixed species thicket
407	Low woodland over scrub; Allocasuarina huegeliana over jam scrub
408	Shrublands; scrub-heath on coastal association, yellow sandplain

411	Succulent steppe with open scrub; scattered bowgada & jam over saltbush
412	Succulent steppe with scrub; tea-tree (*Melaleuca thyioides*) over samphire
413	Shrublands; *Acacia neurophylla* thicket
414	Succulent steppe with open scrub; scattered bowgada & jam over saltbush & bluebush
415	Succulent steppe with open scrub; scattered mulga & other wattle(s) over saltbush & bluebush
416	Low woodland; mulga mixed with cypress pine & York gum
417	Succulent steppe with open scrub; scattered wattles over saltbush
418	Low woodland; mulga, *Casuarina cristata* & cypress pine
419	Shrublands; bowgada, jam and *Melaleuca uncinata* thicket
420	Shrublands; bowgada & jam scrub
423	Shrublands; Acacia scrub-heath unknown
424	Shrublands; York gum mallee scrub
427	Shrublands; jam scrub with scattered *Allocasuarina huegeliana* & York gum
431	Shrublands; *Acacia rostellifera* open scrub
432	Shrublands; *Acacia rostellifera* & *Melaleuca cardiophylla* thicket
433	Mosaic: Shrublands; *Acacia rostellifera* & *Melaleuca cardiophylla* thicket / Sparse low woodland; illyarrie
434	Shrublands; *Acacia quadrimarginea* & jam scrub with scattered York gum & *Allocasuarina huegeliana*
435	Shrublands; *Acacia neurophylla, A. beauverdiana* & *A. resinomarginea* thicket
436	Shrublands; mixed Acacia thickets in thickets of acacia, casuarina & melaleuca alliance
437	Shrubalnds; Mixed acacia thicket on sandplain
438	Shrublands; dodonaea scrub
440	Shrublands; *Acacia ligulata* open scrub
441	Succulent steppe with open low woodland; mulga & sheoak over bluebush
442	Low open woodland; mulga & *Allocasuarina cristata*
444	Hummock grasslands, open low tree steppe; mulga over *Triodia scariosa*
448	Succulent steppe; bluebush (in dongas)
449	Succulent steppe; bluebush with grassy depressions
460	Succulent steppe; bluebush with saltbush in depressions
461	Succulent steppe with open low woodland; *Acacia papyrocarpa* over bluebush
467	Mosaic: Medium woodland; salmon gum & gimlet / Hummock grasslands, mallee steppe; red mallee over spinifex *Triodia scariosa*
468	Medium woodland; salmon gum & Goldfields blackbutt
479	Shrublands; mallee-heath (Nuytsland)
480	Succulent steppe with open low woodland; mulga & sheoak over salt bush
481	Mosaic: Medium woodland; salmon gum & red mallee / Hummock grasslands, mallee steppe; red mallee over spinifex *Triodia scariosa*
482	Medium woodland; merrit & red mallee
483	Hummock grasslands, mixed sandplain - open mallee over sparse dwarf shrubs with spinifex; red mallee mallee & mixed sparse dwarf shrubs over *Triodia basedowii*
484	Shrublands; jam thicket
485	Hummock grassland, mixed sandplain - scattered low trees over sparse dwarf shrubs with spinifex; red mallee over mixed dwarf shrubs with *Triodia basedowii*
486	Mosaic: Medium woodland; salmon gum & red mallee / Shrublands; mallee scrub *Eucalyptus eremophila*
487	Medium woodland; redwood & red mallee (*E. oleosa*)
488	Mosaic: Medium woodland; gimlet / Shrublands; mallee scrub *Eucalyptus eremophila*
489	Mosaic: Medium woodland; Goldfields & Dundas blackbutt / Shrublands; dodonaea scrub
491	Medium woodland; morrel & Dundas blackbutt (*E. dundasii*)
493	Medium woodland; salmon gum mixed with merrit & red mallee
494	Medium woodland; salmon gum mixed with merrit & desert bloodwood (*Eucalyptus* sp.)
495	Shrublands; thicket, Jam & *Allocasuarina acutivalvis* on ironstone
500	Mosaic: Medium woodland; merrit & red mallee / Shrublands; dodonaea scrub

501	Medium woodland; Goldfields blackbutt
502	Medium woodland; Goldfields blackbutt & red mallee
504	Low woodland; mulga & red mallee
505	Low woodland; *Allocasuarina cristata* & eucalypts
506	Succulent steppe with woodland; salmon gum & bluebush
507	Succulent steppe with woodland; salmon gum & saltbush
508	Succulent steppe with open scrub; scattered mulga over saltbush
509	Succulent steppe with woodland; gimlet & saltbush
510	Shrublands; Mt Ragged heath
511	Medium woodland; salmon gum & morrel
512	Shrublands; mallee scrub, *Eucalyptus eremophila* & Forrest's marlock (*E. forrestiana*)
513	Mosaic: Medium woodland; salmon gum & Dundas blackbutt / Shrublands; mallee scrub *Eucalyptus eremophila*
514	Shrublands; mallee scrub, white mallee (*Eucalyptus cooperiana*)
515	Shrublands; mallee scrub, blue mallee (*Eucalyptus socialis*)
516	Shrublands; mallee scrub, black marlock
518	Mosaic: Medium woodland; merrit & coral gum / Shrublands; mallee scrub *Eucalyptus eremophila*
519	Shrublands; mallee scrub, *Eucalyptus eremophila*
520	Shrublands; *Acacia quadrimarginea* thicket
521	Medium woodland; salmon gum & red mallee
522	Medium woodland; redwood (*E. transcontinentalis*) & merrit (*E. floctoniae*)
524	Medium woodland; Dundas blackbutt & red mallee
525	Mosaic: Medium woodland; salmon gum & gimlet / merrit & red mallee
529	Succulent steppe with open low woodland; mulga & sheoak over bluebush
532	Hummock grassland, mixed sandplain - sparse low trees over sparse dwarf shrubs with spinifex; marble gum & red mallee mixed dwarf shrubs with *Triodia scariosa*
533	Low woodland; mulga & cypress pine
535	Medium woodland; rough fruited mallee on greenstone hills
536	Medium woodland; morrel & rough fruited mallee (*E. corrugata*)
537	Medium woodland; morrel (*E. longicornis*)
538	Shrublands; *Acacia brachystachya* scrub
540	Succulent steppe with open low woodland; sheoak over saltbush
542	Shrublands; mallee scrub marble gum (*Eucalypus gonglocarpa*)
545	Hummock grasslands, sparse low tree-steppe; mulga over *Triodia basedowii*
546	Succulent steppe with low woodland; mulga over samphire
547	Mosiac: Low woodland; mulga & bowgada / Succulent steppe; samphire
551	Shrublands; *Allocasuarina campestris* thicket
552	Shrublands; *Casuarina acutivalvus* & calothamnus (also melaleuca) thicket on greenstone hills
554	Low woodland over scrub; *Allocasuarina cristata* over bowgada scrub
555	Hummock grasslands, mallee steppe; red mallee over spinifex *Triodia scariosa*
560	Mosaic: Shrublands; bowgada scrub / Succulent steppe; samphire
561	Succulent steppe with low woodland; mulga over saltbush
562	Mosaic: Low woodland; mulga in valleys / Hummock grasslands, open low tree-steppe; snappy gum over *T. wiseana*
563	Shrublands; acacia scrub (Acacia sp. unknown various locations)
565	Hummock grasslands, low tree steppe; bloodwood over soft spinifex
567	Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *T. basedowii*
568	Hummock grasslands, shrub steppe; mulga & snakewood over *Triodia wiseana*
569	Hummock grasslands, low tree steppe; bloodwood over soft spinifex & *T. wiseana*
580	Mosaic: Shrublands; eremophila and cassia dwarf scrub / Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana*

583	Hummock grasslands, sparse shrub steppe; kanji & *Acacia bivenosa* over hard spinifex *Triodia basedowii* & *T. wiseana*
584	Open low woodland; Eucalyptus sp. aff. aspera
585	Mosiac: Shrublands; snakewood & *Acacia victoriae* scrub / Hummock grasslands, shrub-steppe; kanji over soft spinifex & *T. basedowii*
587	Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* / Hummock grasslands, shrub-steppe; kanji over *T. pungens*
588	Shrublands; *Acacia victoriae* scrub
589	Mosaic: Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex soft spinifex
600	Sedgeland; sedges with open low tree sananna; Eucalyptus sp. aff aspera over various sedges
601	Mosaic: Sedgeland; various sedges with very sparse snakewood / Hummock grasslands, shrub-steppe; kanji over soft spinifex
603	Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* over hard spinifex
604	Hummock grasslands, shrub steppe; kanji & snakewood over soft spinifex
605	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & waterwood over soft spinifex
606	Hummock grasslands, shrub steppe; *Acacia victoriae* & snakewood over soft spinifex
607	Hummock grasslands, low tree steppe; snappy gum & bloodwood over soft spinifex & *T. wiseana*
608	Mosaic: Shrublands; *Acacia victoriae* & snakewood scrub patches / Short bunch grassland - savanna /grass plain (Pilbara)
609	Mosaic: Hummock grasslands, open low tree steppe; bloodwood with sparse kanji shrubs over soft spinifex / Hummock grasslands, open low tree steppe; snappy gum over *Triodia wiseana* lateritic crust
612	Low woodland; *Eucalyptus* sp. aff. aspera
619	Medium woodland; river gum (*E. camaldulensis*)
620	Hummock grasslands, shrub steppe; snakewood over soft spinifex
624	Hummock grasslands, shrub steppe; mulga over soft spinifex & *T. basedowii*
625	Shrublands; mulga & minniritchie sparse groups
626	Hummock grasslands, shrub-steppe; kanji over soft spinifex & *T. brizioides*
629	Mosaic: Short bunch grassland-savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana*
631	Succulent steppe with woodland and thicket; York gum over *Melaleuca thyoides* & samphire
640	Sedgeland; sedges with scattered medium trees; coolabah & river gum over sedges
641	Medium woodland; coolabah & river gum
644	Hummock grasslands, open low tree steppe; mulga & snakewood over soft spinifex & *T. basedowii*
645	Hummock grasslands, shrub steppe; kanji & snakewood over soft spinifex & *T. wiseana*
646	Hummock grasslands, shrub steppe; snakewood over *Triodia basedowii*
647	Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex
649	Sedgeland; Various sedges with very sparse snakewood
658	Shrublands; *Acacia sclerosperma* & snakewood scrub (also with some waterwood)
662	Hummock grassland; shrub steppe; mixed acacia scrub & dwarf scrub with soft spinifex & *T. basedowii*
663	Hummock grasslands, shrub steppe; waterwood over soft spinifex
664	Hummock grasslands, sparse tree-steppe; scattered bloodwood over soft spinifex & T. sp. indet. aff. angusta
667	Hummock grasslands, shrub-steppe; scattered shrubs over *Triodia wiseana* & T. sp. indet. aff. angusta
670	Hummock grasslands, shrub steppe; scattered shrubs over *Triodia basedowii*
674	Hummock grasslands, shrub steppe; bowgada & snakewood over *Triodia basedowii*
675	Shrublands; mixed thicket (melaleuca & hakea)
676	Succulent steppe; samphire
678	Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* over hard spinifex
680	Hummock grasslands, shrub steppe; *Acacia bivenosa* over *Triodia basedowii*
681	Shrublands; open dwarf scrub, waterwood (*Acacia coriacea)* on recent dunes
683	Succulent steppe with open scrub; scattered *Acacia sclerosperma* & snakewood over samphire
684	Mosaic: Shrublands; jam scrub with scattered York gum in the valleys *Allocasuarina campestris* thicket

686	Medium woodland; York gum & red mallee
687	Shrublands; bowgada & jam scrub with scattered *Allocasuarina huegeliana* & York gum
691	Shrublands; *Dryandra quercifolia* & *Eucalyptus* spp. thicket
692	Shrublands; casuarina & melaleuca thicket
693	Mosaic: Low woodland: *Allocasuarina huegeliana* over mallee and acacia scrub / *Allocasuarina campestris* thicket
694	Shrublands; scrub-heath on yellow sandplain banksia-xylomelum alliance in the Geraldton Sandplain & Avon-Wheatbelt Regions
695	Shrublands; *Allocasuarina campestris* scrub
696	Shrublands; casuarina & dryandra thicket with wandoo and powderbark wandoo
697	Shrublands; scrub-heath on lateritic sandplain in the southern Geraldton Sandplain
698	Mosaic: Shrublands; scrub-heath Dryandra-Calothamnus assoc. with *B. prionotes* on limestone in northern Swan Region/Sparse low woodland; wandoo & powderbark wandoo
699	Shrublands, pindan; *Acacia eripoda* shrubland with scattered low bloodwood (*E. dicromophloia*) & *E. setosa* over soft & curly spinifex on sandplain
700	Shrublands, pindan; *Acacia eripoda* shrubland with scattered low bloodwood & *Eucalyptus setosa* over soft & curly spinifex between dunes
701	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & grevillea over soft spinifex & *T. intermedia* on sandy plateau
702	Hummock grasslands, grass steppe; hard spinifex *Triodia intermedia*
703	Hummock grasslands, low tree steppe; snappy gum over *Triodia intermedia*
704	Grasslands, short bunch grass savanna low tree & sparse shrubs; bauhinia & *Acacia eriopoda* & *A. impressa* over *Aristida brownii* short grasses on river flats
705	Hummock grasslands, sparse tree steppe; snappy gum & bloodwood (*E. dichromophloia*) & *Eucalyptus setosa* over spinifex & *T. intermedia*
706	Grasslands, tall bunch grass savanna, Mitchell & ribbon/blue grass
707	Grasslands, tall bunch grass savanna sparse low tree; bauhinia & coolabah over ribbon/blue grass on black soil
709	Hummock grasslands, shrub steppe; *Acacia impressa* over *Triodia intermedia* on stony laterite
710	Mosaic: Grasslands, tall bunch grass savanna low tree; baobabs, bauhinia & beefwood over ribbon grass / Hummock grasslands, grass steppe *Trioda pungens* & *Plectrachne pungens*
712	Mosaic: Shrublands, pindan; *Acacia eriopoda* shrubland with scattered low bloodwood & *Eucalyptus setosa* over soft & curly spinifex / Grasslands, tall bunch grass savanna low tree; baobabs, bauhinia & beefwood over ribbon grass
713	Mosaic: Hummock grasslands, open low tree steppe; bloodwood (*Eucalyptus dichromophloia*) over soft spinifex soft spinifex / Hummock grasslands, open low tree steppe; desert walnut over soft spinifex between sand ridges
716	Mosaic: Grasslands, tall bunch grass savanna low tree; baobabs, bauhinia & beefwood over ribbon grass / Hummock grasslands, open low tree-steppe; snappy gum over soft spinifex & *T. intermedia*
717	Low forest; mixed tropical deciduous forest
718	Grasslands, tall bunch grass savanna woodland, coolabah & ghost gum over ribbon grass
720	Grasslands, tall bunch grass savanna, Mitchell & Mitchell/blue grass
721	Hummock grasslands, sparse tree steppe; eucalypt & bauhinia over hard spinifex *Triodia intermedia*
722	Shrublands, pindan; *Acacia pachycarpa* & *A. eriopoda* shrubland with sparse low bauhinia (*Lysiphyllum cunninghamii*) & bloodwood over ribbon & curly spinifex
724	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & *A. impressa* over *Triodia intermedia*
725	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & *A. tumida* over soft spinifex
726	Grasslands, tall bunch grass savanna low tree; baobabs, bauhinia & beefwood over Mitchell & ribbon/blue grass on black soil
727	Hummock grasslands, low open tree & shrub steppe; bloodwood, kanji (*A. pyrifolia*) over soft spinifex
728	Grasslands, short bunch grass savanna low tree & acacia thicket; bauhinia & Acacia sp. & *A. impressa* over aristida short grasses on river flats
729	Hummock grasslands, low tree steppe; bauhinia & *Grevillea striata* over soft spinifex
730	Shrublands, pindan; *Acacia pachycarpa* & *A. eriopoda* shrubland with sparse low bauhinia & grevillea over soft spinifex & *T. intermedia*
731	Hummock grasslands, low tree steppe; snappy gum over soft spinifex & *T. intermedia*
733	Hummock grasslands, shrub steppe; silver-leaved box over soft spinifex

735	Hummock grasslands, sparse meduim tree steppe; *Adansonia gregorii* over open *T. wiseana* on limestone
736	Mosaic: Grasslands, curly spinifex, low tree savanna; snappy gum & *Eucalyptus perfoliata* over *Plectrachne pungens* / Grasslands; sparse low tree savanna; *Adansonia gregorii* over *Plectrachne bynoei*
737	Shrublands, pindan; *Acacia tumida* shrubland with scattered low bloodwood & *Eucalyptus setosa* over curly spinifex
738	Grasslands, curly spinifex, low tree savanna; snappy gum & bloodwood (*Eucalyptus dichromophloia*) over curly spinifex
739	Grasslands, high grass savanna woodland; grey box *Eucalyptus tectrifica* & cabbage gum over white grass (*Sehima nervosum)*
740	Grasslands, curly spinifex, tree savanna woodland; snappy gum & bloodwood over curly spinifex on limestone plateau
741	Grasslands, tall bunch grass savanna woodland, grey box & cabbage gum over ribbon & blue grass
742	Medium woodland; river gum & terminalia
743	Grasslands, tall bunch grass savanna sparse low tree; *Acacia suberosa* & bauhinia over ribbon/blue grass on black soil
744	Grasslands, tall bunch grass savanna sparse low tree; *Acacia suberosa* & bauhinia over Mitchell & ribbon/blue grass on black soil
745	Shrublands, pindan; acacia shrubland with scattered low trees over spinifex
746	Hummock grasslands, low tree steppe; bloodwood over *Triodia wiseana*
748	Shrublands; *Melaleuca thyoides* thicket with scattered river gum
750	Shrublands, pindan; *Acacia tumida* shrubland with grey box & cabbage gum medium woodland over ribbon grass & curly spinifex
751	Shrublands, pindan; *Acacia eriopoda* & *A. tumida* shrubland with scattered low *Eucalyptus confertifolia* over curly spinifex
752	Hummock grasslands, shrub steppe; *Acacia tumida* over *Triodia intermedia*
754	Shrublands, pindan; *Acacia tumida* shrubland with woollybutt (*Eucalyptus miniata*) & cabbage gum (*E. grandiflora*) medium woodland over ribbon grass & curly spinifex (*Plectrachne pungens*)
755	Shrublands, pindan; *Acacia tumida* & *A. oimpressa* shrubland with scattered low bloodwood & *Eucalyptus setosa* over ribbon & curly spinifex
756	Medium woodland; river gum & terminalia mixed with coolabah & ghost gum (*E. papuana*)
757	Shrublands, pindan; *Acacia tumida* & *A. oimpressa* shrubland with scattered low bloodwood & *Eucalyptus setosa* over ribbon & curly spinifex
759	Grasslands, tall bunch grass savanna woodland, coolabah over ribbon/blue grass (*Botriochloa* spp.)
760	Shrublands, pindan; *Acacia tumida* shrubland with scattered low bloodwood & *Eucalyptus setosa* over ribbon & curly spinifex
761	Hummock grasslands, shrub steppe; *Acacia eriopoda* & *A. tumida* over *Triodia pulchella* & *T. intermedia* sandplain
762	Hummock grasslands, shrub steppe; *Acacia eriopoda* over soft spinifex
764	Shrublands, pindan; *Acacia eriopoda* & *A. tumida* shrubland with scattered low bloodwood & *Eucalyptus setosa* over ribbon & curly spinifex
765	Pindan; *A. eriopoda* & *A. tumida* shrubland with scattered low bloodwood (*E. dichromophloia*) & *E. setosa* over ribbon & curly spinifex (*T. bitextura*) between sandhills
767	Hummock grasslands, shrub steppe; *Grevillea refracta* over soft spinifex soft spinifex
770	Shrublands; Wattle thicket near Broome
771	Shrublands, pindan; *Acacia tumida* shrubland with ghost gum (*Eucalyptus papuana*) & *E. setosa* medium woodland over curly spinifex
772	Shrublands; *Acacia lasiocarpa* & *Melaleuca acerosa* heath
773	Grasslands, high grass savanna low tree; bloodwood (*Eucalyptus dichromophloia*) & grey box over white grass &/or upland tall grass
774	Grasslands, tall bunch grass savanna sparse low tree; *Acacia suberosa* over Mitchell grass on black soil
800	Grasslands, high grass savanna woodland; stringybark & woollybutt over upland tall grass & curly spinifex
802	Grasslands, high grass savanna woodland; grey box & cabbage gum over mixed/white grass on basalt and dolerite
804	Grasslands, tall bunch grass savanna low tree; bloodwood (*Eucalyptus dichromophloia*) & cabbage gum over ribbon grass
805	Grasslands, curly spinifex, tree savanna woodland; snappy gum & bloodwood over curly spinifex on limestone plateau

806	Hummock grasslands, low tree steppe; snappy gum & Mt House box over soft spinifex on shale plains
807	Grasslands, tall bunch grass savanna sparse low tree; acacia over grass on black soil
808	Grasslands, curly spinifex, low tree savanna; snappy gum over curly spinifex
809	Grasslands, tall bunch grass savanna woodland, bloodwood (*E. polycarpa*) over aristida grass (*Aristida browniana*), riverine
810	Grasslands, high grass savanna woodland; ghost gum & *Eucalyptus foelscheana* over upland tall grass (Sorghum spp.) & curly spinifex on basalt
811	Grasslands, high grass savanna low tree; Mt House box & bloodwood (*Eucalyptus terminalis*) over white grass on rolling basalt country
812	Grasslands, high grass savanna woodland; bloodwood & woollybutt over upland tall grass & curly spinifex
813	Grasslands, high grass savanna sparse tree; bauhinia & coolabah over blue & tall upland grasses on black soil plain
814	Hummock grasslands, low steppe woodland; silver-leaved box (*E. prunosa*) & melaleuca over plectrachne
815	Grasslands, tall bunch grass savanna, sparse low tree, terminalia; Mitchell & blue grass on basalt
816	Grasslands, short bunch grass savanna, low tree, Mt House box (*E. argilliacea*) & bloodwood over arid short grass (*Enneapogon* spp.)
817	Grasslands, high grass savanna low tree; terminalia (Terminalia spp) over upland tall grass & blue grass
818	Hummock grasslands, low tree steppe; snappy gum over *Triodia inutilis*
819	Grasslands, tall bunch grass savanna low tree; cabbage gum & silver-leaved box over aristida & ribbon grass on sandy plains
820	Grasslands, high grass savanna sparse low tree; snappy gum (*E. brevifolia*) over upland tall grass & curly spinifex on granite
825	Grasslands, high grass savanna woodland; cabbage gum & *Eucalyptus foelscheana* over upland tall grass & curly spinifex on basalt
826	Hummock grasslands, low tree steppe; snappy gum over curly spinifex
827	Hummock grasslands, low tree steppe; terminalia over *Triodia wiseana* on limestone
829	Mosaic: Grasslands, short bunch grass savanna, low tree, Mt House box & bloodwood over enneapogon arid short grass / Grasslands; high grass savanna, white grass
830	Mosaic: Grasslands, short bunch grass savanna, low tree, Mt House box & bloodwood over enneapogon short grass / Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* / Grasslands; high grass savanna, white grass
831	Hummock grasslands, sparse tree steppe; snappy gum over hard spinifex *Triodia intermedia* & *T. inutilis*
833	Grasslands, short bunch grass savanna sparse low tree; scattered snappy gum over arid short grass on plains
834	Grasslands, tall bunch grass savanna, Mitchell & blue grass
835	Grasslands, high grass savanna woodland; grey box & *Eucalyptus foelscheana* over spinifex & white grass
837	Grasslands, short bunch grass savanna low tree; snappy gum over arid short grass on plains
838	Grasslands, high grass savanna woodland; ghost gum & bloodwood (*Eucalyptus polycarpa*) over spinifex & tall upland grass
839	Grasslands, high grass savanna low tree; Mt House box & bloodwood (*E. terminalis*) over upland tall grass
840	Grasslands, tall bunch grass savanna, ribbon/blue grass
842	Mosaic: Grasslands, short bunch grass savanna, low tree, Mt House box & bloodwood over enneapogon short grass / Hummock grasslands, open low tree-steppe; snappy gum over *T. wiseana* & *T. intermedia*
843	Hummock grasslands, grass steppe; curley spinifex *Plectrachne pungens* on shale
844	Grasslands, high grass savanna low tree; melaleuca over upland tall grass
846	Hummock grasslands, sparse tree steppe; snappy gum over hard spinifex *Triodia pungens* & *T. intermedia*
847	Hummock grasslands, sparse tree steppe; snappy gum & bloodwood (*Eucalyptus terminalis*) over soft spinifex soft spinifex
848	Hummock grasslands, low tree steppe; eucalypts over curly spinifex on laterite sand plains
849	Hummock grasslands, low tree steppe; snappy gum & bloodwood over soft spinifex
850	Grasslands, tall bunch grass savanna, Mitchell & blue grass
851	Hummock grasslands, sparse tree steppe; snappy gum & bloodwood (E. terminalis) over hard spinifex *Triodia wiseana* & *T. intermedia* on basalt and dolerite
852	Grasslands, short bunch grass savanna low tree; snappy gum & bloodwood (*Eucalyptus terminalis*) over arid short grass on plains
854	Grasslands, tall bunch grass savanna low tree; baobabs, bauhinia & beefwood over ribbon & blue grass

855	Grasslands, tall bunch grass savanna low tree; mixed low trees over Mitchell & ribbon/blue grass on black soil
856	Grasslands, tall bunch grass savanna low tree; mixed low trees over ribbon/blue grass on black soil
858	Mosaic: Grasslands, curly spinifex, low tree savanna woodland; gnainger & Eucalyptus ferrruginea over *Plectrachne pungens* / Grasslands, curly spinifex, low tree savanna woodland; snappy gum over curly spinifex on sandstone
861	Grasslands, tall bunch grass savanna low tree; grey box & bloodwood (*Eucalyptus terminalis*) over aristida & ribbon grass on sandy plain
862	Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*E. kinsmillii*) over hard spinifex *Triodia basedowii*
863	Hummock grassland, mixed sandplain - sparse low trees over sparse dwarf shrubs with spinifex; red mallee over mixed dwarf shrubs with Triodia scariosa
864	Grasslands, tall bunch grass savanna low tree; bloodwood (*Eucalyptus dichromophloia*) over ribbon grass
865	Hummock grassland, mixed sandplain - scattered low trees over sparse dwarf shrubs with spinifex; red mallee over mixed dwarf shrubs with *Triodia scariosa*
866	Grasslands, tall bunch grass savanna sparse low tree; bauhinia & coolabah over ribbon grass on black soil
867	Grasslands, high grass savanna low woodland; grey box & cabbage gum over white grass &/or upland tall grass
868	Grasslands, curly spinifex & short grass low tree savanna; snappy gum & bloodwood (*Eucalyptus dichromophloia)* over enneapogon & curly spinifex on granite
869	Grasslands, tall bunch grass savanna low tree; bauhinia & coolabah over ribbon grass on black soil
870	Grasslands, tall bunch grass savanna low tree; snappy gum over ribbon grass
871	Mosaic: Grasslands, curly spinifex, low tree savanna; snappy gum over curly spinifex/ Hummock grasslands, grass steppe; hard spinifex *Triodia intermedia*
872	Hummock grasslands, sparse tree steppe; snappy gum over hard spinifex *Triodia wiseana* & *T. intermedia* on basalt and dolerite
873	Mosaic: Grasslands, short bunch grass savanna low tree; snappy gum over enneapogon short grass on plains / Hummock grasslands, grass steppe; soft & hard spinifex soft spinifex & *T. intermedia*
875	Mosaic: Hummock grasslands, open low tree steppe; snappy gum over soft spinifex/ Hummock grasslands, grass steppe; hard spinifex *Triodia intermedia* on laterite
876	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & *A. tumida* over *Triodia pulchella* & *T. intermedia* sandplain
877	Grasslands, tall bunch grass savanna low tree; snappy gum & bloodwood (*E. dichromophloia*) over ribbon grass
878	Hummock grasslands, sparse tree steppe; snappy gum & bloodwood (*Eucalyptus dichromophloia*) over soft spinifex & *T. intermedia*
879	Grasslands, short bunch grass savanna low tree; bauhinia over Aristida pruinosa short grasses on plains
881	Grasslands, curly spinifex, low tree savanna; bauhinia over *Plectrachne* sp.
882	Hummock grasslands, sparse tree steppe; snappy gum over hard spinifex *Triodia intermedia*
883	Grasslands, curly spinifex, low tree savanna; bloodwood (*Eucalyptus dichromophloia*) over curly spinifex
884	Grasslands, tall bunch grass savanna low tree; cabbage gum & bloodwood (*Eucalyptus polycarpa*) over ribbon & blue grass on sandy plains
887	Grasslands, high grass savanna woodland; grey box & cabbage gum over mixed/white grass
888	Grasslands, tall bunch grass savanna low woodland, grey box & cabbage gum over ribbon grass
894	Sedgeland; sedges with low tree savanna woodland; coolabah & grey box over spinifex
895	Hummock grasslands, shrub steppe; mixed acacia over soft spinifex (Tanami)
897	Spinifex, Mitchell grass & kangaroo grass
899	Mosaic: Grasslands, short bunch grass savanna low tree; snappy gum over enneapogon short grass on plains/ Hummock grasslands, grass steppe; hard spinifex *Triodia intermedia*
901	Grasslands, high grass savanna woodland; stringybark & woollybutt over upland tall grass & curly spinifex
902	Hummock grasslands, low tree steppe; scattered low rare eucs in open curly spinifex
904	Medium woodland-tropical; stringybark & woollybutt with understorey of palms (*Livistona eastonii*)
905	Grasslands, high grass savanna woodland; cabbage gum & ghost gum over mixed/white grass, riverine
906	Grasslands, high grass savanna woodland; bloodwood, stringybark & woollybutt over white grass & tall upland grass on sandstone
907	Grasslands, high grass savanna woodland; ghost gum & bloodwood (*Eucalyptus polycarpa*) over ribbon & tall upland grass
908	Grasslands, high grass savanna low tree; terminalia & bauhinia over upland tall grass

909	Grasslands, high grass savanna woodland; bloodwood, stringybark & woollybutt over upland tall grass & curly spinifex on sandplain
911	Grasslands, high grass savanna woodland; bloodwood over upland tall grass & curly spinifex
914	Grasslands, high grass savanna woodland; grey box & *Eucalyptus foelscheana* over kangaroo (*Themeda australis*) & white grass
915	Mosaic: Grasslands, high grass savanna woodland; grey box, *E. confertifolia* & *E. foelscheana* over spinifex, white & tall upland grass / Grasslands, high grass savanna low tree; terminalia & bauhinia over upland tall grass
916	Grasslands, high grass savanna woodland; grey box, *Eucalyptus confertifolia* & *E. foelscheana* over spinifex, white & tall upland grass on sandy plain on limestone
918	Hummock grasslands, low tree steppe; snappy gum over curly spinifex
922	Hummock grasslands, low tree steppe; eucalypts (e23) over soft & feather spinifex between sandhills
923	Hummock grasslands, grass steppe; spinifex *Triodia inutilis*
924	Shrublands; mallee scrub, *Eucalyptus eremophila* & red mallee
925	Shrublands; mallee scrub, red mallee
929	Low forest; moort (*E. platypus*)
931	Medium woodland; yate
934	Shrublands; mallee scrub *Eucalyptus nutans*
936	Medium woodland; salmon gum
938	Medium woodland; York gum & yate
939	Succulent steppe with woodland; Yorkgum, sparse tea-tree scrub & samphire
940	Mosaic: Shrublands; mallee scrub, black marlock /Shrublands; tallerack mallee-heath
941	Mosaic: Medium woodland; salmon gum & morrel/Shrublands; mallee scrub, redwood
942	Mosaic: Medium woodland; yate / Shrublands; mallee scrub, black marlock
945	Mosaic: Medium woodland; salmon gum /Shrublands; mallee scrub, redwood & black marlock
946	Medium woodland; wandoo
947	Medium woodland; powderbark & mallet
948	Medium woodland; York gum & river gum
949	Low woodland; banksia
950	Medium woodland; *Casuarina obesa*
951	Succulent steppe with sparse woodland & thicket; York gum & Kondinin blackbutt over tea-tree thicket & samphire
952	Shrublands; dryandra heath
953	Succulent steppe with thicket; tea-tree over samphire
954	Shrublands; thicket, jam & *Allocasuarina huegeliana*
955	Mosaic: Shrublands; scrub-heath (SE Avon)/ Shrublands; *Allocasuarina campestris* thicket
956	Shrublands; Allocasuarina campestris thicket with scattered wandoo
959	Succulent steppe with sparse woodland & thicket; yorrell & Kondinin blackbutt over tea-tree & samphire
960	Shrublands; mallee scrub, redwood & black marlock
961	Mosaic: Shrublands; scrub-heath (SE Avon)/ Shrublands; *Allocasuarina campestris* thicket
962	Medium woodland; mallet (*E. astringens*)
963	Medium woodland; yate & paperbark (*Melaleuca* spp.)
964	Shrublands; mallee scrub, black marlock & *Eucalyptus decipiens*
965	Medium woodland; jarrah & marri
966	Succulent steppe with sparse woodland & thicket; salmon gum & morrell over tea-tree & samphire
967	Medium woodland; wandoo & yate
968	Medium woodland; jarrah, marri & wandoo
969	Mosaic: Medium forest; jarrah-marri / Low forest; jarrah
970	Low forest; jarrah & *Eucalyptus decipiens*
971	Shrublands; mallee scrub, *Eucalyptus decipiens*
972	Medium woodland; jarrah, marri, wandoo & yate
973	Low forest; paperbark (*Melaleuca rhaphiophylla*)

974	Medium woodland; Yorkgum, salmon gum & morrel
975	Low woodland; jarrah
976	Succulent steppe with low woodland; myoporum over samphire
977	Low forest; tea-tree & casuarina
978	Low forest; jarrah, *Eucalyptus staeri* & *Allocasuarina fraseriana*
979	Mosaic: Medium forest; jarrah-marri / Low forest; jarrah & casuarina (probably *Allocasuarina fraseriana)*
980	Shrublands; jarrah mallee-heath
981	Medium woodland; wandoo,Yorkgum & yate
982	Low woodland; *Eucalyptus decipiens*
984	Mosaic: Shrublands; acacia & melaleuca scrub/Succulent steppe; saltbush
986	Shrublands; mallee-heath (Stirling Range)
987	Medium woodland; jarrah & wandoo
988	Succulent steppe with thicket; *Melaleuca thyoides* over samphire
989	Shrublands; Albany blackbutt mallee-heath
990	Low forest: peppermint (*Agonis flexuosa*)
991	Medium woodland; small wandoo patches surrounded by other eucalypts
992	Medium forest; jarrah & wandoo (*E. wandoo)*
993	Medium woodland; Yorkgum & *Allocasuarina huegeliana*
994	Low forest; jarrah & casuarina (probably Allocasuarina fraseriana)
995	Shrublands; mallee scrub, bushy yate & Bald Island marlock
997	Shrublands; melaleuca heath
998	Medium woodland; tuart
999	Medium woodland; marri
1000	Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; tea-tree *(Melaleuca* spp.)
1001	Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina
1002	Medium open woodland; jarrah
1003	Medium forest; jarrah, marri & wandoo
1004	Mosaic: Medium open woodland; wandoo / Shrublands; mixed heath
1005	Low woodland; *Allocasuarina huegeliana*
1006	Medium woodland; jarrah, wandoo & powderbark
1008	Medium open woodland; marri
1009	Medium woodland; marri & river gum
1010	Medium open woodland; marri & tuart
1011	Medium open woodland; tuart
1012	Mosaic: Medium open woodland; tuart / Low woodland; banksia
1013	Mosaic: Medium open woodland; marri / Shrublands; tea-tree thicket
1014	Mosaic: Low woodland; banksia / Shrublands; tea-tree thicket
1015	Mosaic: Shrublands; scrub-heath on Swan Coastal Plain / Shrublands; dryandra heath
1016	Mosaic: Low woodland; banksia / Shrublands; dryandra heath
1017	Medium open woodland; jarrah & marri, with low woodland; banksia
1018	Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; tea-tree / Low woodland; *Casuarina obesa*
1019	Medium sparse woodland; jarrah & marri
1020	Mosaic: Medium forest; jarrah-marri / Medium woodland; marri-wandoo
1021	Mosaic: Medium open woodland; wandoo / Shrublands; dryandra heath
1022	Succulent steppe with woodland; Casuarina obesa & samphire
1023	Medium woodland; Yorkgum, wandoo & salmon gum (*E. salmonophloia*)
1024	Shrublands; mallee & casuarina thicket
1025	Mosaic: Medium woodland; Yorkgum, salmon gum & morrel / Succulent steppe; saltbush & samphire
1026	Mosaic: Shrublands; *Acacia rostellifera*, *A. cyclops* (S) & Melaleuca cardiophylla (N) thicket

	/ Shrublands; *Acacia lasiocarpa* & Melaleuca acerosa heath
1027	Mosaic: Medium open woodland; jarrah & marri, with low woodland; banksia / Medium sparse woodland; jarrah & marri
1028	Medium woodland; river gum
1029	Shrublands; scrub-heath Dryandra-Calothamnus assoc. with *B. prionotes* on limestone in the northern Swan Region
1030	Low woodland; *Banksia attenuata* & *B. menziesii*
1031	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath
1032	Mosaic: Medium woodland; marri, wandoo, powderbark / Shrublands; dryandra heath
1034	Medium woodland; marri, wandoo & powderbark
1035	Mosaic: Medium open woodland; marri / Shrublands; dryandra heath
1036	Low woodland; *Banksia prionotes*
1037	Medium woodland; York gum & river gum
1038	Medium open woodland; eucalypts with low woodland; *Banksia attenuata* & *B. menziesii*
1039	Shrublands; mallee with scattered York gum
1040	Medium woodland; York gum & *Casuarina obesa*
1041	Low woodland; *Allocasuarina huegeliana* & jam
1042	Succulent steppe with low woodland; sheoak over samphire
1043	Mosaic: Medium open woodland; wandoo & powderbark wandoo / Shrublands; dryandra heath
1044	Mosaic: Medium woodland; York gum & salmon gum / Shrublands; *Melaleuca thyioides* thicket
1046	Succulent steppe with woodland; York gum & samphire
1047	Shrublands; *Eucalyptus incrassata* mallee-heath
1048	Mosaic: Shrublands; melaleuca patchy scrub / Succulent steppe; samphire
1049	Medium woodland; wandoo, York gum, salmon gum, morrel & gimlet
1051	Shrublands; tea-tree thicket with scattered wandoo & yate
1053	Shrublands; *Melaleuca uncinata* thicket with scattered York gum
1055	Shrublands; York gum & Eucalyptus sheathiana mallee scrub
1056	Shrublands; thicket, acacia & *Allocasuarina campestris*
1057	Mosaic: Shrublands; Medium woodland; salmon gum & gimlet / York gum & *Eucalyptus sheathiana* mallee scrub
1058	Shrublands; York gum & *Eucalyptus gonglocarpa* mallee scrub
1059	Mosaic: Medium woodland; salmon gum & gimlet/Shrublands; mallee *Eucalyptus longicornis* & *E. sheathiana* scrub
1061	Mosaic: Medium sparse woodland; salmon gum & yorrell / Succulent steppe; saltbush & samphire
1062	Succulent steppe with open woodland & thicket; York gum over *Melaleuca thyiodes* & samphire
1063	Medium-Low woodland; York gum & cypress pine (*Callitris columellaris)*
1065	Mosaic: Shrublands; Medium woodland; wandoo & gimlet / York gum & *Eucalyptus sheathiana* mallee scrub
1067	Medium woodland; salmon gum, morrel, gimlet & rough fruited mallee
1068	Medium woodland; salmon gum, morrel, gimlet & *Eucalyptus sheathiana*
1071	Succulent steppe with scrub; acacia species over saltbush & bluebush
1073	Medium woodland; wandoo & mallet
1074	Succulent steppe with open woodland & thicket; wandoo & *Allocasuarina obesa* over tea-tree & samphire
1075	Shrublands; mallee scrub, *Eucalyptus eremophila* & black marlock (*E. redunca*)
1076	Mosaic: Medium woodland; salmon gum & morrel / Shrublands; mallee scrub *Eucalyptus eremophila* & bloodwood (*E. dichromophloia)*
1077	Medium woodland; jarrah & river gum
1078	Medium woodland; salmon gum, redwood, merrit, gimlet & *Eucalyptus sheathiana*
1079	Mosaic: Medium open woodland; salmon gum & morrel / Succulent steppe; saltbush
1080	Succulent steppe with malle & thickets; Mallee and *Melaleuca uncinata* thickets on salt flats
1081	Shrublands; mallee scrub, *Eucalyptus longicornis* & *E. sheathiana*
1083	Succulent steppe with open woodland & scrub; wandoo, salmon gum & *Allocasuarina obesa* over tea-tree & samphire

1085	Medium woodland; wandoo & blue mallet (*E. gardneri*)
1087	Medium woodland; wandoo, morrel & blue mallet
1088	Medium woodland; mallet & blue mallet
1091	Low woodland; *Banksia prionotes* & *Allocasuarina huegeliana*
1092	Medium woodland; wandoo, York gum & morrel
1093	Succulent steppe with open woodland & thicket; eucalypts & *Allocasuarina obesa* over tea-tree & samphire
1094	Mosaic: Medium woodland; York gum & salmon gum / Shrublands; mallee scrub *Eucalyptus eremophila* & black marlock
1095	Medium woodland; York gum, yate & salmon gum
1096	Medium woodland; yate & salmon gum
1098	Mosaic: Medium sparse woodland; salmon gum & morrel / Succulent steppe; samphire
1099	Hummock grassland; shrub steppe; wattle scrub & heath *Acacia ligulata* x rostellifera
1100	Hummock grassland; dwarf shrub steppe; mixed ericoid shrubs & spinifex
1101	Shrublands; *Acacia ligulata* x rostellifera thicket
1102	Mosaic: Shrublands; mixed heath / Shrublands; acacia patchy scrub
1103	Shrublands; Acacia & lamarchea thicket
1104	Mosaic: Shrublands; scrub-heath / Shrublands; *Acacia rostellifera* & *Melaleuca cardiophylla* thickets
1105	Hummock grasslands, grass steppe; spinifex *Triodia plurinervata*
1106	Mosaic: Shrublands; scrub-heath / Shrublands; acacia various species
1107	Open low woodland; *Eucalyptus oraria*
1108	Shrublands; *Acacia decipiens*
1109	Shrublands; peppermint scrub, *Agonis flexuosa*
1111	Medium woodland; yate (*E. occidentalis*)
1112	Mosaic: Tall forest; karri / Tall forest; jarrah & marri
1113	Shrublands; *Jacksonia horrida* heath
1114	Shrublands tree-heath; paperbark over tea-tree thickets
1115	Medium woodland; marri & yate
1116	Tall forest; jarrah (*E. marginata*)
1121	Mixed short grass and spinifex with scattered coolabah
1125	Succulent steppe with scrub; *Acacia victoriae* & snakewood over saltbush & bluebush
1126	Low woodland; mulga & minniritchie
1127	Mosaic: Saltbush & bluebush/samphire
1128	Mosaic: Succulent steppe with open scrub; scattered *Acacia sclerosperma* & bowgada over saltbush & bluebush/Succulent steppe; samphire
1130	Tall forest; karri & red tingle (*E. jacksonii*)
1131	Medium forest; bushy yate (*E. cornuta*)
1132	Medium forest; marri
1134	Medium woodland; jarrah (south coast)
1136	Medium woodland; marri with some jarrah, wandoo, river gum and casuarina
1137	Shrublands; *Melaueca incana*, *Hakea tuberculata*, *Viminaria juncea* scrub on ironstone, south coast
1138	Low forest; jarrah & marri
1139	Tall forest; karri & yellow tingle (*E. guilfoylei*)
1140	Tall forest; karri & Rates tingle (*E. brevostylis*)
1141	Shrublands; jam, *Acacia rostellifera* & *Melaleuca megacephala* thicket
1142	Shrublands; *Acacia ligulata* & *Melaleuca uncinata* dominated thicket on dark brown loamy soil
1143	Shrublands; *Allocasuarina campestris* thicket with patches of heath
1144	Tall forest; karri & marri (*Corymbus calophylla*)
1147	Shrublands; scrub-heath in the south-east Avon-Wheatbelt Region
1148	Shrublands; scrub-heath in the Coolgardie Region
1149	Shrublands; scrub-heath Acacia-Ecdeiocolia association in the south-east Geraldton Sandplain Region

1150	Tall forest; karri, red tingle & yellow tingle
1151	Medium forest; jarrah & red tingle
1152	Medium forest; jarrah & yellow tingle
1153	Medium forest; jarrah & Rates tingle
1154	Shrublands; Acacia thicket with patches of heath
1155	Mosaic: Medium woodland; York gum /Shrublands; *Allocasuarina campestris* thicket
1156	Shrublands; *Allocasuarina campestris* thickets with scattered jam & casuarina
1157	Tall forest; jarrah & marri
1158	Mosaic:Medium forest; jarrah & yellow tingle / Medium forest; jarrah & Rates tingle
1162	Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* & *T. basedowii*
1164	Mosaic: Shrublands; scrub-heath on sandplain (banksia-xylomelum alliance) in Geraldton Sandplain & Avon-Wheatbelt Regions/ Shrublands; *Allocasuarina campestris* thicket
1180	Shrublands; *Calothamnus quadrifidis & Hakea trifircata* (Cape Naturaliste)
1181	Medium woodland, jarrah & *Eucalyptus haematoxylon* (Whicher Range)
1182	Medium woodland; *Eucalyptus rudis & Melaleuca rhaphiophylla*
1183	Medium woodland; *Eucalyptus rudis* & blackbutt with some bullich, jarrah & marri (fringing Blackwood River)
1184	Medium woodland-fringing; jarrah, marri, *Eucalyptus rudis & Agonis flexuosa*
1185	Medium woodland; jarrah, marri & blackbutt
1195	Mosaic: Low woodland; mulga in valleys / Hummock grasslands, shrub steppe; acacia species over *Triodia basedowii*
1198	Mosaic: Succulent steppe with thicket; *Melaleuca thyiodes* over samphire / Shrublands; bowgada open scrub
1200	Mosaic: Medium woodland; salmon gum & morrel / Shrublands; mallee scrub *Eucalyptus eremophila* & black marlock (*E. reduncа)*
1217	Hummock grasslands, steppe woodland; desert oak & soft spinifex between sandhills
1239	Hummock grasslands, open medium tree & mallee steppe; marble gum & mallee (*E. youngiana*) over hard spinifex *Triodia basedowii* on sandplain
1241	Succulent steppe; bluebush
1271	Bare areas; claypans
1294	Medium woodland; coral gum
1322	Shrublands; *Acacia sclerosperma, A. victoriae* & snakewood scrub
1325	Succulent steppe with very open low trees; coolebah over saltbush & samphire
1413	Shrublands; acacia, casuarina & melaleuca thicket
1423	Shrublands; scrub-heath in Shark Bay area, mainly *Acacia* spp.
1446	Succulent steppe with scrub; mulga over bluebush
1515	Shrublands; mallee scrub *Eucalyptus gracilis*
1516	Shrublands; mallee scrub, black marlock & Forrest's marlock
1519	Shrublands; mallee scrub, *Eucalyptus eremophila* & banksia
1550	Shrublands; dwarf scrub (Dirk Hartog Island)
1601	Mosaic: Shrublands; snakewood & A. victoria scrub / Hummock grasslands; grass steppe, hard spinifex *Triodia basedowii*
1602	Mosaic: Shrublands; snakewood scrub / Hummock grasslands; grass steppe, hard spinifex *Triodia basedowii* & *T. wiseana*
1684	Succulent steppe with open scrub; scattered snakewood over bluebush
1948	Low woodland; banksia on limestone
1949	Low woodland; banksia on low sandhills, swamps in swales with tea-tree and paperbark
1967	Medium woodland; wandoo, yate & river gum
2003	Medium forest; jarrah & marri on laterite with blackbutt (*E. patens*) in valeys, swampy bottomlands with bullich (*E. megacarpa*) and *Agonis flexuosa*
2009	Medium woodland; redwood & Goldfields blackbutt
2016	Low forest; bushy yate
2041	Succulent steppe with scrub; tea-tree over saltflats
2047	Shrublands; tamma & dryandra thicket

2048	Shrublands; scrub-heath in the Mallee Region
2051	Sedgeland; sedges with low tree savanna woodland; paperbarks over various sedges
2081	Shrublands; bowgada and associated spp. scrub
2093	Succulent steppe with open woodland & scrub; yate over tea-tree & samphire
2097	Mosaic: Hummock grasslands, open low tree steppe; desert bloodwood and feathertop spinifex(on) sandhills / Shrublands; tea-tree scrub
2121	Mosaic: Open low woodland; mulga / Succulent steppe; saltbush & bluebush on greenstone
2151	Low woodland; coolabah & paperbark(*Melaleuca* sp.)
2175	Grass savanna on clay plains (Tanami)
2245	Shrublands; mallee scrub (Nullarbor) *Eucalyptus socialis*, *E. cooperana* & *E. gracilis*
2675	Hummock grasslands, low tree & shrub steppe; scattered eucalypts, kanji over Triodoa pungens & T. basedowii
2685	Shrublands; *Acacia quadrimarginea* & jam scrub on greenstone
2736	Grasslands, curly spinifex, low tree savanna; snappy gum & *Eucalyptus perfoliata* over *Plectrachne pungens*
2901	Mosaic: Medium woodland; *Allocasuarina cristata* & Goldfields blackbutt /Shrublands; *Acacia quadrimarginea* thicket
2902	Medium woodland; *Allocasuarina cristata* & Goldfields blackbutt
2903	Medium woodland; Salmon gum, Goldfield blackbutt, gimlet & *Allocasuarina cristata*
2904	Medium woodland; York gum, Goldfields blackbutt, gimlet & *Allocasuarina cristata*
3003	Medium forest; jarrah & marri on laterite with wandoo in valleys, sandy swamps with tea-tree and banksia
3041	Mosaic: Low woodland; *Allocasuarina huegeliana* & jam around granite rocks
3048	Shrublands; scrub-heath on Swan Coastal Plain
3432	Mosaic: Low woodland; waterwood / Shrublands; *Acacia sclerosperma*, *A. victoriae* & *A. subtressarogona* scrub
4048	Shrublands; scrub-heath in the Esperance Plains incl. Mt Ragged scrub-heath
4621	Shrublands; mallee scrub, *Eucalyptus eudesmioides*
4623	Succulent steppe with low woodland; *Acacia papyrocarpa* over bluebush
4641	Succulent steppe with open woodland; salmon gum & gimlet over bluebush
4801	Shrublands; heath with scattered *Nuytsia floribunda* on sandplain
6048	Shrublands; banksia scrub-heath on sandplain in the Esperance Plains Region
7001	Shrublands, pindan; *Acacia eripoda* & *A. tumida* shrubland with scattered low cabbage gum & *Eucalyptus setosa* over ribbon & curly spinifex
7048	Shrublands; banksia scrub-heath on coastal plain in the Esperance Plains
8001	Grasslands, curly spinifex, low tree savanna; bloodwood (*Eucalyptus dichromophloia*) & woollybutt over curly spinifex on islands
8002	Grasslands, high grass savanna woodland; *E. dichromophloia* (bloodwood) & *E. miniata* (woollybutt) over upland tall grass & curly spinifex (*T. bitextura*) / Hummock grasslands, grass steppe; soft spinifex (*T. pungens*) & *T. intermedia*
8003	Pindan *A. eriopoda*; *A. impressa* shrubland with scattered low trees of *Lysiphyllum cunninghamii*; *Grevillea striata* over *Aristida pruinosa*; *Chrysopogon* spp. tussock grass understorey and patches of *T. pungens* hummock grasses