



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9550/2
Permit type:	Purpose permit
Applicant name:	Yangibana Pty Ltd
Application received:	4 January 2022
Application area:	1.37 hectares (revised) of native vegetation
Purpose of clearing:	Geotechnical investigations and baseline surveys
Method of clearing:	Mechanical
Properties:	Lot 600 on Deposited Plan 400249
Location (LGA area):	Shire of Ashburton
Locality (suburb):	Talandji

1.2. Description of clearing activities

The administrative amendment to CPS 9550/1 is to update the commencement date of the permit, to align with the closing date of the appeals period for CPS 9550/1 (the closing date for the appeals period against the permit conditions is 5 September 2022). Due to operational constraints and associated timeframes of Yangibana Pty Ltd, the amended permit commencement date of 6 September 2022 will align with their pre-existing work schedules and commitments.

CPS 9550/2 allows for the clearing of up to 1.37 hectares of native vegetation within Lot 600 on Deposited Plan 400249, Talandji for the purpose of geotechnical investigations and baseline surveys within the application area. The description of the activities within geotechnical investigations and baseline surveys remains unchanged since the assessment of CPS 9550/1.

1.3. Decision on application

Decision:	Granted
Decision date:	6 September 2022
Decision area:	1.37 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This administrative amendment was accepted, assessed, and determined in accordance with sections 51K and 51M of the *Environmental Protection Act 1986* (EP Act). The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986*. Given that this amendment relates only to correcting an administrative error on the current permit, it has been concluded that the assessment against the clearing principles has not changed since the assessment of application CPS 9550/1, which can be found in Clearing Permit Decision Report CPS 9550/1.

In determining to grant a clearing permit, the Delegated Officer determined that the proposed clearing is unlikely to lead to any unacceptable risk to the environment, and that the existing conditions under Clearing Permit CPS 9550/1 are sufficient to limit the impacts of the proposed clearing.

1.5. Site map

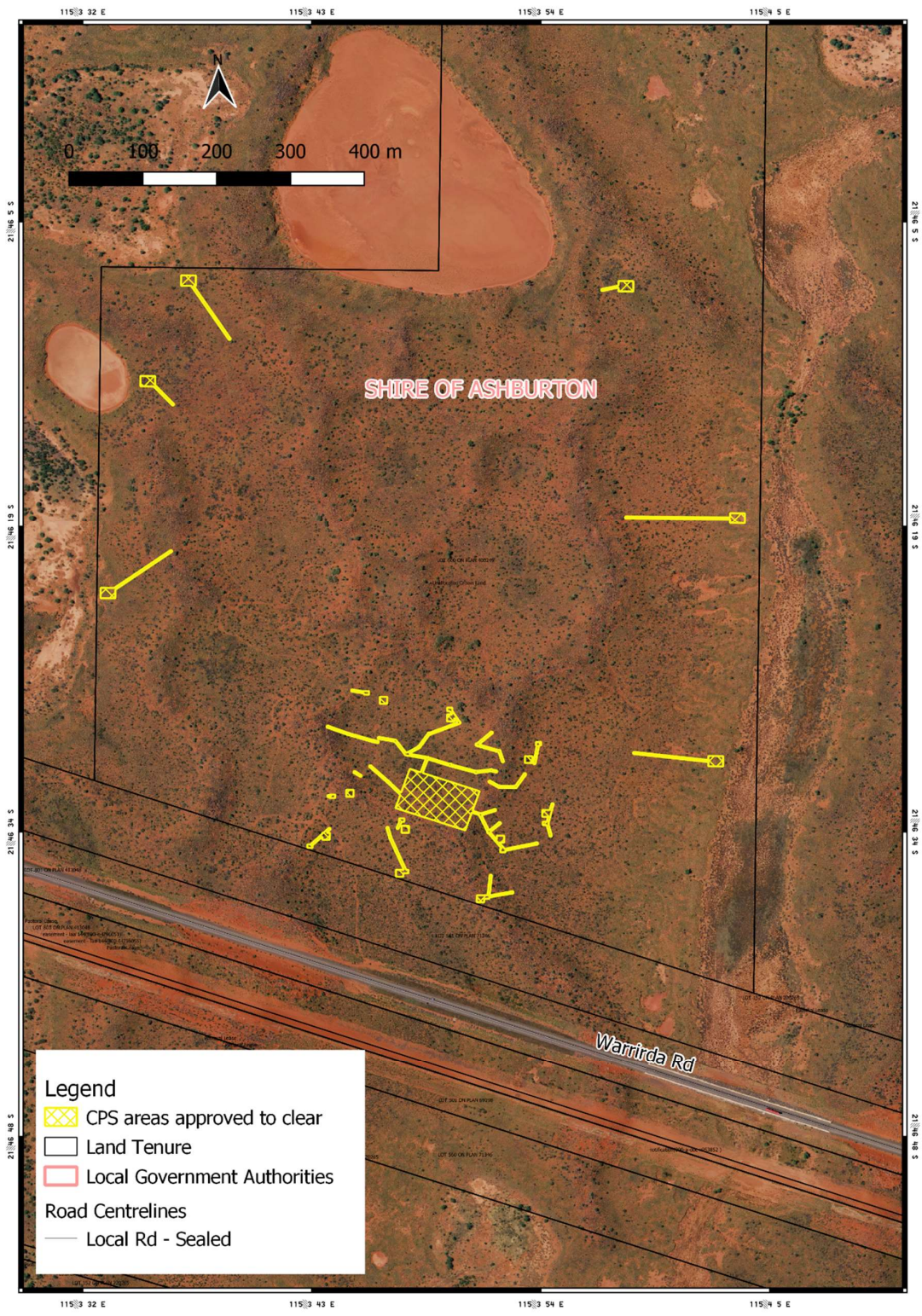


Figure 1 Map of the application area

The areas crosshatched yellow indicates the areas authorised to be cleared under the granted clearing permit.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016a)
- Technical guidance – *Sampling of short range endemic invertebrate fauna* (EPA, 2016b)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016c)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

As this amendment is administrative in nature and relates only to updating the commencement date on the permit, the avoidance and mitigation measures implemented by the Permit Holder are unchanged and can be found in the Decision Report prepared for Clearing Permit CPS 9550/1.

3.2. Assessment of impacts on environmental values

The avoidance and mitigation measures employed by the applicant, the assessment against the clearing principles, and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values, has not changed and can be found in Clearing Permit Decision Report CPS 9550/1.

3.3. Relevant planning instruments and other matters

The assessment against planning and other matters has not changed and can be found within Clearing Permit Decision Report CPS 9550/1.



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Appendix A. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

A.1 Site characteristics

Characteristic	Details
Local context	<p>The application area is approximately 15 kilometres south of Onslow and approximately 1,360 kilometres north of Perth. The application area occurs within the General Industrial Zone within the Ashburton North Strategic Industrial Area (ANSIA) and within the Carnarvon region of Western Australia.</p> <p>The historical land use has been pastoral, and evidence of degradation occurs due to previous disturbances (roads and tracks, services such as gas, water and power corridors) within the ANSIA, as well as grazing and weeds.</p> <p>The application area is part of an extensive remnant of native vegetation in the Carnarvon Bioregion and the Cape Yannare Coastal Plain (670) mapped vegetation type. The application area occurs on linear and reticulate dunes consisting of dark red sands and loamy sands and are characterised by vegetation consisting of hummock grasslands of <i>Triodia schinzii</i> with numerous low shrubs and forbs (RPS, 2021).</p> <p>Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 99.4 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area does not intersect any formally mapped ecological linkages.
Conservation areas	There are no conservation areas located within or adjacent the application area. The nearest conservation area is the Mt Minnie former pastoral lease, located approximately 8.4 kilometres southeast of the application area.
Vegetation description	<p>Vegetation types delineated and mapped within the RPS (2021) and Ecoscape (2019) survey areas were merged with recent vegetation mapping undertaken by Ecological Australia (2021). As a result, a total of three vegetation types were mapped within the application area:</p> <ul style="list-style-type: none"> • AteTe: <i>Acacia tetragonophylla</i> tall to mid isolated shrubs to open shrubland over <i>Triodia epactia</i> hummock grassland (0.305 hectares); • GsTe: <i>Grevillea stenobotrya</i> tall sparse to open shrubland over <i>Triodia epactia</i> open hummock grassland (0.5 hectares); and • HsAstTe: <i>Hakea stenophylla</i> subsp. <i>stenophylla</i>, <i>Acacia stellaticeps</i> mid sparse shrubland over <i>Triodia epactia</i> hummock grassland (0.559 hectares). <p>Representative photographs and the full survey descriptions and maps are available in Appendix E.</p> <p>This is broadly consistent with the mapped Beard vegetation association:</p> <ul style="list-style-type: none"> • 670 (Cape Yannare Coastal Plain), which is described as hummock grasslands, shrub steppe and scattered shrubs over <i>Triodia basedowii</i>, (Shepherd et al, 2001).
Vegetation condition	The vegetation condition mapped within the RPS (2021) and Ecoscape (2019) survey areas were merged with recent vegetation mapping undertaken by Ecological Australia (2021). The surveys identified that the vegetation within the application area is in Very Good to Good (Trudgen, 1991) condition.

Characteristic	Details
	<p>The vegetation conditions identified within the application area are described as:</p> <ul style="list-style-type: none"> • Very Good: Some relatively slight signs of damage caused by human activities since European settlement (98 per cent); and • Good: More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds (2 per cent). <p>The full Trudgen (1991) condition rating scale is provided in Appendix D.</p>
Climate and landform	<p>The application area is located on flat topography within Cape Range sub-region, characterised by limestone ranges and extensive areas of red dune fields, coastal beach dunes and mud flats, with topographic high of 15 meters AHD and a low of seven metres AHD at the east and western boundaries.</p> <p>The climate is arid, semidesert to subtropical climate, with variable summer and winter rainfall; cyclonic activity can be significant (Kendrick and Mau, 2002).</p> <p>The application area has a mean annual maximum temperature of 32.1 degrees Celsius and a mean annual minimum temperature of 19.2 degrees Celsius. The mean annual rainfall and the annual evapotranspiration rate are both 400 millimetres.</p>
Soil description	<p>The Carnarvon bioregion consists of a sedimentary basin composed of quaternary alluvial, aeolian and marine sediments with locally exposed rocks of Permian to Recent age (Kendrick and Mau 2002; Beard 1990).</p> <p>The dominant soil type in the application area is represented by the Dune System (201Du) (over 98 per cent) and is described as coastal mudflats (with some sandplains and coastal dunes) on coastal deposits over sedimentary rocks of the Carnarvon Basin with tidal soils, calcareous deep sands and some red deep sands, red/brown non-cracking clays and salt-lake soils (making up 98.8 hectares of the application area).</p> <p>The secondary soil type in the application area is represented by the Onslow Land System (201On) and is described as undulating sand plains, dunes and level clay plains supporting soft spinifex grasslands and minor tussock grasslands (making up 28.8 hectares of the application area).</p>
Land degradation risk	<p>While the mapped soils generally are not prone to land degradation, sandy units of the Onslow System and Dune System are susceptible to wind erosion when bared by overgrazing or fire, but revegetate rapidly after rain (Van Vreeswyk et al., 2004).</p> <p>Clay plains with tussock grasses within the Onslow System are also sensitive to overgrazing and are susceptible to erosion (Van Vreeswyk et al., 2004).</p>
Waterbodies and hydrogeography	<p>The application area is mapped within the Pilbara Surface Water Area and the Pilbara Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act) but does not transect any water resources proclaimed under either the <i>Metropolitan Water Supply Sewerage and Drainage Act 1909</i> or <i>Country Areas Water Supply Act 1947</i> (CAWS Act).</p> <p>Groundwater salinity within the application area is mapped at 7,000 to 14,000 milligrams per litre total dissolved solids.</p>
Flora	<p>The desktop assessment identified that eight rare flora species have been recorded within the local area, comprising of one Priority 1 (P1) flora and seven Priority 3 (P3) flora (WAH and DBCA, 2021). None of these existing records occur within the application area. The closest records being occurrences of <i>Triumfetta echinata</i> (P3) approximately 1.80 kilometres away from the application area and <i>Eremophila forrestii</i> subsp. <i>viridis</i> (P3) approximately 615 metres from the application area.</p> <p>No flora species listed as threatened under the BC Act or EPBC Act have been recorded in the local area. The closest record of a threatened flora species is an occurrence of <i>Abutilon</i></p>

Characteristic	Details
	<p>sp. <i>Onslow</i> (F. Smith s.n. 10/9/61), approximately 26 kilometres east from the application area.</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (360 Environmental, 2021; Biota, 2010; Ecological Australia, 2021; ENV, 2012; RPS, 2021; Spectrum, 2021), the application area may provide suitable habitat for two priority flora species and impacts to these species required further consideration (see Appendix B.3).</p>
Ecological communities	There are no mapped Priority or Threatened Ecological Communities within the application area. There nearest known PEC is the Tanpool Land System (P1), located approximately 54 kilometres east of the application.
Fauna	<p>The desktop assessment identified that a total of 70 threatened or priority fauna species have been recorded within the local area, including 21 threatened fauna species, 11 priority fauna species, 34 fauna species protected under international agreement, and four other specially protected fauna species (DBCA, 2007-). No records of conservation significant fauna are found within the application area.</p> <p>The closest records are <i>Pseudomys chapmani</i> (Western pebble-mound mouse), located approximately 2.5 kilometres away from the application area and <i>Leggadina lakedownensis</i> (Lakeland Downs mouse) located approximately 2.4 kilometres away from the application area.</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (BCE, 2021, Ecological Australia, 2021 and Ecoscape, 2019), the application area may provide suitable habitat for 20 conservation significant fauna species and impacts to these species required further consideration (see Appendix B.4).</p>

B.2 Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Carnarvon	8,382,890.35	8,360,801.46	99.74	1,020,434.08	12.17
Vegetation complex*					
Beard vegetation association Cape Yannare Coastal Plain (670) *	147,808.61	147,792.06	99.99	17,242.88	11.67
Local area					
50km radius	521,868.00	518,773.54	99.4	-	-

*Government of Western Australia (2019)

B.3 Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the distribution and extent of existing records, and biological survey information (Ecological Australia, 2021 and RPS, 2021), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (m)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Eremophila forrestii</i> subsp. <i>viridis</i>	P3	Y	Y	Y	615	8	Y
<i>Triumfetta echinata</i>	P3	Y	Y	Y	1,800	6	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

B.4 Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the distribution and extent of existing records, and biological survey information (Bamford Consulting Ecologists, 2021 and Ecoscape, 2019), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Hirundo rustica</i> (Barn Swallow)	MI	Y	Y	16.7	10	Y
<i>Leggadina lakedownensis</i> (Short-tailed mouse)	P4	Y	Y	2.3	348	Y
<i>Lerista planiventralis maryani</i> (Maryan's keeled slider (Ashburton))	P1	Y	Y	17.8	2	Y
<i>Liasis olivaceus barroni</i> (Pilbara olive python)	VU	Y	Y	14.2	1	Y
Migratory waterbirds (16 species)	MI	Y	Y	0.715	1,355	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority; MI: migratory species protected under International Agreement; OS: other specially protected fauna

B.5 Land degradation risk table

Risk categories	Land Unit 1
Wind erosion	M1: 10-30% of the map unit has a high to extreme hazard
Water erosion	L2: 3-10% of the map unit has a very high to extreme hazard
Salinity	L2: 3-10% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	M2: 30-50% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L2: 3-10% of the map unit has a moderate to very high to risk
Phosphorus export risk	L2: 3-10% of the map unit has a high to extreme hazard

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared (1.37 hectares) contains three vegetation types and two broad fauna habitat types. Flora and vegetation surveys completed by Ecological Australia (2021a & 2021b) and RPS (2021a) recorded one Priority 3 species within the application area. Noting the size and context of the proposed clearing, potential impacts are unlikely to affect the conservation status of these species and communities and are not considered to be significant (DBCA, 2022b), given the distribution and abundance of adjacent habitat.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>Yes</p> <p>Refer to Section 3.2.1 and 3.2.2 above.</p>
<p><u>Principle (b):</u> “Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</p> <p><u>Assessment:</u></p> <p>Three broad fauna habitat types have been described over the application area (Bamford Consulting Ecologists, 2021). A likelihood of occurrence assessment was conducted and concluded that five species were likely to occur:</p> <ul style="list-style-type: none"> • Brush-tailed mulgara (<i>Dasyercus blythi</i>) (P4) • Lakeland Downs mouse or northern short-tailed mouse (<i>Leggadina lakedownensis</i>) (P4) • Maryan's keeled slider (Ashburton) (<i>Lerista planiventralis maryani</i>) (P1) • Northern Quoll (<i>Dasyurus hallucatus</i>) (EN) • Pilbara Olive Python (<i>Liasis olivaceus</i> subsp. <i>barroni</i>) (VU) <p>However, given the size and context of the proposed clearing, it is unlikely to comprise of significant habitat for fauna.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>Yes</p> <p>Refer to Section 3.2.2, above.</p>
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u></p> <p>No threatened flora species listed under the BC Act are known to occur within a 50-kilometre radius of the application area. Therefore, the area proposed to be cleared is unlikely to contain suitable or significant habitat necessary for the continued existence of threatened flora species.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>

<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area. Flora and vegetation surveys of the application area did not identify any vegetation that would form part of a TEC (Ecological Australia, 2021a & 2021b and RPS, 2021a).</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to and separation from the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of conservation areas.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on any vegetation growing in association with a watercourse or wetland.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The application area lies within the Dune and Onslow land systems. The Dune land system is described as dune fields supporting soft spinifex grasslands (Van Vreeswyk et al., 2004). Potential wind erosion occurs when vegetation cover is reduced or removed (Van Vreeswyk et al., 2004). The Onslow land system is described as sandplains, dunes and clay plains supporting soft spinifex grasslands and minor tussock grasslands (Van Vreeswyk et al., 2004). This land system is susceptible to erosion when vegetation cover is reduced or removed (Van Vreeswyk et al., 2004).</p> <p>However, given the size and context of the proposed clearing activities, the proposed clearing is not considered likely to have an appreciable impact on land degradation.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>



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<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>There are no Public Drinking Water Source Areas within or in close proximity to the application area. There are no permanent or ephemeral watercourses or wetlands within the area proposed to clear. The proposed clearing is unlikely to result in significant changes to surface water flows or to cause deterioration in the quality of underground water.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped and surveyed soils and topographic contours and in the surrounding area and the nature of the vegetation to be removed does not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding or waterlogging.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9550/2)</p>	<p>No</p>

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.

Condition	Description
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Biological survey excerpts / photographs of the vegetation

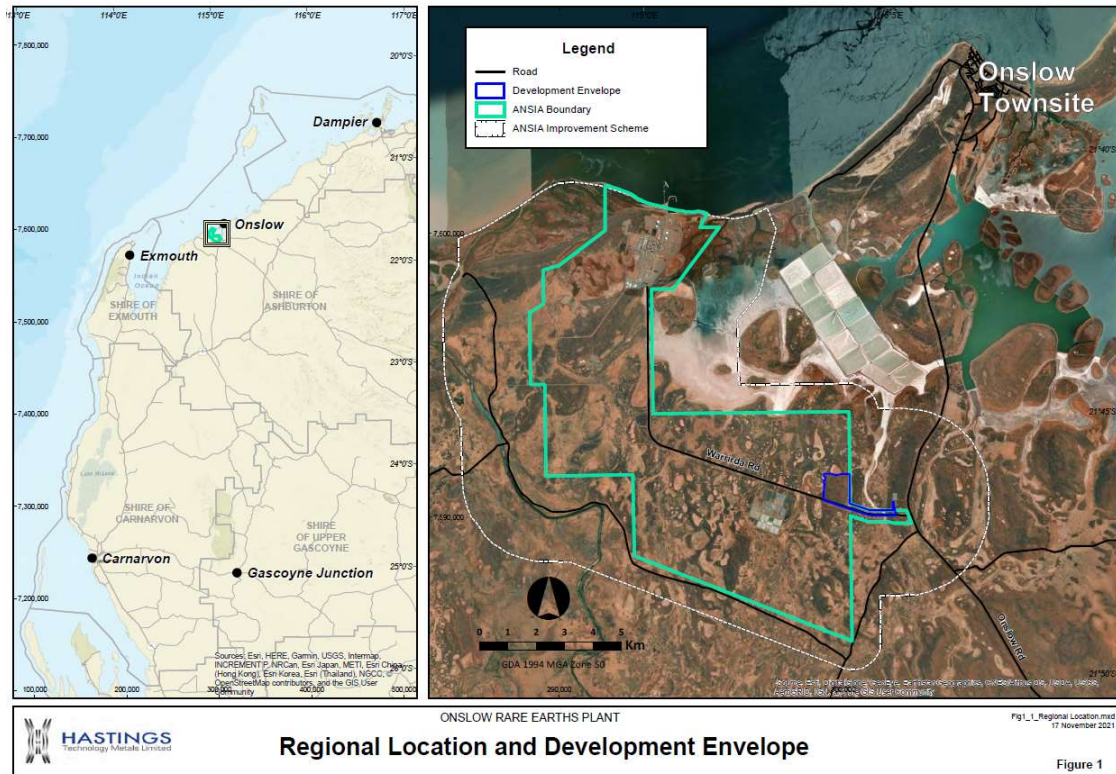


Figure 2 – Regional Location and application’s Development Envelope (Hastings, 2022a)

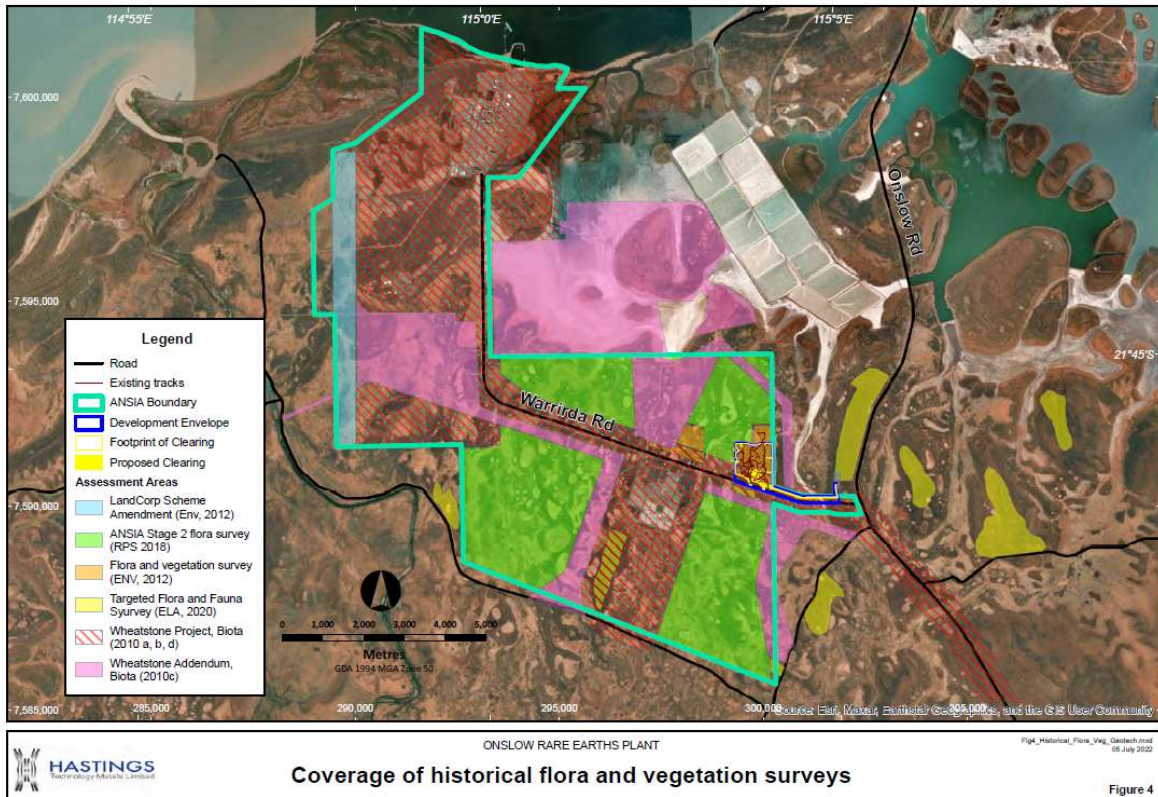


Figure 3 – Coverage of historical flora and vegetation surveys within ANSIA (Hastings, 2022e)

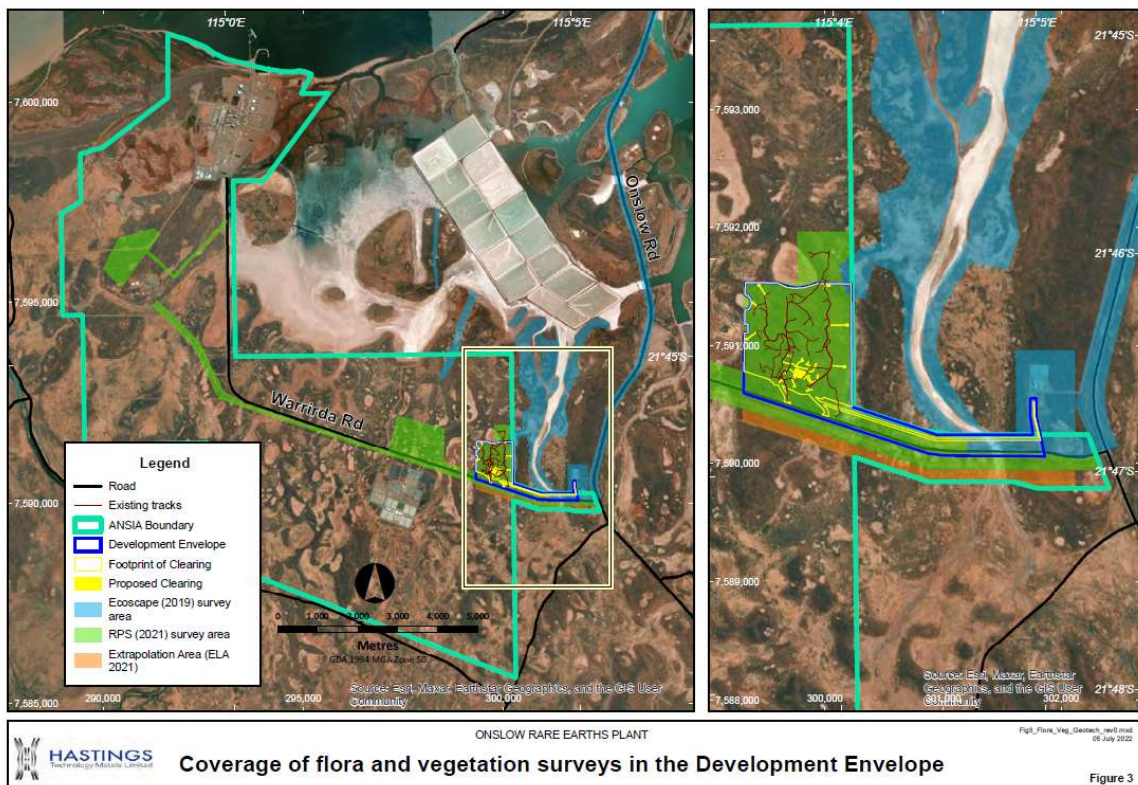


Figure 4 – Coverage of flora and vegetation surveys in the application area and Development Envelope (Hastings, 2022e)



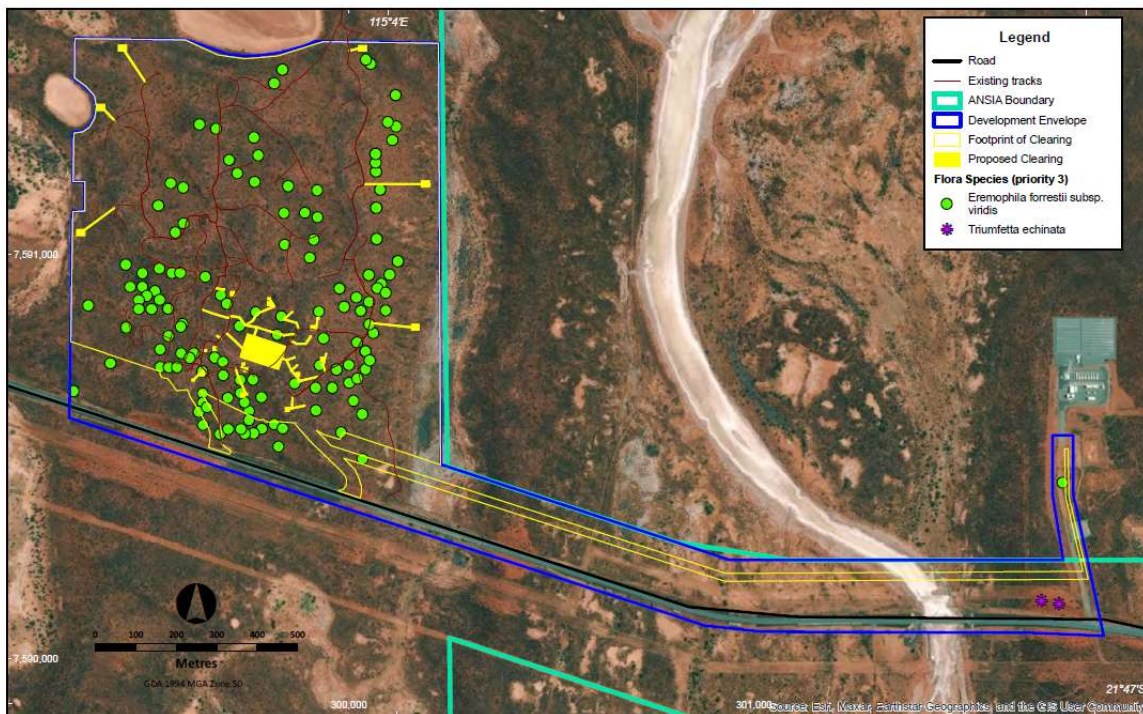
ONSLow RARE EARTHs PLANT

Fig5_Veg_Types_DE_Geotech.mxd
05 July 2022

Vegetation types mapped in the Development Envelope

Figure 9

Figure 5 - Mapped Vegetation Types within the Development Envelope (Hastings, 2022e)



ONSLow RARE EARTHs PLANT

Fig6_Flora_DE_Geotech.mxd
05 July 2022

Priority flora species recorded in the Development Envelope

Figure 6

Figure 6 - Priority flora species recorded within the application area and Development Envelopment (Hastings, 2022e)

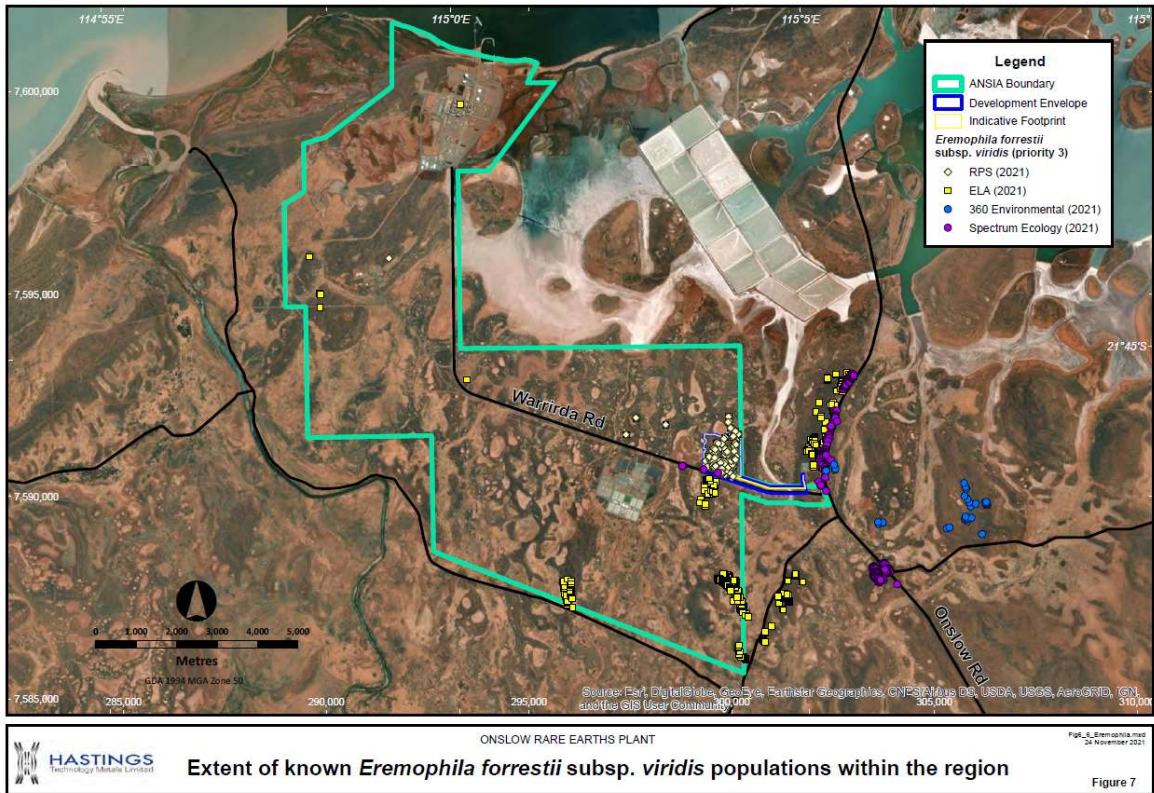


Figure 7 - Known *Eremophila forrestii* subsp. *Viridis* populations within the region (Hastings, 2022a)

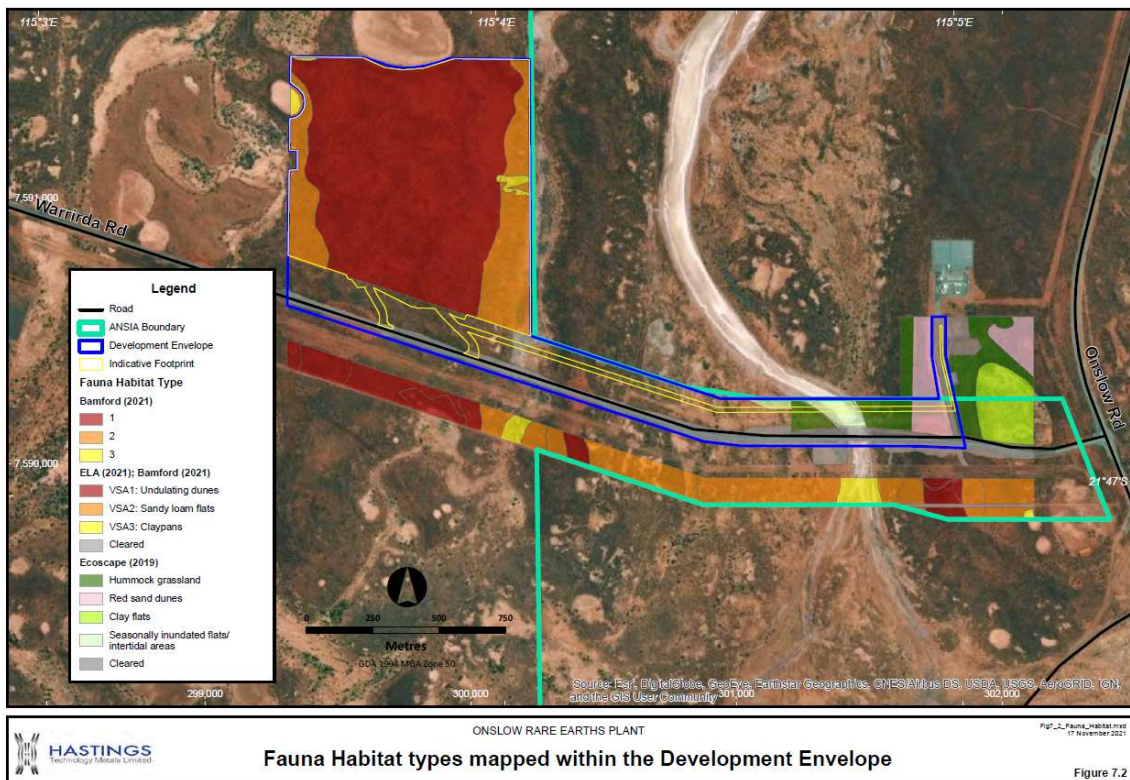


Figure 8 - Fauna Habitat types mapped within the Development Envelopment (Hastings, 2022a)



Figure 9 – Representative photograph of Undulating dunes in the application area (Bamford Consulting Ecologists, 2021)



Figure 10 – Representative photograph of Sandy loam flats, with terminate mounds in the application area (Bamford Consulting Ecologists, 2021)



Figure 11 - *Eremophila forrestii* subsp. *viridis* photographed during the Targeted Flora field survey (Ecological Australia, 2021)



Figure 12 - *Eremophila forrestii* subsp. *viridis* photographed during the Detailed Flora and vegetation assessment (RPS, 2021)




Vegetation type	Photograph
<p>AteTe</p> <p><i>Acacia tetragonophylla</i> Tall to Mid Isolated Shrubs to Open Shrubland over <i>Triodia epactia</i> Hummock Grassland</p>	
<p>GsTe</p> <p><i>Grevillea stenobotrya</i> Tall Sparse to Open Shrubland over <i>Triodia epactia</i> Open Hummock Grassland</p>	
<p>HsAstTe</p> <p><i>Hakea stenophylla</i> subsp. <i>stenophylla</i> Mid Sparse Shrubland over <i>Acacia stellaticeps</i> Low Sparse Shrubland over <i>Triodia epactia</i> Open Hummock Grassland</p>	

Figure 13 - Representative vegetation types AteTe, GsTe and HsAstTe, within application area photographed (Hastings, 2022a)

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)

- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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