GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10710/1
Permit Holder:	Murchison Hydrogen Renewables Pty Ltd as trustee for the Murchison Hydrogen Renewables Trust
Duration of Permit:	From 16 November 2024 to 16 November 2029

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of geotechnical and hydrogeological investigations.

2. Land on which clearing is to be done

Lot 1544 on Deposited Plan 74340
Unallocated Crown Land (PIN 18814411

.

3. Clearing authorised

The permit holder must not clear more than 0.54 hectares of *native vegetation* within the area cross-hatched yellow in Figures 1-11 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 16 November 2029.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

6. Weed management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *weed*-affected soil, *mulch, fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. Directional clearing

The Permit Holder shall must:

(a) conduct all clearing authorised under this permit in one direction towards adjacent vegetation; and

(b) allow a reasonable time for fauna present within the area being cleared to move into that adjacent native vegetation ahead of the clearing activity.

PART III - RECORD KEEPING AND REPORTING

8. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 6.

9. Reporting

The permit holder must provide to the *CEO* the records required under condition R1 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
Weed/s	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

B. Walker.

Belinda Walker
EXECUTIVE DIRECTOR
GREEN ENERGY
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

24 October 2024

Schedule 1

Plan 10710/1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

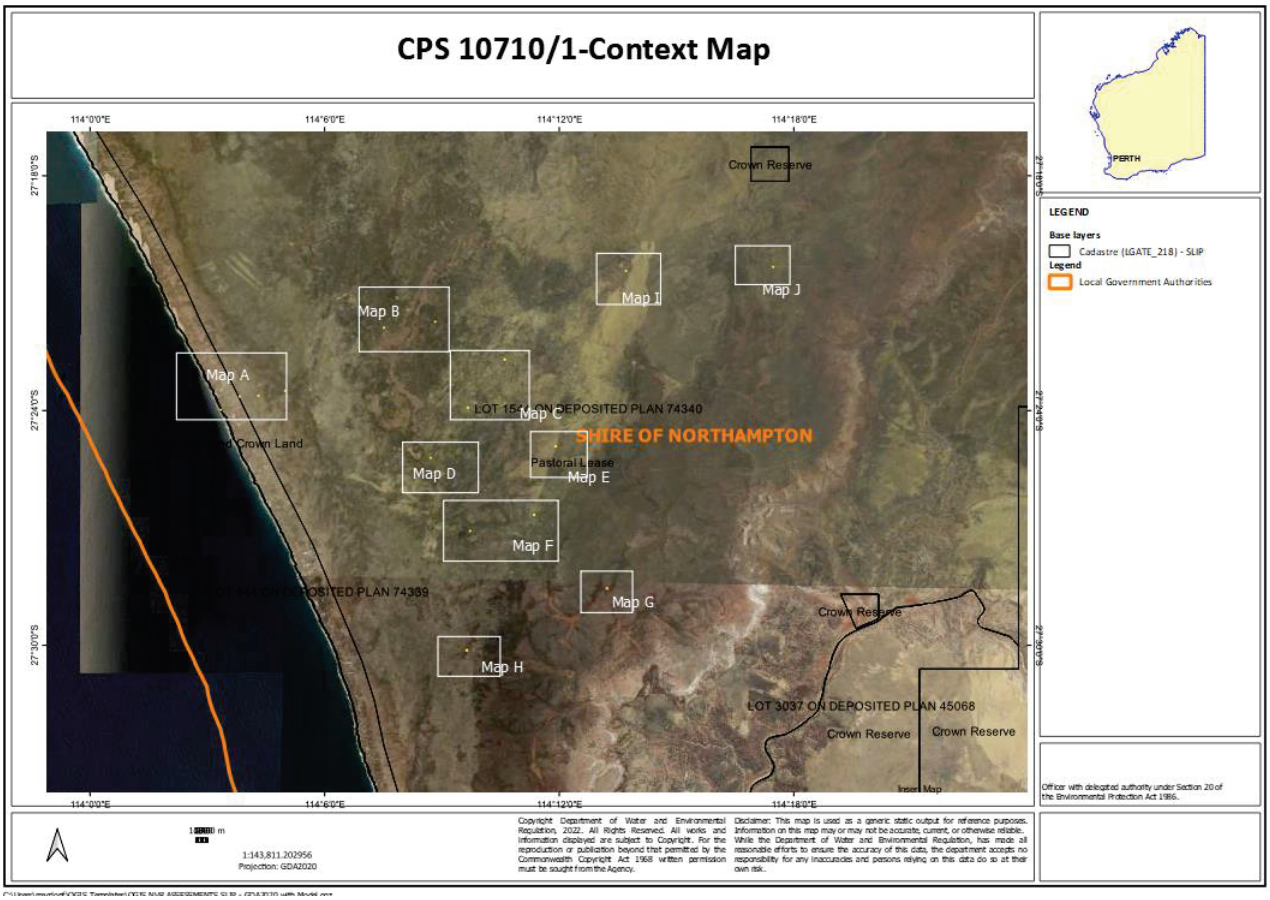


Figure 1: Map of the boundary of the area within which clearing may occur

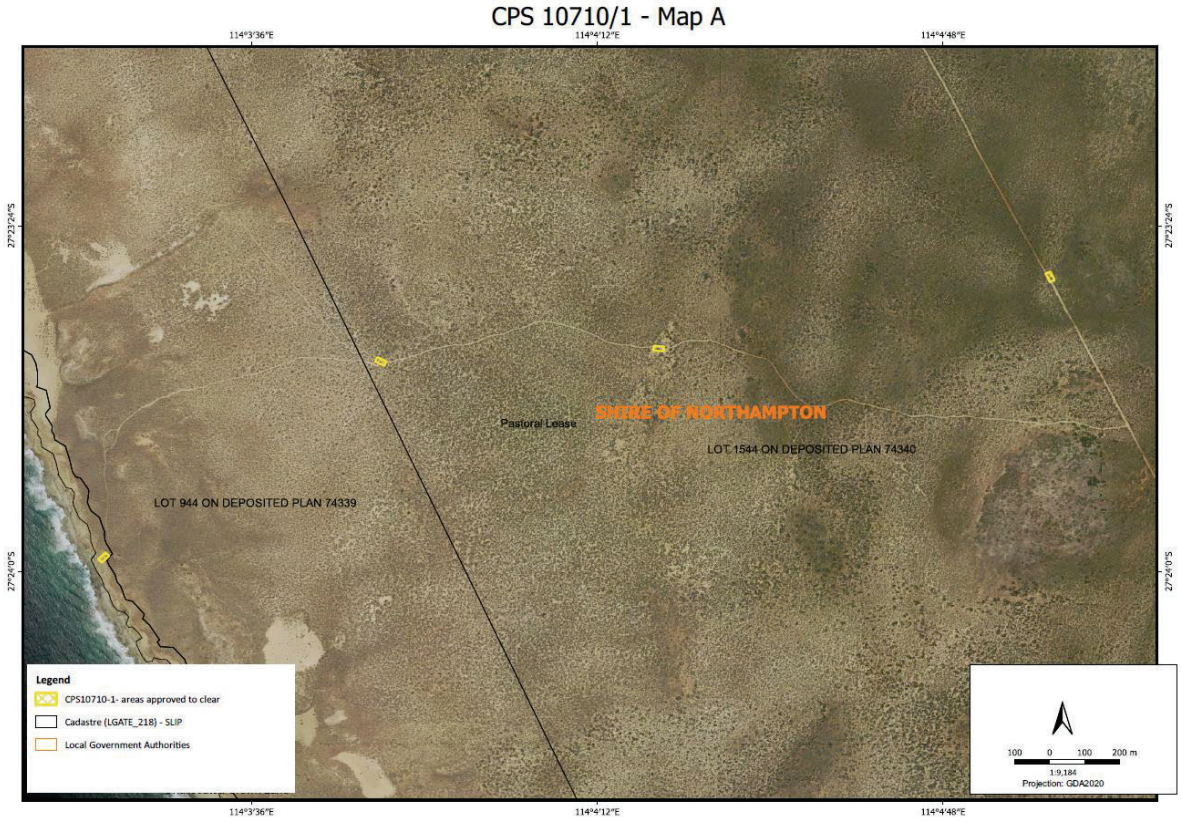


Figure 2: Map of the boundary of the area within which clearing may occur

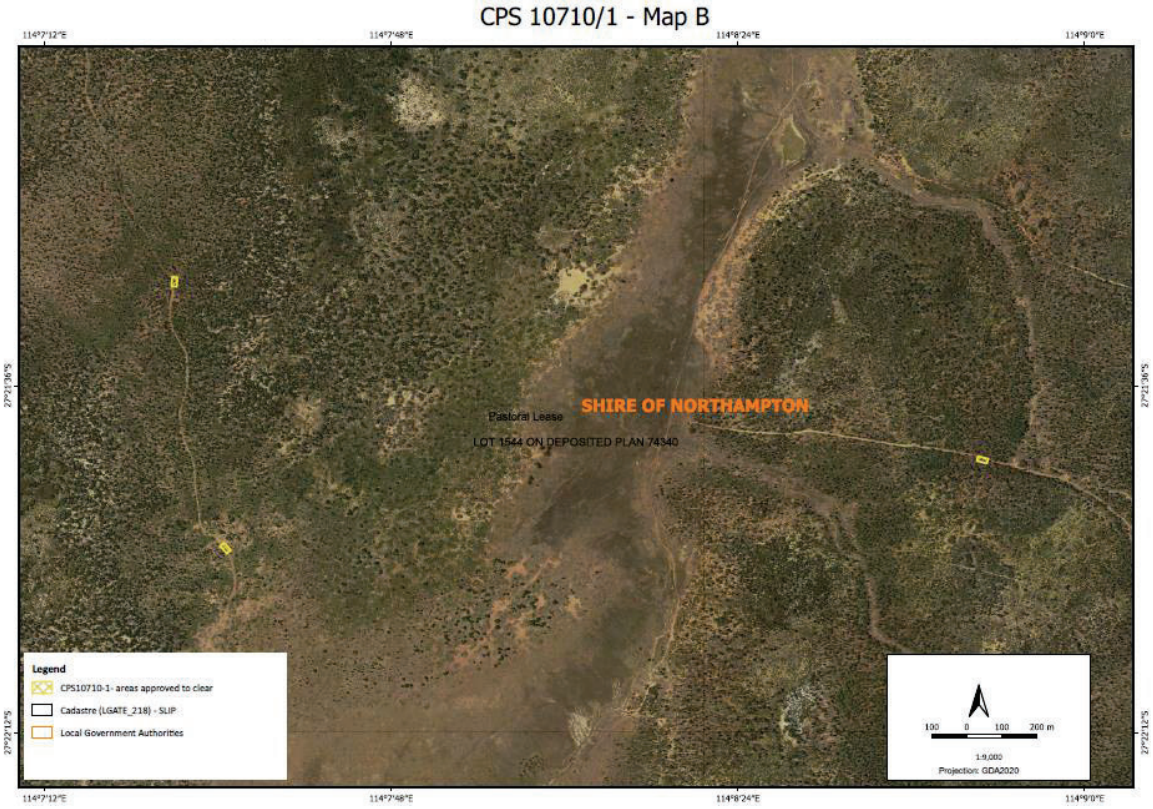


Figure 3: Map of the boundary of the area within which clearing may occur

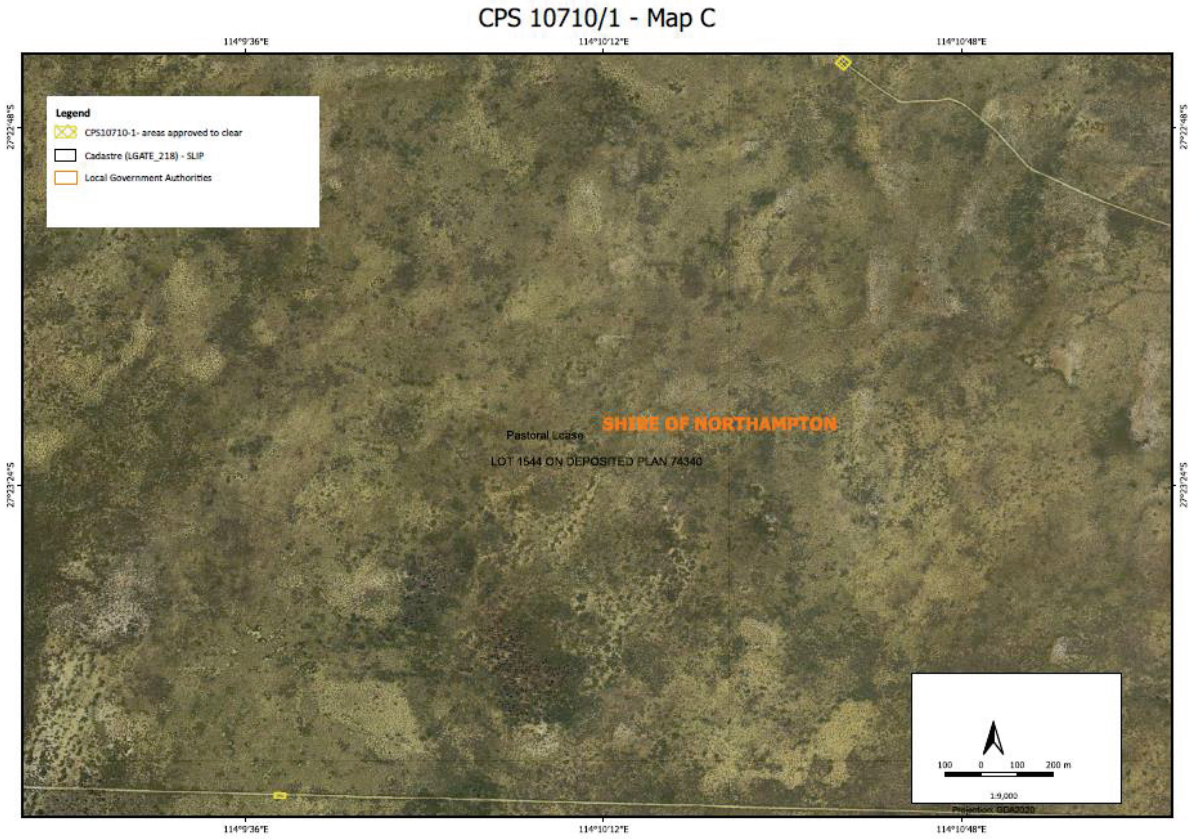


Figure 4: Map of the boundary of the area within which clearing may occur

Figure 5: Map of the boundary of the area within which clearing may occur

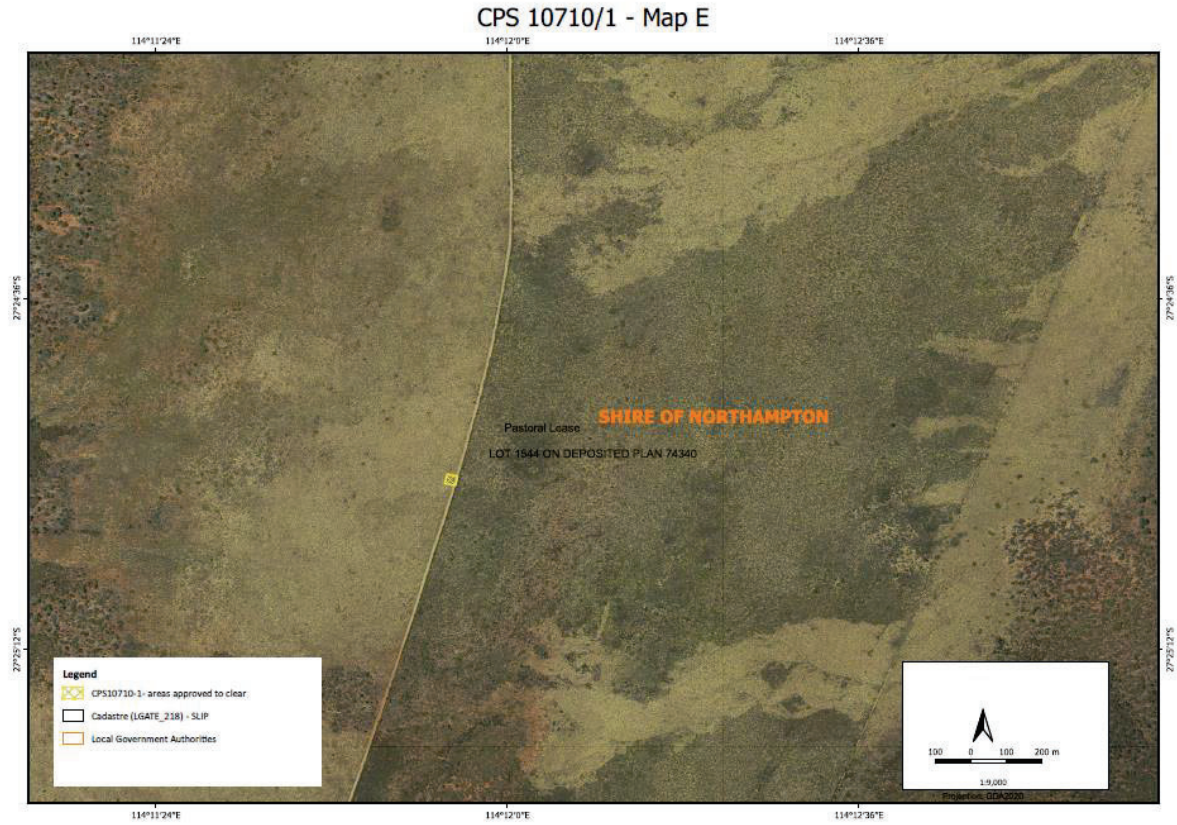


Figure 6: Map of the boundary of the area within which clearing may occur

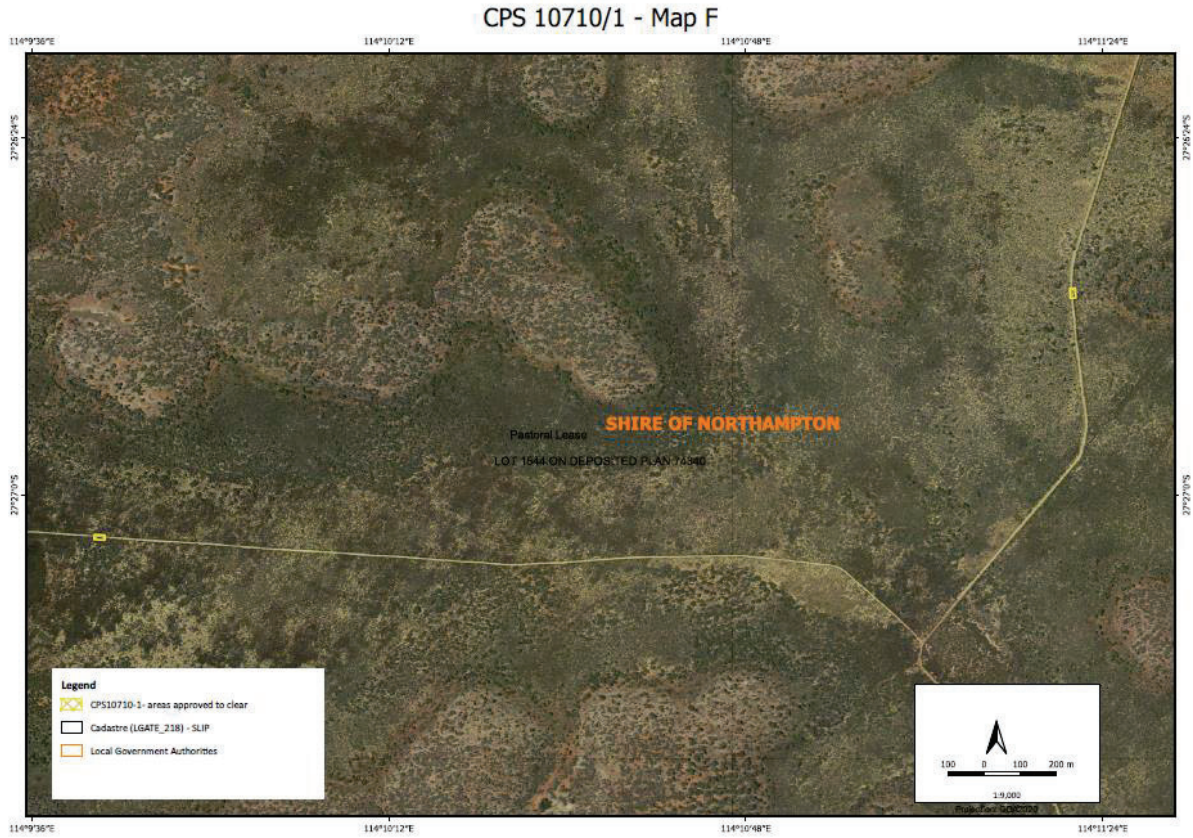


Figure 7: Map of the boundary of the area within which clearing may occur

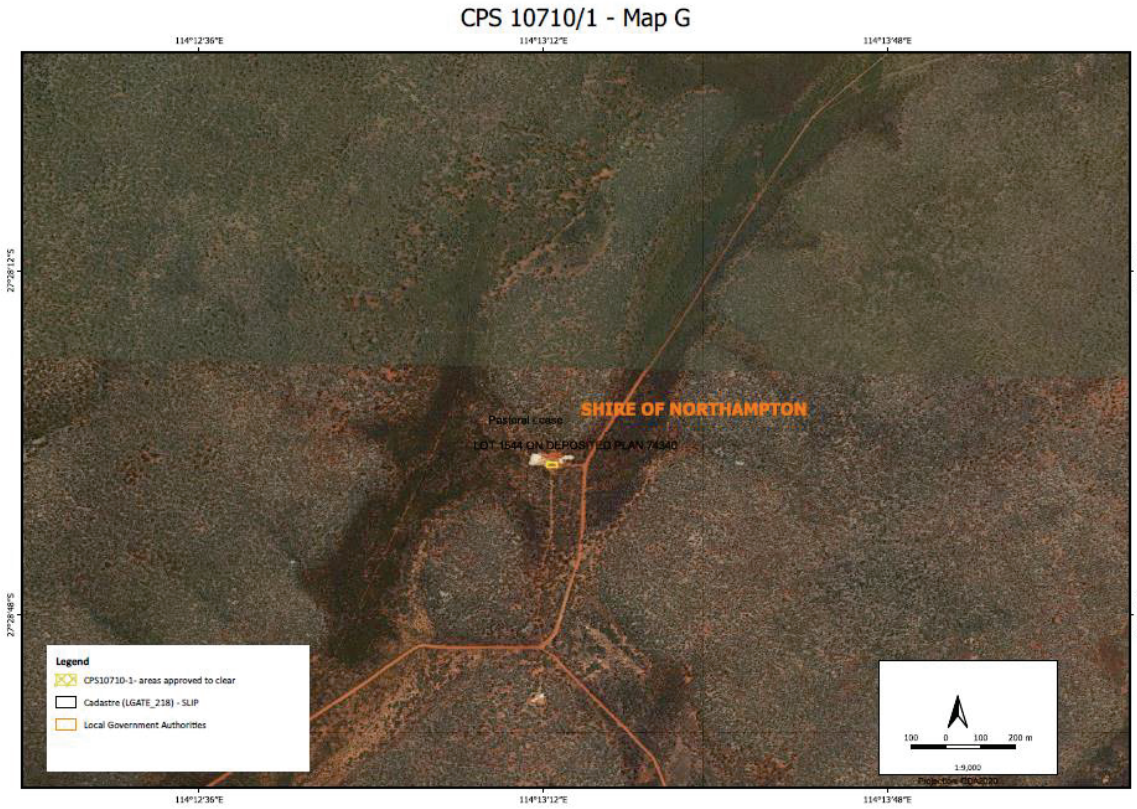


Figure 8: Map of the boundary of the area within which clearing may occur

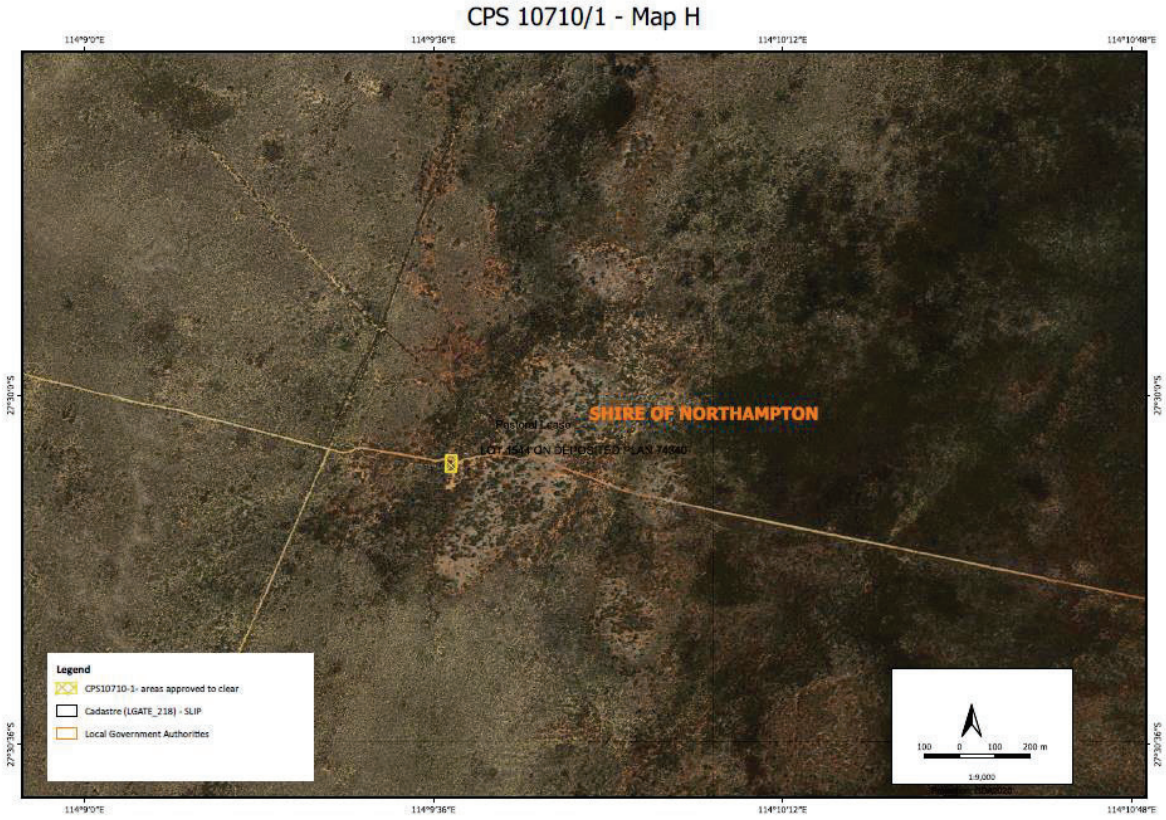


Figure 9: Map of the boundary of the area within which clearing may occur

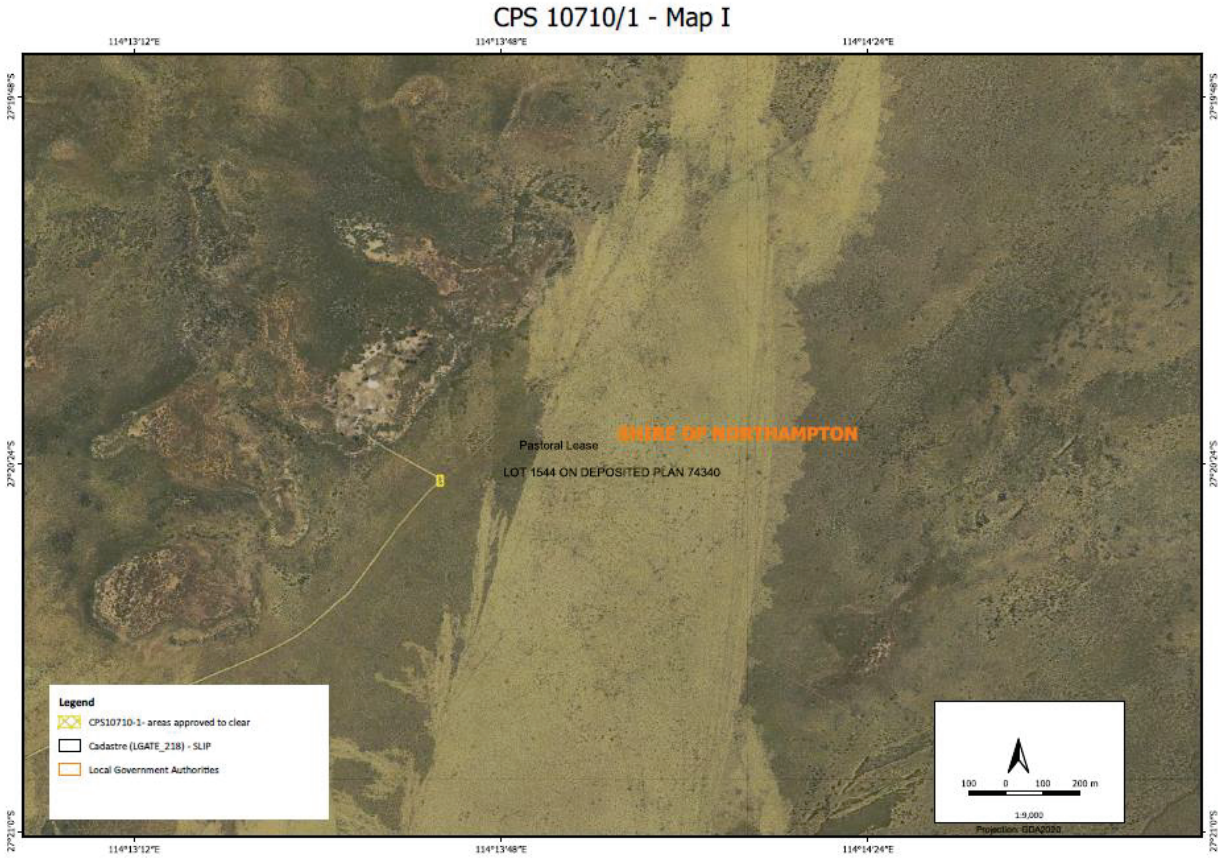


Figure 20: Map of the boundary of the area within which clearing may occur

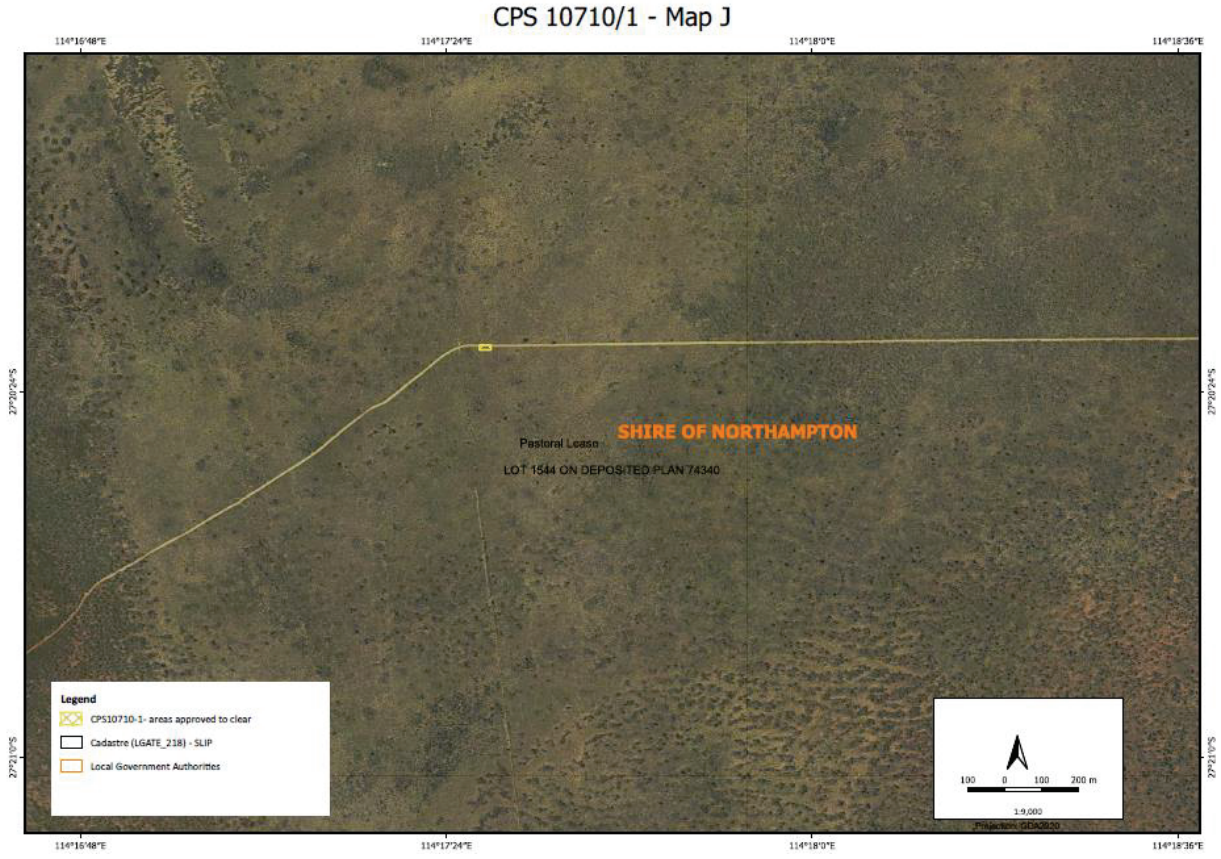


Figure 31: Map of the boundary of the area within which clearing may occur

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10710/1
Permit type:	Purpose permit
Applicant name:	Murchison Hydrogen Renewables Pty Ltd as trustee for the Murchison Hydrogen Renewables Trust
Application received:	2 August 2024
Application area:	0.54 hectares of native vegetation
Purpose of clearing:	Geotechnical and hydrogeological investigations
Method of clearing:	Mechanical
Property:	Lot 1544 on Deposited Plan 74340 Unallocated Crown Land (PIN 18814411)
Location (LGA area/s):	Shire of Northampton
Localities (suburb/s):	Zuytdorp

1.2. Description of clearing activities

The applicant is proposing to clear 0.54 hectares of native vegetation within a 0.97 hectare permit boundary to conduct geotechnical and hydrogeological investigations for the Murchison Hydrogen Renewables Project. The proposed clearing is over 17 separate areas varying in permit boundary size, from 0.45 hectares (14 locations) to 0.9 hectares (2 locations) and one location being 0.158 hectares (GHD, 2024).

1.3. Decision on application

Decision:	Granted
Decision date:	24 October 2024
Decision area:	0.54 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the findings of a flora, fauna and vegetation survey and a site inspection (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see **Error! Reference source not found.**), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing:

- may increase the risk of spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- the loss of native vegetation that is suitable habitat for Carnaby's cockatoo, malleefowl; and
- potential impacts to conservation significant fauna if present during clearing activities.

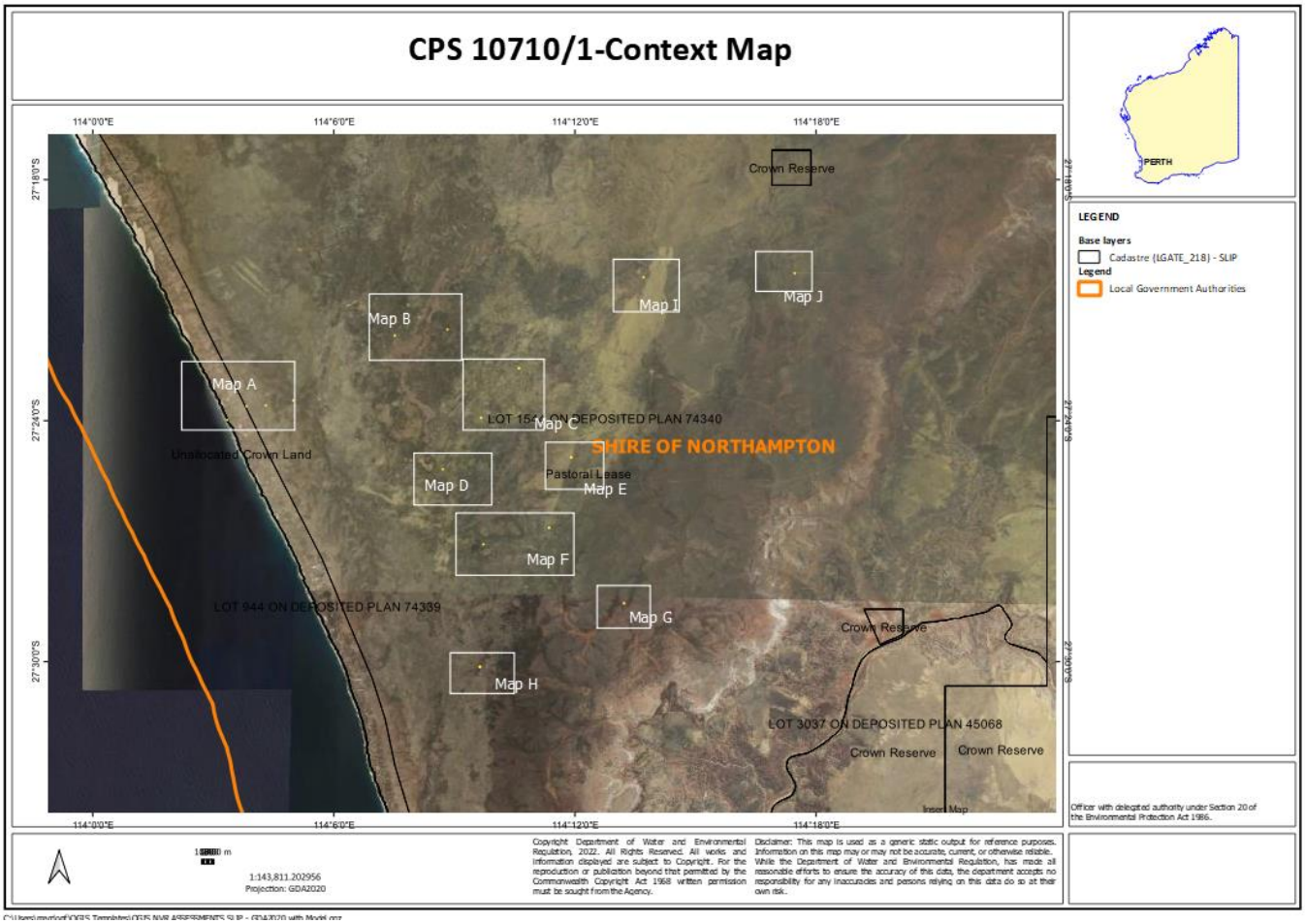
After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to appreciable land degradation and long-term adverse impacts on environmental values. Potential impacts of clearing can be minimised and managed to unlikely lead to an unacceptable risk to environmental values. The applicant has suitably demonstrated avoidance and minimisation measures, to counterbalance the impacts to clearing.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

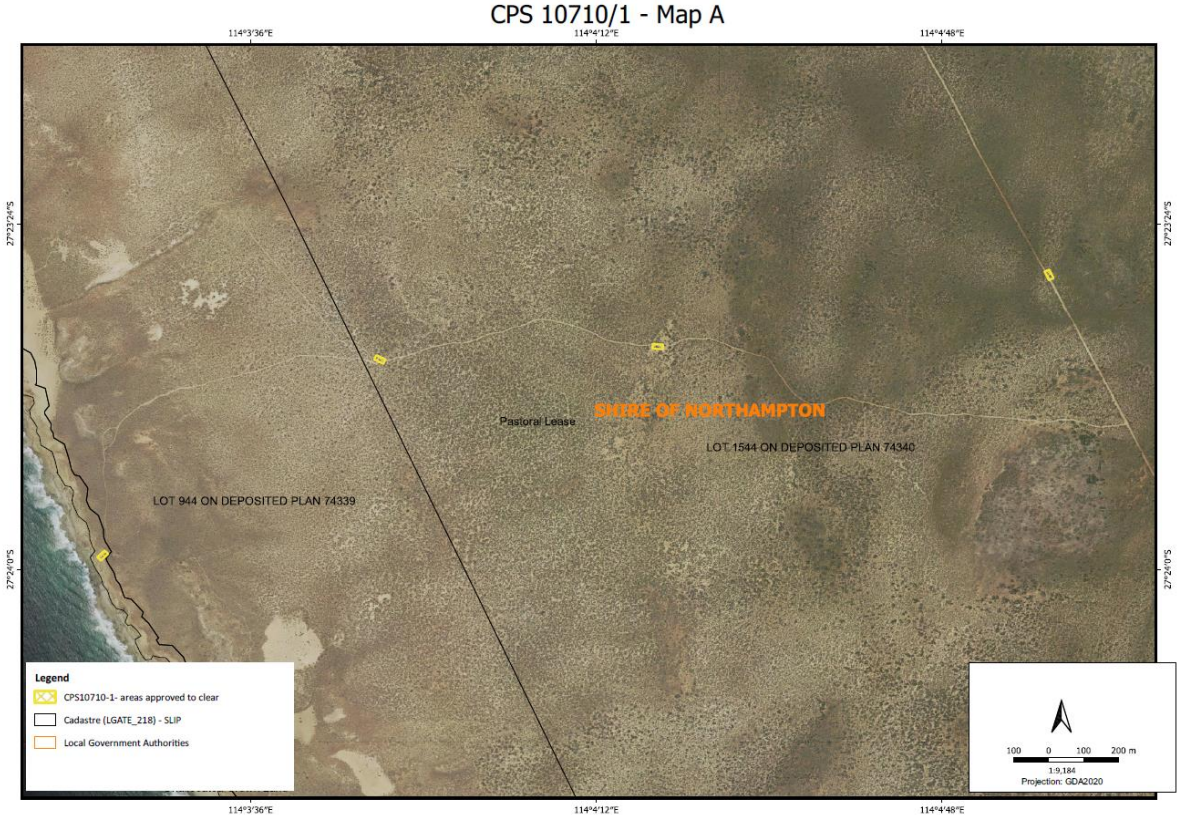
- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity; and
- undertake revegetation and rehabilitation of areas to restore the environmental values.

The Delegated Officer also noted that the impacts of the proposed clearing are only temporary and are unlikley to have long term impact on the environemntal values in the application area.

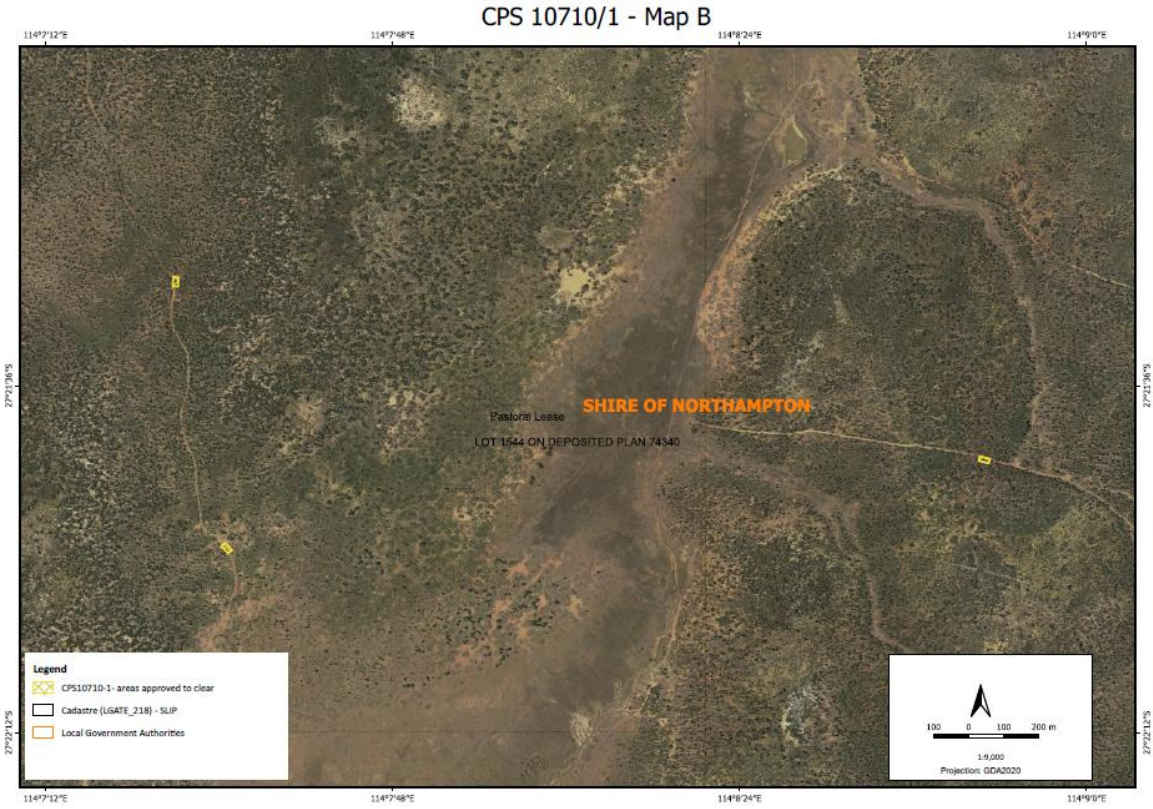
1.5. Site map



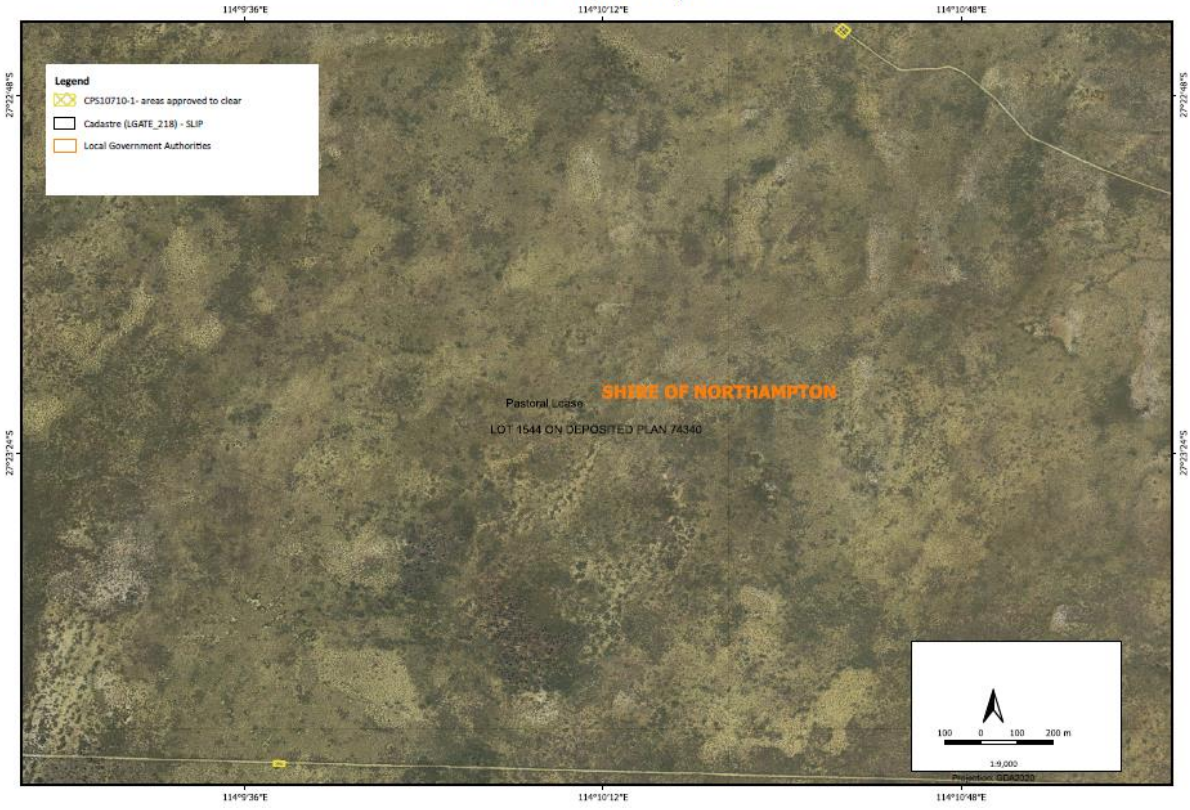
CPS 10710/1 - Map A



CPS 10710/1 - Map B

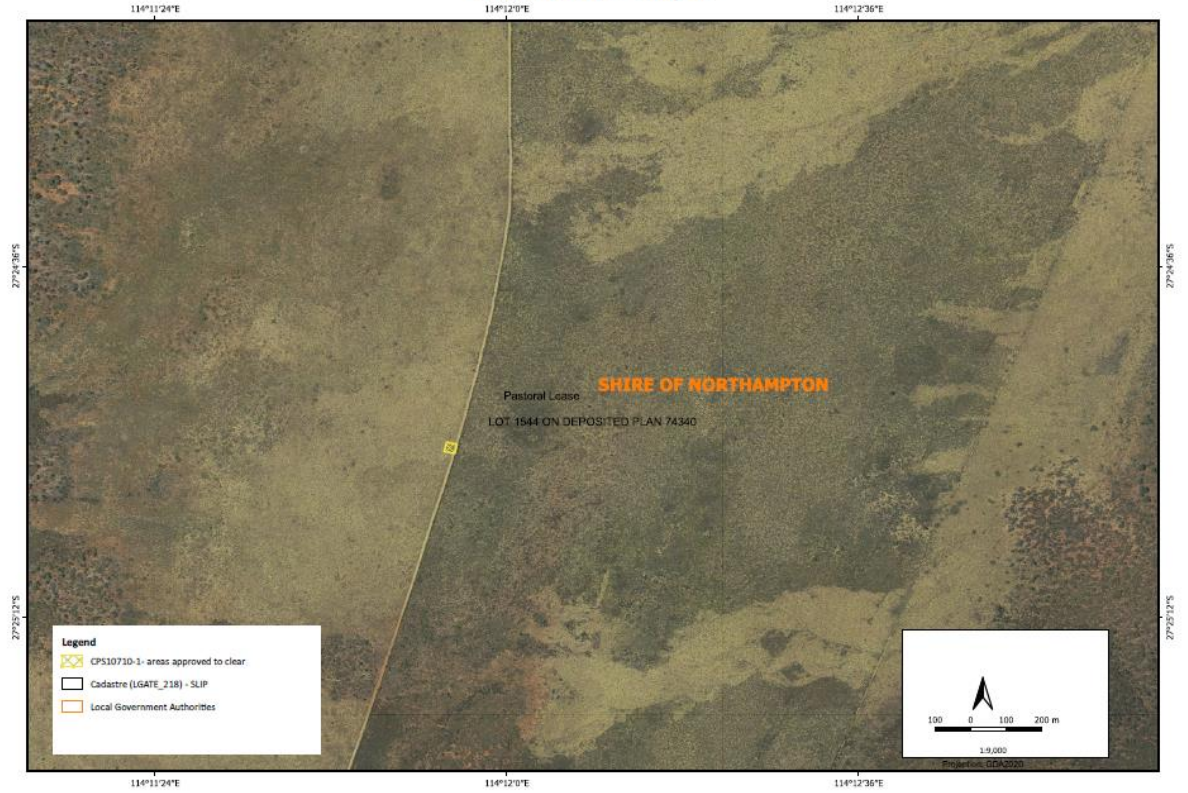


CPS 10710/1 - Map C



CPS 10710/1 - Map D

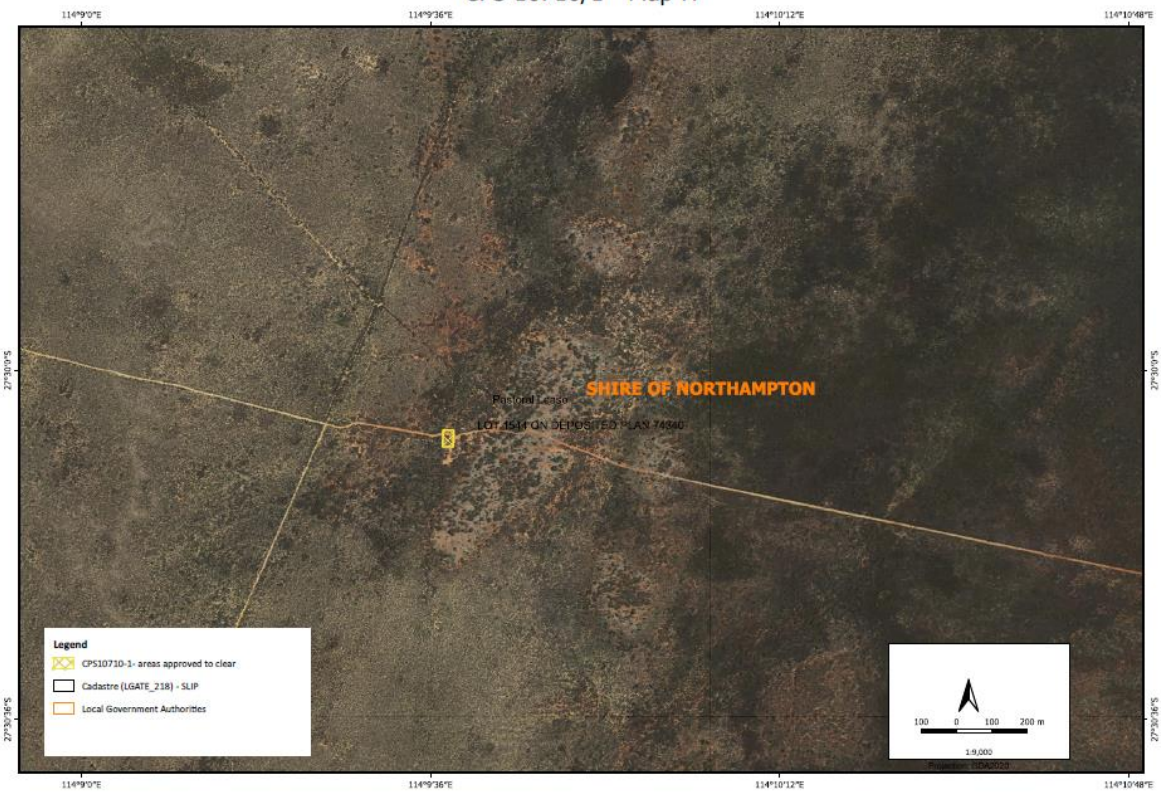
CPS 10710/1 - Map E



CPS 10710/1 - Map F

CPS 10710/1 - Map G

CPS 10710/1 - Map H



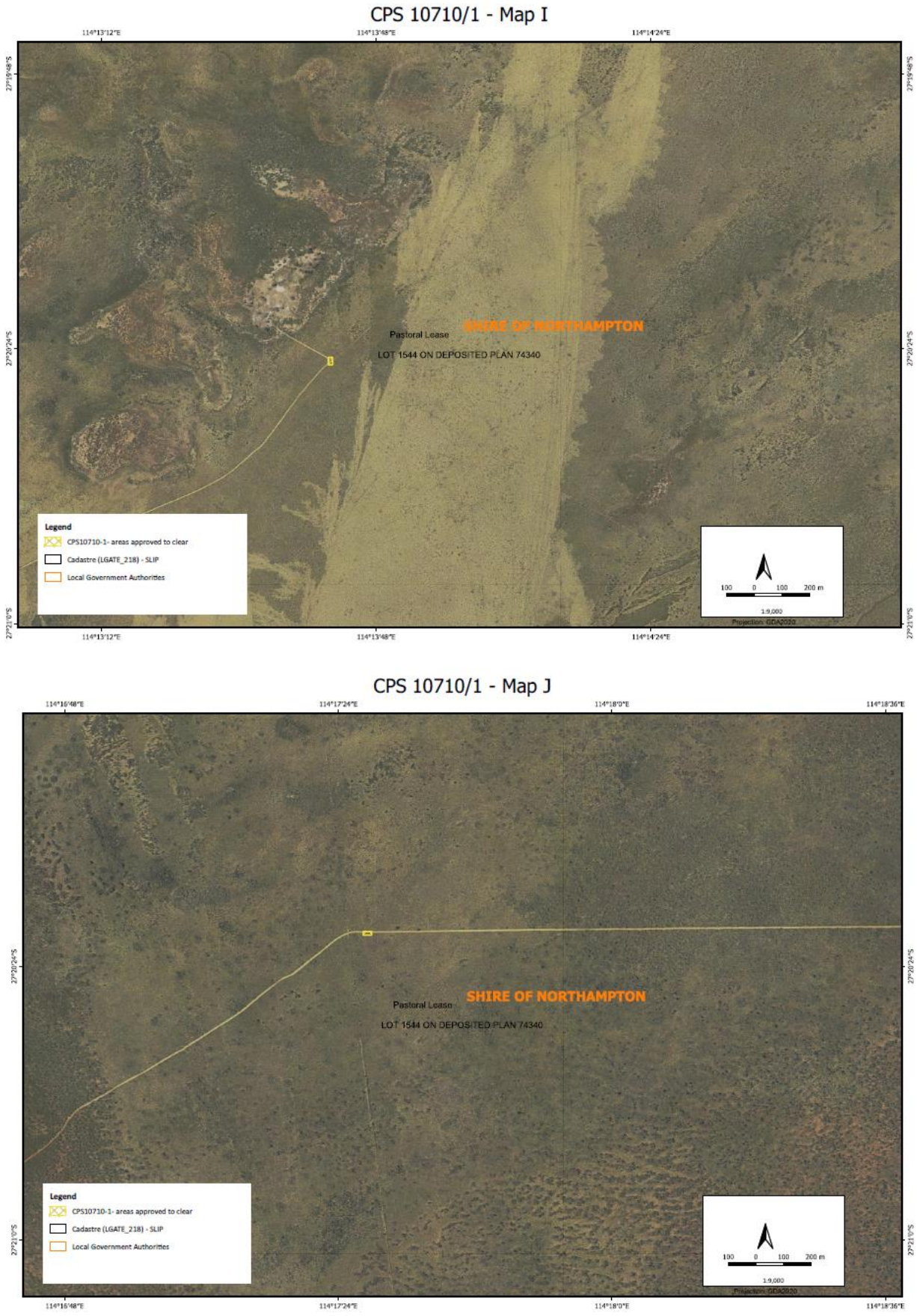


Figure 1 Map of the application area. The areas crosshatched yellow indicate the areas approved to clear

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 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)
- *Rights in Water and Irrigation Act 1914* (RIWI 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, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has considered and demonstrated to avoid or minimise the need for clearing, as below:

- Flora and vegetation loss has been avoided through design of the geotechnical locations, which are all on or adjacent to existing access tracks with the clearing envelope.
- When considering placement of the geotechnical tests, a site-by-site assessment with designers, geotechnicians and the environmental team occurred, to identify constraints and the most practicable location of the geotechnical sites, using existing access tracks and existing cleared areas wherever possible.
- Impacts to flora and vegetation will be minimised by selecting existing access tracks and sparsely vegetated or bare soil borehole/ test pit locations where possible during geotechnical works.
- Conservation significant areas to be avoided will be provided to the geotechnical team in hard copy and digital format to ensure sites of environmental significance are avoided in the field when deciding the location of boreholes, test pits and access tracks within the geotechnical corridor.

Avoidance and management measures applied on site:

- The geotechnical team will utilise existing tracks and roads where possible, only veering off existing tracks and roads within predefined investigation sites to allow for the drill rig and light vehicle access to boreholes locations.
- Where practicable, vegetation will be driven over and not removed.
- Preference will be given to degraded or already cleared vegetation in proximity to access tracks when selecting borehole locations.
- Boreholes are to be capped, and the cleared drill pad area will have topsoil reinstated to facilitate natural regrowth.
- Upon the conclusion of drilling each borehole, the same access track will be used to return to the main road.
- All vehicles will be cleaned before entering site to mitigate the risk of weeds entering the site or spreading.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see **Error! Reference source not found.**) identified that the impacts of the proposed clearing present a risk to biological values (fauna and flora). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Environmental value: fauna - Clearing Principle (b)

Assessment

The fauna survey recorded 262 vertebrate species within the survey area, which include the application areas and surrounding area, comprising 28 mammals, 156 birds, 72 reptiles and six amphibians (GHD, 2023b).

There have been 17 conservation significant fauna species have been recorded within the local area. Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type, the condition of the vegetation within the application area, as well as the findings of the fauna survey (GHD, 2023b), the application areas are likely to comprise suitable habitat for the following species:

- Bar-tailed Godwit (*Limosa lapponica menzbieri*) – EPBC Endangered, BC Critically Endangered
- Carnaby's Cockatoo (*Zanda latirostris*) – EPBC Endangered, BC Endangered
- Greater Sand Plover (*Charadrius leschenaultia*) – EPBC Endangered, BC Endangered
- Malleefowl (*Leipoa ocellata*) – EPBC Vulnerable, BC Vulnerable
- Taper-tailed West Coast Slider (*Lerista humphriesi*) – Priority 3
- Western Grasswren (*Amytornis textilis* subsp. *textilis*) – Priority 4
- Western Spiny-tailed Skink (*Egernia stokesii badia*) – EPBC Endangered, BC Vulnerable

There were several migratory birds recorded within the survey area, as well as Carnaby's Cockatoo, Malleefowl, Western Spiny-tailed Skink, and the Taper-tailed West Coast slider (GHD, 2023b). There were no conservation significant fauna species recorded within the application areas (GHD, 2023; 2024). The application areas do not contain breeding or critical habitat for conservation significant fauna (GIS Database).

The proposed clearing of 0.54 hectares of native vegetation over 17 separate areas is unlikely to have an impact on habitat for conservation significant fauna. The fauna habitat types within the application areas and survey area are part of a larger contiguous landscape of similar habitats in the local area and surrounding region. Thus, the proposed clearing is not likely to have an impact on vegetation acting as a significant ecological linkage or stepping stone for fauna movement (GHD, 2023).

Conclusion

Based on the above assessment, it is considered that the impacts of the proposed clearing can be managed to be environmentally acceptable if avoidance, mitigation and management measures are implemented. For the reasons set out above, it is considered that the impacts of the proposed clearing on potential habitats for conservation significant fauna species can be managed with conditions to be environmentally acceptable.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Undertake slow, progressive, one directional clearing to allow terrestrial fauna to move into adjacent vegetation ahead of the clearing activity will minimise impact to individuals;
- Avoidance and minimisation to reduce the impacts and extent of clearing; and
- Revegetation activities of areas no longer required for the purpose of clearing.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Licence to abstract water under the *Rights in Water and Irrigation Act 1914* – Advice has been requested to DWER's Midwest Gascoyne Groundwater Area (8 Oct 24)
- Permit to interfere with bed and banks under the *Rights in Water and Irrigation Act 1914*.

No registered Aboriginal sites of significance have been mapped within the application area. It is the applicant's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

No submissions were received in relation to this application.

End

Appendix A. Site characteristics

A.1. Site characteristics

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td>Local context</td><td>The application areas occur approximately 20 kilometres north of Kalbarri within the Geraldton Sandplains and Yalgoo Interim Biogeographic Regionalisation for Australia (IBRA).

Aerial imagery indicates the local area (20-kilometre radius from the application areas) retains more than 90 per cent of the original native vegetation cover.</td></tr>
<tr><td>Ecological linkage</td><td>The application area is not mapped within ecological linkages</td></tr>
<tr><td>Conservation areas</td><td>The application area is not mapped within any conservation area.

The closest DBCA managed land is the Kalbarri National Park, approximately 13 kilometres southeast of the application areas (GIS Database).</td></tr>
<tr><td>Vegetation description</td><td>The application area is mapped as the Beard vegetation associations described below. The flora and vegetation survey (GHD, 2023a) identified the vegetation within the proposed clearing areas as comprising of 8 vegetation types, as listed in Appendix D.

These vegetation types are consistent with the Vegetation Associations broadly mapped for the application area and surround which are as follows:

<table>
<tr><th>Vegetation association</th><th>Description</th><th>Extent of VA remaining</th></tr>
<tr><td>17</td><td>Shrublands; Acacia rostellifera thicket</td><td>84.70</td></tr>
<tr><td>380</td><td>Shrublands; scrub-heath on sandplain</td><td>62.89</td></tr>
<tr><td>401</td><td>Mosaic: Shrublands; scrub-heath on coastal association on yellow sandplain / Shrublands; acacia patchy scrub</td><td>100.00</td></tr>
<tr><td>402</td><td>Shrublands; heath on coastal limestone</td><td>99.38</td></tr>
<tr><td>403</td><td>Shrublands; Acacia ligulata scrub-heath</td><td>96.27</td></tr>
</table>
</td></tr>
<tr><td>Vegetation condition</td><td>A vegetation survey (GHD, 2023a) indicates the vegetation within the proposed clearing area ranges from degraded to excellent (Keighery, 1994) condition.

The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos are available in Appendix D.</td></tr>
<tr><td>Climate and landform</td><td>Climate: Mean maximum temperature ranges from 34.1 °C (February) to 21.9 °C (July)
Mean minimum temperature ranges from 27.7°C

Rainfall: Mean annual rainfall in the area as 334.8 mm falling May through August (BoM, 2024).</td></tr>
<tr><td>Soil description</td><td>The soil is mapped as below</td></tr>
</table>

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>
<table>
<tr><th>System</th><th>Description</th><th>Landform</th></tr>
<tr><td>Nanga</td><td>Undulating sand plains and occasional dunes supporting shrub heath and tree heath vegetation.</td><td>Sandplains with acacia, mallees, and heath</td></tr>
<tr><td>Zuytdorp</td><td>Elevated, undulating limestone plains with thin sand cover, sea cliffs and low hills supporting low heath, mallee shrublands and paper bark thickets.</td><td>Coastal plains, cliffs, dunes, mudflats, and beaches; various vegetation</td></tr>
<tr><td>Bilbra</td><td>Plains and low rises on calcrete supporting dense tall Melaleuca and Acacia shrublands.</td><td>Calcrete plains with acacia shrublands</td></tr>
<tr><td>Cooloomia</td><td>Undulating sandplain and minor limestone outcrop plains with clumped vegetation (discontinuous mallee woodlands and thickets of myrtaceous shrubs) mixed with open grassy slopes.</td><td>Sandplains with acacia, mallees, and heath</td></tr>
<tr><td>Pillwarra</td><td>Calcrete plateaux, mesas, hills and footslopes supporting annual grasslands, herbfields and degraded chenopod shrublands.</td><td>Low hills with eucalypt or acacia woodlands with halophytic undershrubs</td></tr>
</table>
</td></tr>
<tr><td>Land degradation risk</td><td>The risks of land degradation in the form of erosion (wind and water), salinity, and flooding (including waterlogging) are very low (GIS Database).</td></tr>
<tr><td>Waterbodies</td><td>The desktop assessment and aerial imagery indicated that there are no wetlands, permanent or ephemeral watercourses within the application areas (GIS Database).</td></tr>
<tr><td>Hydrogeography</td><td>According to available databases, the application area is mapped within Proclaimed Gascoyne Groundwater area (RIWI Act). There are no Public Drinking Water Source Areas within the application areas.</td></tr>
<tr><td>Flora</td><td>A total of 49 flora species were recorded within the survey area, and no conservation significant flora species were recorded within the application areas (GHD, 2023a).</td></tr>
<tr><td>Ecological communities</td><td>No threatened (TEC’s) or priority ecological communities (PECs) are mapped within the application area. The vegetation within the application area does not represent any TECs or PECs (GHD, 2023a).</td></tr>
<tr><td>Fauna</td><td>A total of 17 conservation significant fauna species were recorded in the survey area.</td></tr>
</table>

A.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information, 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 (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia leptospermoides subsp. *obovata*	2	Y	Y	Y	>5	1	Y
Acacia plautella	3	Y	Y	Y	>19	1	Y
Acanthocarpus parviflorus	3	Y	Y	Y	>5	3	Y
Angianthus microcephalus	2				>10	1	
Anthotroche myoporoides	3	Y	Y	Y	>10	1	Y

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 (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Arnocrinum drummondii	3	Y	Y	Y	>12	2	Y
Baeckea subcuneata	2				>18	1	N
Bossiaea inundata	2				>17	1	N
Caladenia barbarella	T	Y	Y	Y	>10	1	Y
Caladenia bryceana subsp. *cracens*	T	N	Y	N	>17	1	Y
Caladenia integra	4				>12	1	N
Calytrix formosa	3				>16	2	N
Calytrix harvestiana	2	Y	Y	Y	>6	6	Y
Calytrix purpurea	2				>18	1	N
Chamelaucium marchantii	3	Y	Y	Y	>15	2	Y
Chamelaucium sp. *Coolcalalaya* (A.H. Burbidge 4233)	1	Y	Y	Y	<5	5	Y
Cryptandra glabriflora	2				>18	1	
Dasymalla glutinosa	3	Y	Y	Y	>11	1	Y
Drakaea concolor	T	Y	Y	Y	>12	1	Y
Drosera rechingeri	3				>15	3	N
Eremophila microtheca	4				<10	1	N
Eucalyptus zopherophloia	4	Y	Y	Y	>12	2	Y
Frankenia confusa	4				>10	2	N
Geleznowia amabilis	2	Y	Y	Y	>18	1	Y
Grevillea costata	3				>18	2	N
Grevillea leucoclada	3				>18	2	N
Grevillea stenomera	2	Y	Y	Y	<5	10	Y
Hemigenia saligna	3	Y	Y	Y	>14	1	Y
Hypocalymma longifolium	T				>12	4	N
Jacksonia velutina	4	Y	Y	Y	>14	2	Y
Lechenaultia chlorantha	T				>14	2	N
Lepidium biplicatum	3	Y	Y	Y	>15	1	Y
Macarthuria georgeana	1	Y	Y	Y	<5	1	Y
Macarthuria intricata	3	Y	Y	Y	>17	1	Y
Malleostemon microphyllus	2	Y	Y	Y	>11	5	Y
Melaleuca boeophylla	2				>19	1	N

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 (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Micromyrtus collina	1				<10	3	N
Mirbelia corallina	3				>18	2	N
Mirbelia sp. Zuytdorp (G.J. Keighery & N. Gibson 1688)	1	Y	Y	Y	>14	1	Y
Pileanthus aurantiacus	1	Y	Y	Y	<10	6	Y
Pileanthus bellus	3				>18	2	N
Scholtzia bellairsiorum	3				>18	1	N
Scholtzia corrugata	2	Y	Y	Y	>14	1	Y
Scholtzia kalbarri	2				>18	1	N
Scholtzia oleosa	3	Y	Y	Y	>5	4	Y
Scholtzia sp. Folly Hill (M.E. Trudgen 12097)	2	N	N	N	>14	1	Y
Scholtzia tenuissima	2				>18	1	N
Stachystemon nematophorus	4				<10	3	N
Styphelia cernua	2				>18	1	N
Thryptomene caduca	3	Y	Y	Y	>11	3	Y
Thryptomene calcicola	2	Y	Y	Y	>7	2	Y
Thysanotus fragrans	2				>18	1	N
Triodia bromoides	4	Y	Y	Y	>14	1	Y
Verticordia capillaris	4	Y	Y	Y	>6	3	Y
Verticordia cooloomia	3	Y	Y	Y	>9	5	Y
Verticordia dasystylis subsp. *kalbarriensis*	2				>18	3	N
Verticordia dichroma var. *dichroma*	3	Y	Y	Y	>9	2	Y
Verticordia dichroma var. *syntoma*	3	Y	Y	Y	>9	8	Y
Verticordia galeata	2				>16	5	N
Verticordia lepidophylla var. *quantula*	1	Y	Y	Y	>9	8	Y
Verticordia polytricha	4	Y	Y	Y	>7	6	Y

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

A.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Arenaria interpres (ruddy turnstone)	MI	Y	<15	1	Y
Hydroprogne caspia (Caspian tern)	MI	Y	<5	8	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Lerista humphriesi (taper-tailed West Coast slider (Murchison River))	P3	Y	<5	19	Y
Pandion haliaetus (osprey)	MI	Y	<5	4	Y
Thalasseus bergii (crested tern)	MI	Y	<5	2	Y
Pezoporus occidentalis (night parrot)	CR	N	>5	1	N
Idiosoma incomptum (Carnarvon shield-backed trapdoor spider)	P3	Y	>10	4	N
Idiosoma arenaceum (Geraldton Sandplain shield-backed trapdoor spider)	P3	N	>10	13	N
Tringa nebularia (common greenshank)	MI	Y	>10	2	Y
Leipoa ocellata (malleefowl)	VU	Y	>12	3	Y
Zanda latirostris (Carnaby's cockatoo)	EN	Y	>16	4	Y
Hypseleotris aurea (golden gudgeon)	P2	Y	>12	1	N
Falco peregrinus (peregrine falcon)	OS	Y	>17	2	Y

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

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared does not contain locally significant flora, fauna, or assemblages of plants. There were no Threatened or Priority flora species recorded within the application areas, as well as no mapped Priority Ecological Communities.	Not likely to be at variance	No
Principle (b): *"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."* Assessment: The proposed clearing area provides potential suitable habitat for several conservation significant fauna.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: There were no Threatened flora species recorded within the application areas (GHD, 2023a).	Not likely to be at variance	No
Principle (d): *"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."* Assessment: There are no Threatened Ecological Communities within the application areas, or surrounding region (GHD, 2023a; GIS Database).	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type 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.	Not likely to be at variance	No
Principle (h): *"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."* Assessment:	Not at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the separation distance between the application area and the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.		
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: No wetlands or watercourses are recorded within the application area. There will be no clearing of any vegetation associated with watercourses.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are not susceptible to land degradation (wind or water erosion, salinity. Noting the extent of the application area and the condition of the vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not at variance	No
Principle (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."* Assessment: Given no wetlands recorded within the application area. The application area is located within the unproclaimed surface water and proclaimed Gascoyne Groundwater area. Given the distance to the closest watercourses within the application area, the proposed clearing is unlikely to impact surface or ground water quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.	Not at variance	No

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 Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the Southwest and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Biological survey information excerpts

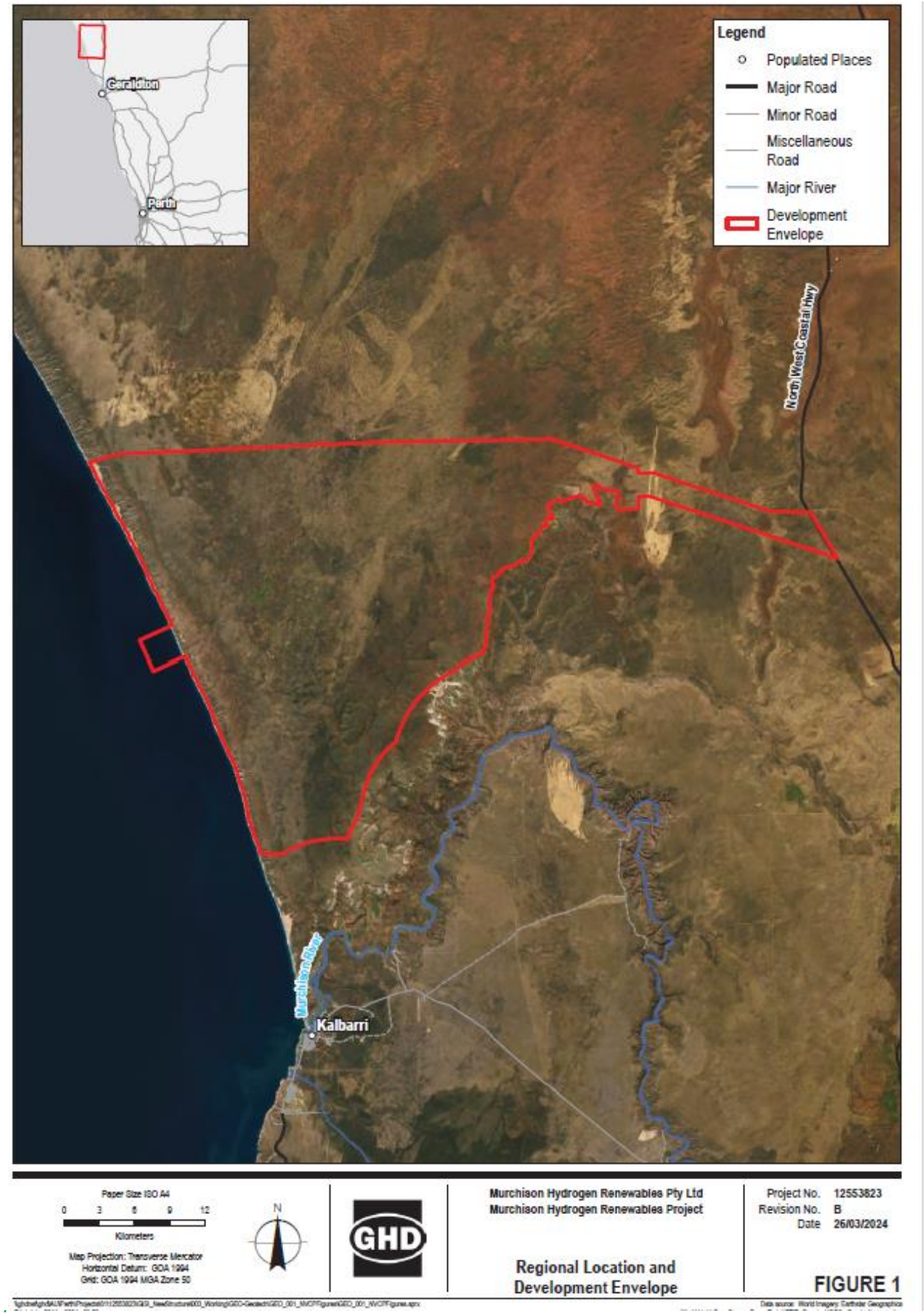


Figure 2 Map of the Regional Location and Development Envelope

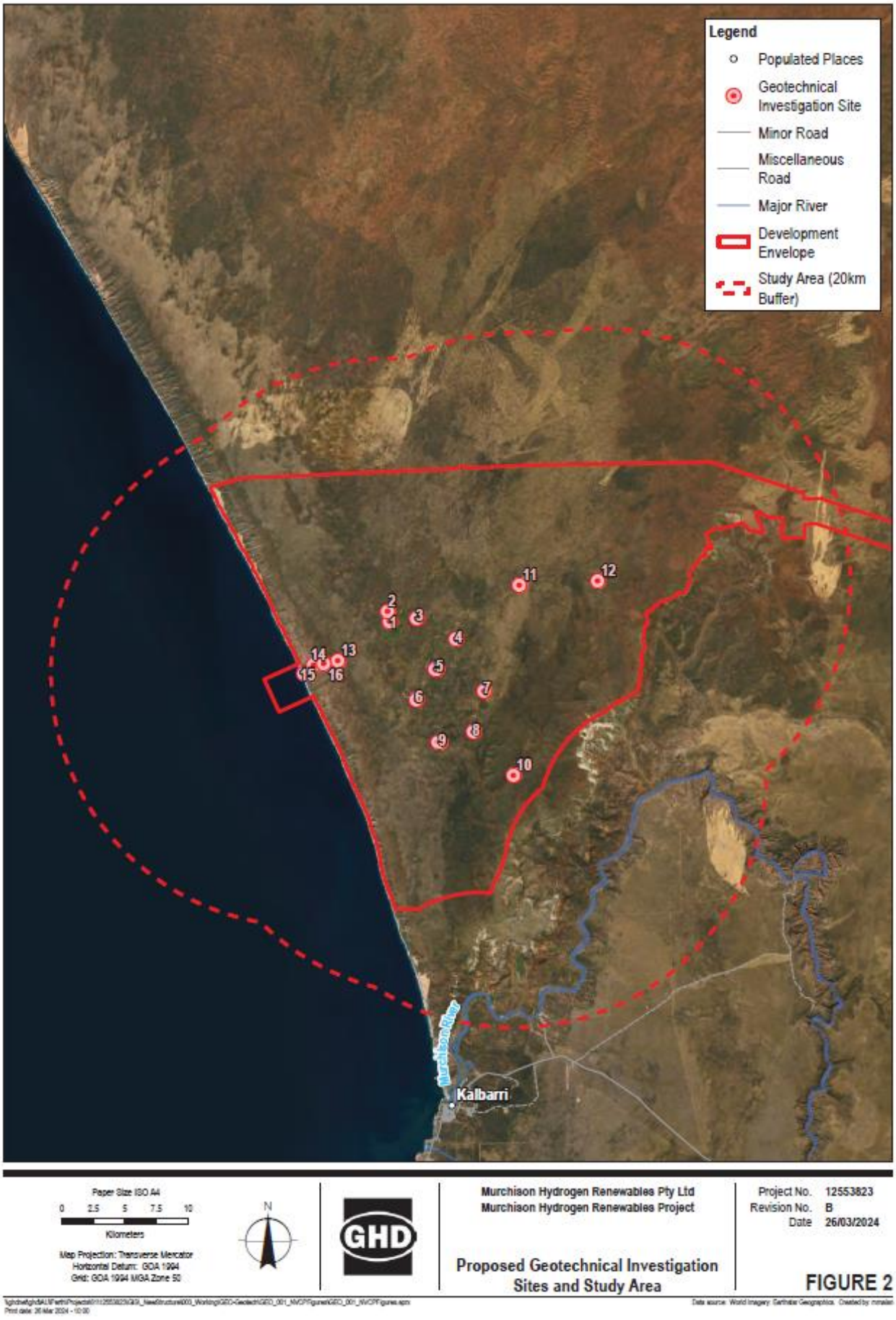


Figure 3 Map of proposed Geotechnical Investigation Sites and Study Area

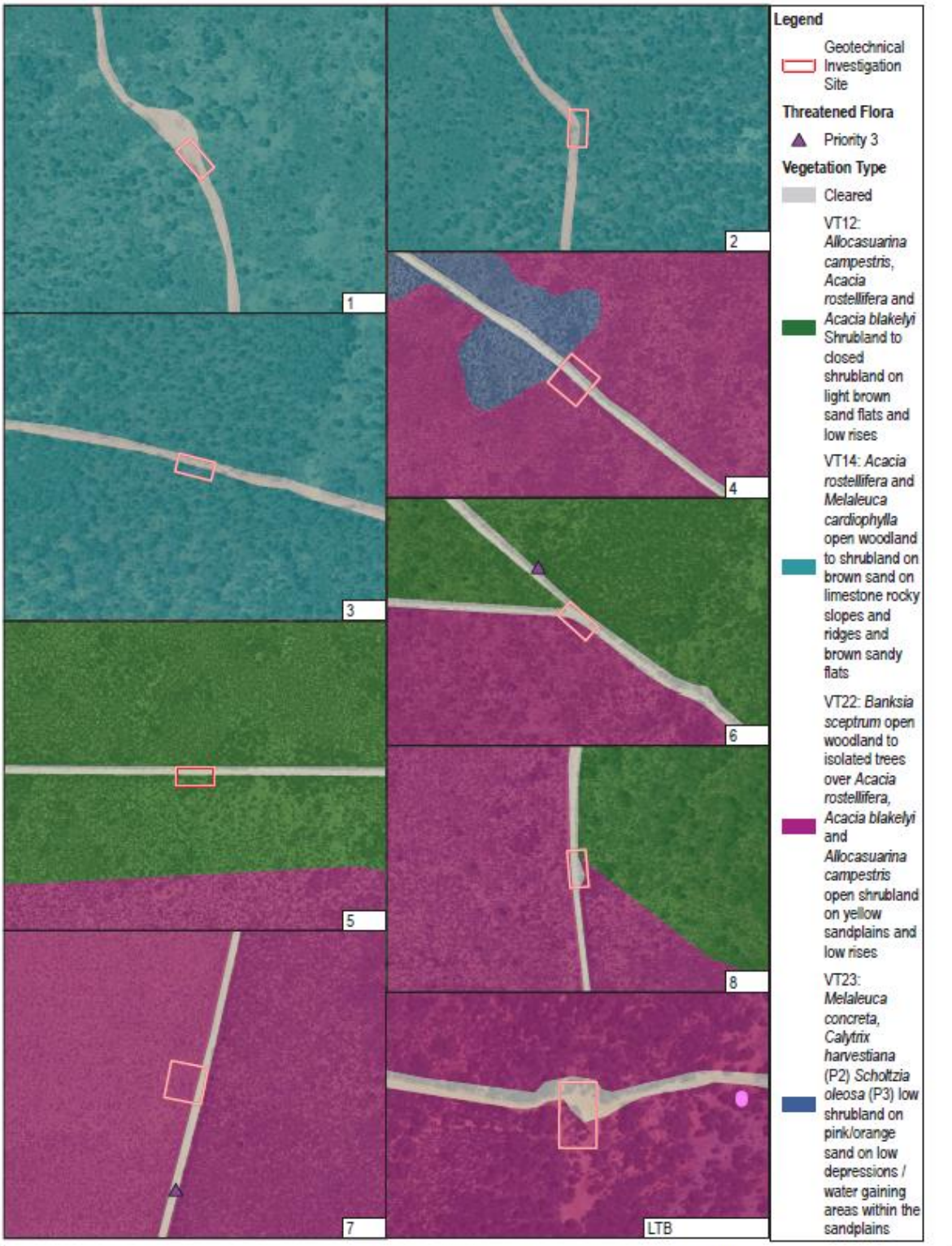


Figure 4 **Map of Native Vegetation and Significant Flora (part 1)**

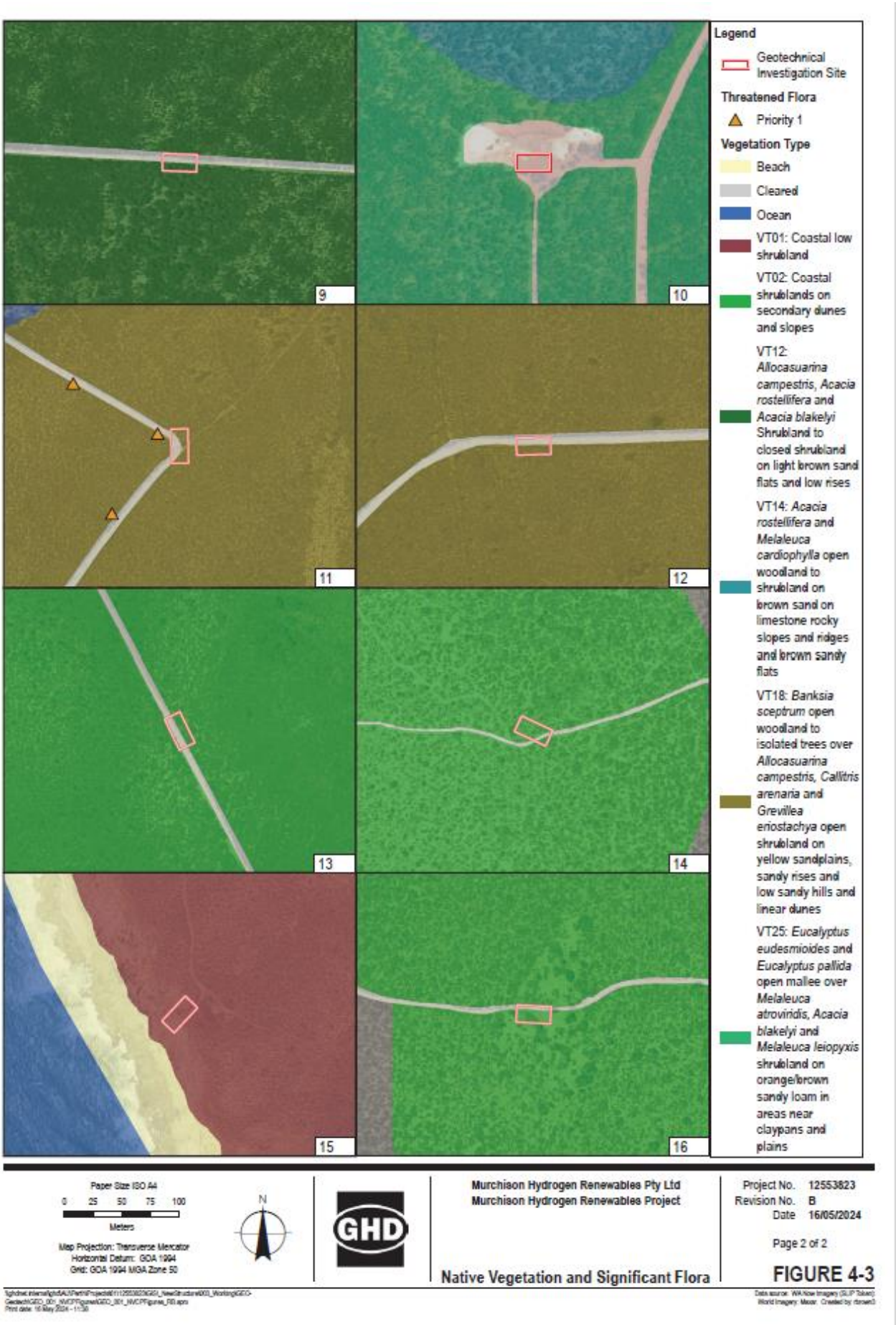


Figure 5 Map of Native Vegetation and Significant Flora (part 2)

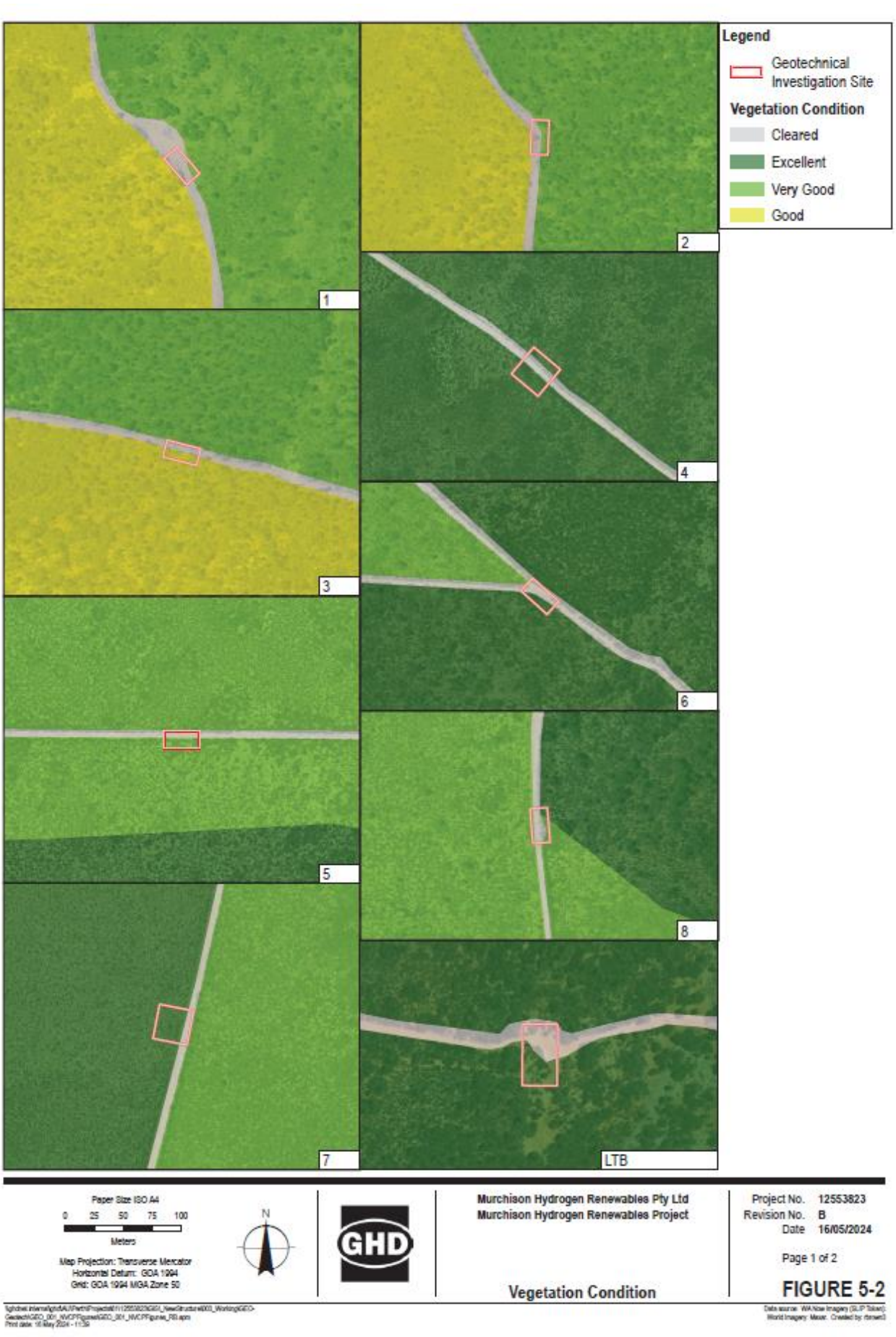


Figure 6 Map of Vegetation Condition (part 1)

Figure 7 Map of Vegetation Condition (part 2)

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Habitat type	Habitat Description	Photograph	Sites located in habitat type
Beach and associated dunes and limestone ridge	The coastal strip comprises a mosaic of beaches, reef, rock shelf, pools, dunes, and limestone ridges (with areas of breakaway or wind-swept ridgelines) creating a diverse sweet of microenvironments for species. The vegetation consisted of coastal heathlands however the primary dune contains scattered areas of Beach Spinifex (*Spinifex longifolius*) and coastal Saltbush (*Atriplex cinerea*) as well as other low salt and wind tolerant plants. This habitat was diverse in structure and was evidently sculptured by wind, water, and salt. Some areas were deep sands while others loam, shell or rock or combinations of all. There were high points in the environment and areas where water ran or pooled during large weather events. There was no evidence of fire in this environment. Most tracks leading to the coast had evidence of human use such as camping, fishing, old shacks, and associated rubbish. Additionally, goats were recorded on all habitat features and seen grazing on seaweed and drinking water. Some areas were degraded from goat use however large portions were in very good condition. This habitat provides a variety of habitat resources for fauna species, and patches had a greater structural diversity than the surrounding coastal heaths and shrublands. This habitat provides for burrowing species such as West Coast Banded Snake (*Simoselaps littoralis*), Northern Dotted-line Robust Slider (*Lerista miopus*) and rocky area provide for Barking Gecko (*Underwoodisaurus milli*). The Shark Bay Heath Dragon (*Ctenophorus butlerorum*) was only recorded in this habitat.	 	– 15

Habitat type	Habitat Description	Photograph	Sites located in habitat type
Coastal Heathlands	The western (coastal) side of the Survey Area is dominated by low coastal heathlands on coastal dunes, moving sands or minor limestone ridges. Coastal heaths are continuous along the coast however the beach and associated limestone is described as a separate habitat type due to the possible uses by fauna species and features present. The coastal heathland vegetation is much lower (up to about 50cm) along the coast, than further inland which reaches up to 1.5m. The difference in vegetation growth structure appears to be influenced by winds and in some areas grazing by goats. It is also possible that changes in soil composition i.e. limestone capping or moving sands will influence growth and structure. This habitat supports a continuous homogonous vegetation belt along the coast which varies in species composition from the southern to northern portions of the survey area i.e. Lomandra densities much higher in the south. This is likely due to slight changes in rainfall as the habitat extends north. However, the environment supports mixed shrubs of *Olearia*, *Frankenia*, *Carpobrotus*, *Acacia*, *Thryptomene*, *Eremophila glabra*, *Ptilotus* and Lomandra. The environment has dominant ground covers, some litter and debris with few logs. his is possibly due to the lack of tall or structured vegetative material and/or by grazing from goats and rabbits. There was no evidence of fire within this habitat type. Other disturbances present include old farming fencing and yards, however these compromise small areas of the environment. Due to the habitat present specialised coastal species such as Western Heath Dragon (*Ctenophorus adelaidensis*), West Coast Banded Snake (*Simoselaps littoralis*), Javelin Legless Lizard (*Delma concinna*) and White-spotted Ground Gecko (*Lucasium alboguttatum*) were present. Small passerine birds were also abundant which included White-winged Fairy-wren (*Malurus leucopterus*), Splendid Wren (*Malurus splendens*), Purple-backed Fairy-wren (*Malurus assimilis*), Southern Emu-wren (*Stipiturus malachurus*) and Rufous Field-wren (*Calamanthus campestris*).		– 13 – 14 – 16

Habitat type	Habitat Description	Photograph	Sites located in habitat type
Mixed Shrublands	A variety of different mixed/diverse shrublands occur throughout the sand plain and dune systems present within the survey area. These shrublands are characterised by differing dominance of Acacia, Melaleuca, Hakea, Grevillea, Allocasuarina, Calytrix and Verticordia species. The composition and high structural diversity of these shrublands varies, ranging from open shrublands to areas with dense patches of shrubs, dependent on the position in the landscape, age since fire and level of disturbance. Typically, there is a dominant mid-storey layer of shrubs, with few open patches of bare ground and scattered trees. Dominant ground covers included Lomandra spp. clumps or Triodia hummocks, sedges which provide excellent cover to small terrestrial reptiles. The shrublands provide high value habitat for birds, with foraging opportunities (flowers) and the dense patches of shrubs providing refuge areas. In areas with older fire history there are large amounts of nonvascular ground cover present, including fallen branches, bark, and leaf litter. There are also numerous flowering species, in particular proteaceous and myrtaceous species (e.g. Grevillea, Hakea, Verticordia, Calytrix). Where dune systems and deep sands are present digging species such as Ash Grey Mouse (*Pseudomys albocinereus*), Smooth Knob-tailed Gecko (*Nephrurus levis occidentalis*) and Southern Sandhill Frog (*Arenophryne xiphorhyncha*) were recorded.	 	– 5 – 9
Limestone hills and Ridgelines	The majority of southern and south eastern portion of the Survey Area comprises a mosaic of limestone hills and ridgelines. The formations are usually associated with Melaleuca spp. vegetation types or other low shrubs probably due to the shallow soils and limestone cap rock. Other species associated include Acacia, Eremophila, Grevillia, Hakea, and Borya and an abundance of grasses and herbs. The environment had areas of good ground covers, litter and debris but lacked large logs due to vegetation present. This habitat appeared particularly use by feral goats and pigs with noticeable grazing present and large areas where rocks and surface soils were ploughed by pigs. However despite the disturbances the habitat provides a range of cover to fauna species of outcropping with exfoliating rock, crevices and large rocks.		– 1 – 2 – 3

Habitat type	Habitat Description	Photograph	Sites located in habitat type
Banksia Shrubland	The southern, western and eastern portions of the survey area is characterised by Banksia shrubland withdominant species of Banksia ashbyi, B. sceptrum and B. prionotes. The understorey is of mixed low proteaceous and myrtaceous shrubs, with ground cover of sedges, hummock grasses or low shrubs. This habitat is quite dense with some areas almost impenetrable. Banksia shrubland had areas of dense littler, fallen branches and debris over deep sands creating excellent habitat for fossorial reptile and amphibian species. Limited tree hollows are available in this habitat however dead banksia provides excellent exfoliating bark for sheltering species, particularly bats and arboreal reptiles. Most of this habitat appeared long unburnt with grazing from goats the biggest impact. This habitat is an important foraging resource for Carnaby's Cockatoo, and also provides nectar for many nectivorous species such as the 11 honeyeater species recorded. Additionally the flowering plants lure insects to the area and in turn predatory birds with large flocks of Masked and Black Faced Wood-swallows utilising the resource.		– 4 – 6 – 7 – 8 – 11 – 12 – Long Thickett Bore

Habitat type	Habitat Description	Photograph	Sites located in habitat type
Cleared areas devoid of native vegetation (paths/roads)	Cleared areas including tracks, tank infrastructure and farmland, some scattered native shrubs/trees over weeds. Habitat value: Low to negligible		- 10

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Appendix E. Sources of information

E.1. GIS databases

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

- 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 (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

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