



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 6244/3
Permit Holder:	Forge Resources Swan Pty Ltd
Duration of Permit:	From 20 December 2014 to 24 June 2022

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, water and other investigations including associated access tracks.

2. Land on which clearing is to be done

Crown Reserve (R 53650), Balla Balla

Lot 49 on Deposited Plan 220711 (Pastoral lease N050345) Sherlock

Lot 51 on Deposited Plan 238028, (Pastoral lease N 050343), Sherlock and Chichester

Lot 52 on Deposited Plan 238012, (Pastoral lease N 049532), Chichester,

Lot 83 on Deposited Plan 238012, (Pastoral lease N 049532), Chichester

Lot 554 on Deposited Plan 407837, (R 9701), Sherlock

Lot 555 on Deposited Plan 415079, Sherlock and Balla Balla

Lot 556 on Deposited Plan 407838, Sherlock and Balla Balla

Lot 557 on Deposited Plan 407840, Sherlock and Balla Balla

Lot 558 on Deposited Plan 415079, Sherlock

Lot 559 on Deposited Plan 415079, Sherlock

Lot 78 on Deposited Plan 219351, Sherlock

Lot 79 on Deposited Plan 219326, Sherlock

Roebourne-Wittenoom Road (PIN 11732078), Chichester

Un-named Road (PIN 11732085), Chichester

Un-named Road, (PIN 11732086), Chichester

Un-named Road (PIN 11732087), Chichester

Un-named Road (PIN 11732108), Sherlock

Un-named Road, (PIN, 11732109), Sherlock

Un-named Road (PIN 11732112), Sherlock

Croydon-Whim Creek Road (PIN 11732138, 11732330 and 11732331), Sherlock
Un-named Road (PIN 11732326), Chichester
Un-named Road (PIN 11732890), Sherlock
Unallocated Crown Land (PIN 1017624), Chichester
Unallocated Crown Land (PIN 1019499), Chichester
Unallocated Crown Land (PIN 1019500), Chichester
Unallocated Crown Land (PIN 1019502), Chichester
Unallocated Crown Land (PIN 1180829), Chichester
Unallocated Crown Land (PIN 1180830), Chichester
Unallocated Crown Land (PIN 1258037), Sherlock

3. Clearing authorised

The permit holder must not clear more than 63.5 hectares of native within the area cross-hatched yellow in Figures 1 to 12 of Schedule 1.

4. Clearing not authorized

The permit holder shall only clear native vegetation within the areas shaded red in Figures 13 to 22 of Schedule 1 for the purpose of *access tracks* and associated drainage controls.

5. Period during which clearing is authorised

The permit holder must not clear any native vegetation after 24 December 2021.

6. Application of liability to agents of the permit holder

Without limiting or transferring the liability of the permit holder to comply with the conditions of this permit, the permit holder may authorise (in writing) additional persons, including employees, contractors, and agents of the permit holder, to clear native vegetation for the purpose(s) specified in condition 1.

PART II – MANAGEMENT CONDITIONS

7. 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.

8. 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.

9. Flora Management

- (a) Prior to undertaking any clearing authorised under this permit, the permit holder must demarcate the priority flora identified within reports '*Rutila Resources Railway Corridor Flora and Vegetation Assessment 9736-3882-14R Final, November 2014*' prepared by Ecoscape (Australia) Pty Ltd and '*Supplementary flora and vegetation survey and terrestrial fauna survey for the Balla Balla Infrastructure Project 1155-PIO-BBI-ECO, July 2018*' prepared by Phoenix Environmental Sciences and '*Reconnaissance flora and vegetation survey and targeted terrestrial fauna survey for the Balla Balla Infrastructure - Rail and Conveyor Project. Unpublished report prepared for BBI Group Pty Ltd 2020*' prepared by Phoenix Environmental Sciences; at the following locations:

'*Rutila Resources Railway Corridor Flora and Vegetation Assessment 9736-3882-14R Final, November 2014*' prepared by Ecoscape (Australia) Pty Ltd:

Species Name	Easting	Northing
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	596397	7663853
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	596373	7663935
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	596405	7663954
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	596391	7663902
<i>Goodenia nuda</i>	578289	7700070
<i>Goodenia nuda</i>	579041	7700036
<i>Goodenia nuda</i>	575331	7699462
<i>Goodenia nuda</i>	591289	7607286
<i>Helichrysum oligochaetum</i>	566845	7582615
<i>Helichrysum oligochaetum</i>	566780	7582634
<i>Helichrysum oligochaetum</i>	566145	7582790
<i>Heliotropium muticum</i>	592105	7677258
<i>Heliotropium muticum</i>	594286	7674156
<i>Heliotropium muticum</i>	576394	7691392
<i>Heliotropium muticum</i>	578764	7684815
<i>Heliotropium muticum</i>	592311	7677514
<i>Heliotropium muticum</i>	594402	7670353
<i>Heliotropium muticum</i>	592387	7677670
<i>Heliotropium muticum</i>	576418	7691344
<i>Heliotropium muticum</i>	592517	7677786
<i>Heliotropium muticum</i>	578739	7684869
<i>Heliotropium muticum</i>	591591	7678368
<i>Heliotropium muticum</i>	574765	7700864
<i>Heliotropium muticum</i>	582858	7681525
<i>Heliotropium muticum</i>	575380	7699462

Species Name	Easting	Northing
<i>Heliotropium muticum</i>	592708	7678077
<i>Heliotropium muticum</i>	582841	7681565
<i>Heliotropium muticum</i>	587196	7680918
<i>Heliotropium muticum</i>	586941	7680970
<i>Heliotropium muticum</i>	586821	7681000
<i>Heliotropium muticum</i>	586731	7681033
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	584000	7598006
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	583945	7598087
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	583945	7598087
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	583727	7597908
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	584236	7598385
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	586412	7599467

'Supplementary flora and vegetation survey and terrestrial fauna survey for the Balla Balla Infrastructure Project 1155-PIO-BBI-ECO, July 2018' prepared by Phoenix Environmental Sciences:

Species Name	Easting	Northing
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	597150	7664093
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	597159	7664081
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	597167	7664145
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	597558	7648993
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	597561	7648969
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	597633	7648978
<i>Acacia fecunda</i>	588639	7602862
<i>Goodenia nuda</i>	564544	7568266
<i>Heliotropium muticum</i>	594209	7669399
<i>Heliotropium muticum</i>	594203	7669416
<i>Heliotropium muticum</i>	594193	7669441
<i>Heliotropium muticum</i>	594198	7669450
<i>Heliotropium muticum</i>	594223	7669224
<i>Heliotropium muticum</i>	594208	7669277
<i>Heliotropium muticum</i>	594208	7669280
<i>Heliotropium muticum</i>	594209	7669284
<i>Heliotropium muticum</i>	576443	7691436
<i>Heliotropium muticum</i>	594198	7669483
<i>Heliotropium muticum</i>	594198	7669475
<i>Heliotropium muticum</i>	594211	7669378
<i>Heliotropium muticum</i>	594214	7669389
<i>Heliotropium muticum</i>	594214	7669394
<i>Heliotropium muticum</i>	594211	7669399
<i>Heliotropium muticum</i>	594220	7669413
<i>Heliotropium muticum</i>	594222	7669427
<i>Heliotropium muticum</i>	594222	7669440
<i>Heliotropium muticum</i>	594213	7669447
<i>Heliotropium muticum</i>	594211	7669468

Species Name	Easting	Northing
<i>Heliotropium muticum</i>	597149	7664096
<i>Heliotropium muticum</i>	597142	7664148
<i>Heliotropium muticum</i>	594230	7669384
<i>Heliotropium muticum</i>	594223	7669404
<i>Heliotropium muticum</i>	597141	7664123
<i>Heliotropium muticum</i>	594205	7669301
<i>Heliotropium muticum</i>	594201	7669308
<i>Heliotropium muticum</i>	594213	7669356
<i>Heliotropium muticum</i>	594207	7669371
<i>Heliotropium muticum</i>	594210	7669372
<i>Heliotropium muticum</i>	594200	7669462
<i>Heliotropium muticum</i>	597142	7664130
<i>Heliotropium muticum</i>	597142	7664129
<i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354)	575712	7688260
<i>Rhynchosia bungarensis</i>	572582	7702062
<i>Rhynchosia bungarensis</i>	577005	7699333
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	596143	7623616
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	595310	7615220
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	596143	7623616

'Reconnaissance flora and vegetation survey and targeted terrestrial fauna survey for the Balla Balla Infrastructure - Rail and Conveyor Project. Unpublished report prepared for BBI Group Pty Ltd 2020' prepared by Phoenix Environmental Sciences:

Species Name	Easting	Northing
<i>Heliotropium muticum</i>	576999	7692668
<i>Heliotropium muticum</i>	573275	7701865
<i>Heliotropium muticum</i>	575059	7701708
<i>Heliotropium muticum</i>	577034	7701406
<i>Heliotropium muticum</i>	576614	7694537
<i>Heliotropium muticum</i>	578350	7691760
<i>Heliotropium muticum</i>	577832	7698269
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	576680	7698265
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	577227	7691404
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	573535	7701785
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	573296	7701886
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	577848	7699593
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	578151	7701062
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	575202	7700011
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	575147	7701103
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	577505	7701474
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	576534	7698479
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	576633	7700677
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	575400	7698832
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	576066	7696393
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	577441	7695900
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	575525	7698843
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	577305	7695878

- (b) When undertaking any clearing authorised under this permit, the permit holder shall not cause or allow:
- (i) clearing within 50 metres of the identified priority flora within condition 9(a); and
 - (ii) clearing of the identified priority flora within condition 9(a).

10. Vegetation management – watercourse

Where a *watercourse* is to be impacted by clearing, the permit holder shall maintain the existing surface flow.

11. Revegetation and rehabilitation (temporary clearing)

The permit holder must:

- (a) retain the vegetative material and topsoil removed by clearing authorised under this permit and stockpile the vegetative material and topsoil in an area that has already been cleared;
- (b) within 6 months following clearing authorised under this permit, *revegetate* and *rehabilitate* the area(s) that are no longer required for of geotechnical, water and other investigations including associated access tracks by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding five metres of uncleared land;
 - (ii) ripping the ground on the contour to remove soil compaction;
 - (iii) laying the vegetative material and topsoil retained under condition 11(a) on the cleared area(s); and
 - (iv) undertake *weed* control activities on an ‘as needed’ basis to reduce *weed* cover within the cleared areas to no greater than the *weed* cover within the surrounding five metres of uncleared land.

PART III - RECORD KEEPING AND REPORTING

12. 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	<ol style="list-style-type: none">(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 1994 (GDA94), 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 7;(f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 8;

No.	Relevant matter	Specifications
		and (g) actions taken to maintain the existing surface flows of <i>watercourses</i> in accordance with condition 10 of this permit
2.	In relation to flora management pursuant to condition 9	(a) actions taken to demarcate each threatened flora and/or priority flora species recorded and their relevant buffers; and (b) actions taken to avoid the clearing of <i>threatened flora</i> and/or <i>priority flora</i> species.
3.	In relation to the revegetation and rehabilitation of areas pursuant to condition 11 of this permit	(a) the location of any areas revegetated and rehabilitated, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees; (b) the date(s) that the area was revegetated and rehabilitated; (c) a description of the revegetation and rehabilitation activities undertaken; and (d) the size of the area revegetated and rehabilitated (in hectares).

13. Reporting

- (a) The permit holder must provide to the *CEO*, on or before 30 June of each calendar year, a written report containing:
 - (i) the records required to be kept under condition 12; and
 - (ii) records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding calendar year.
- (b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken, must be provided to the *CEO* on or before 30 June of each calendar year.
- (c) The permit holder must provide to the *CEO*, no later than 90 calendar days prior to the expiry date of the permit, a written report of records required under condition 11, where these records have not already been provided under condition 13(a).

DEFINITIONS

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

Table 2: Definitions

Term	Definition
access track	a pathway with a maximum cleared width of 5 metres, giving access from one location to another.
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
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.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
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.
rehabilitate/ rehabilitated/ rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
watercourse	has the meaning given to it in section 3 of the <i>Rights in Water and Irrigation Act 1914</i> ;
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; 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



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

7 December 2020

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1-12).

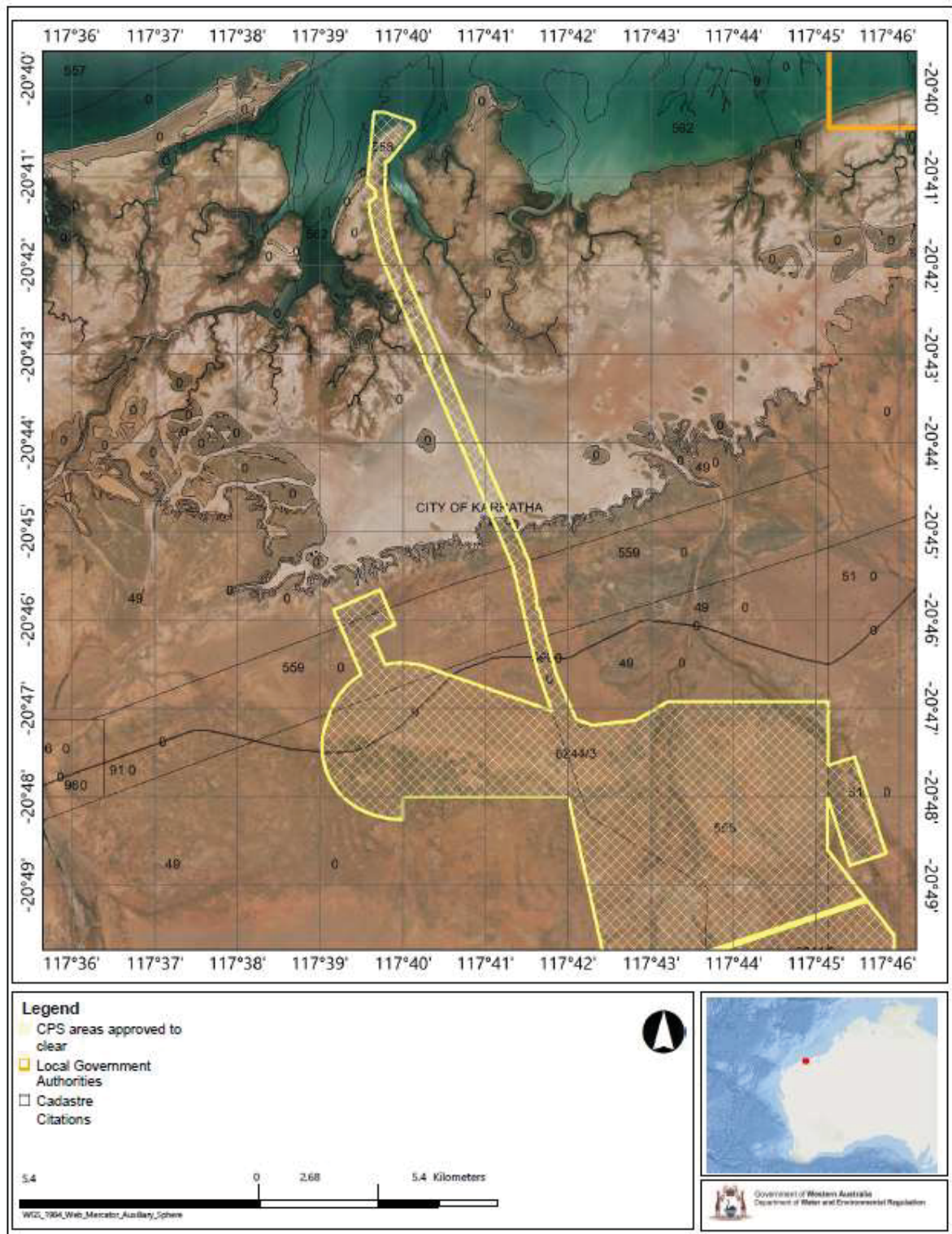


Figure 1: Map of the boundary of the area within which clearing may occur

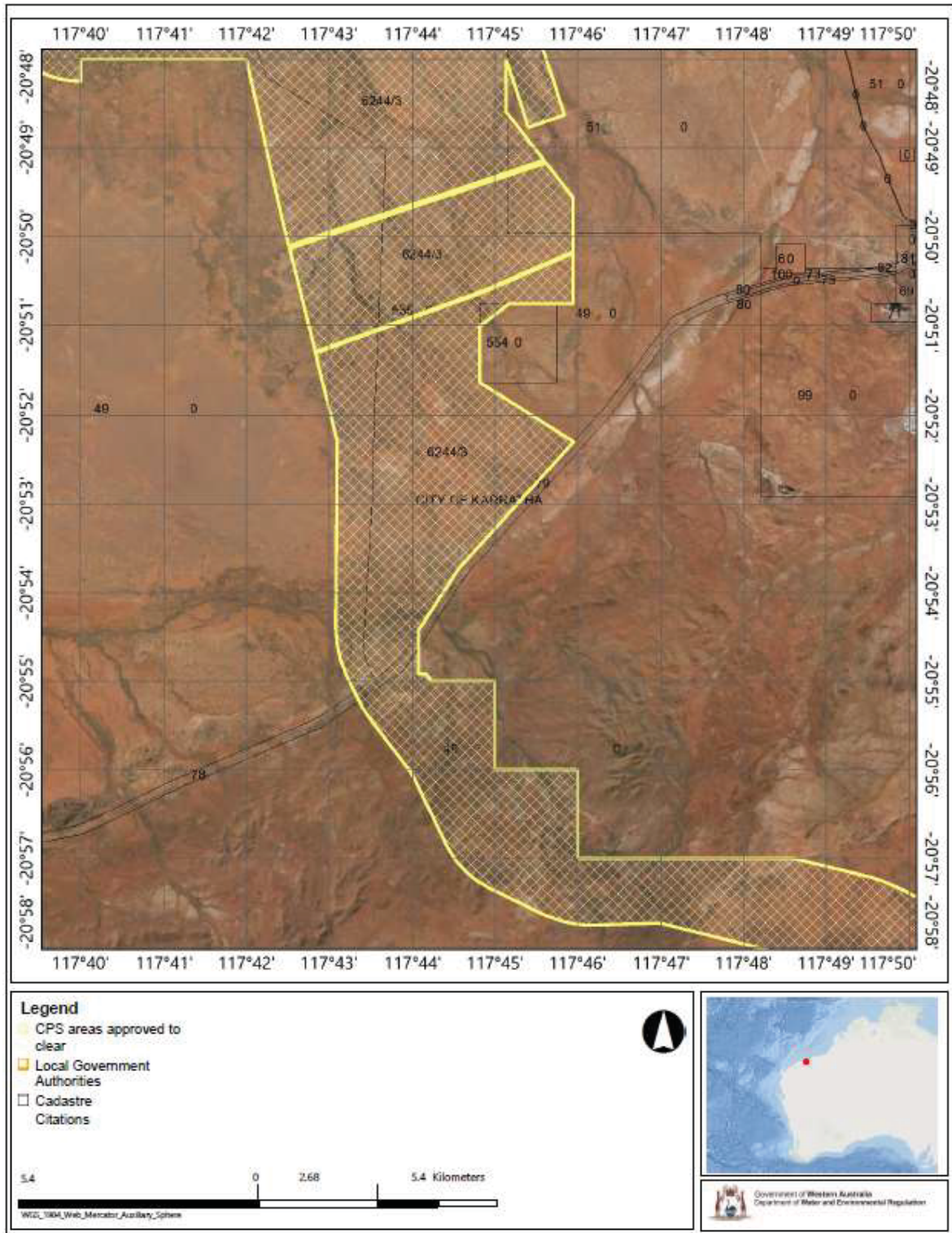


Figure 2: Map of the boundary of the area within which clearing may occur

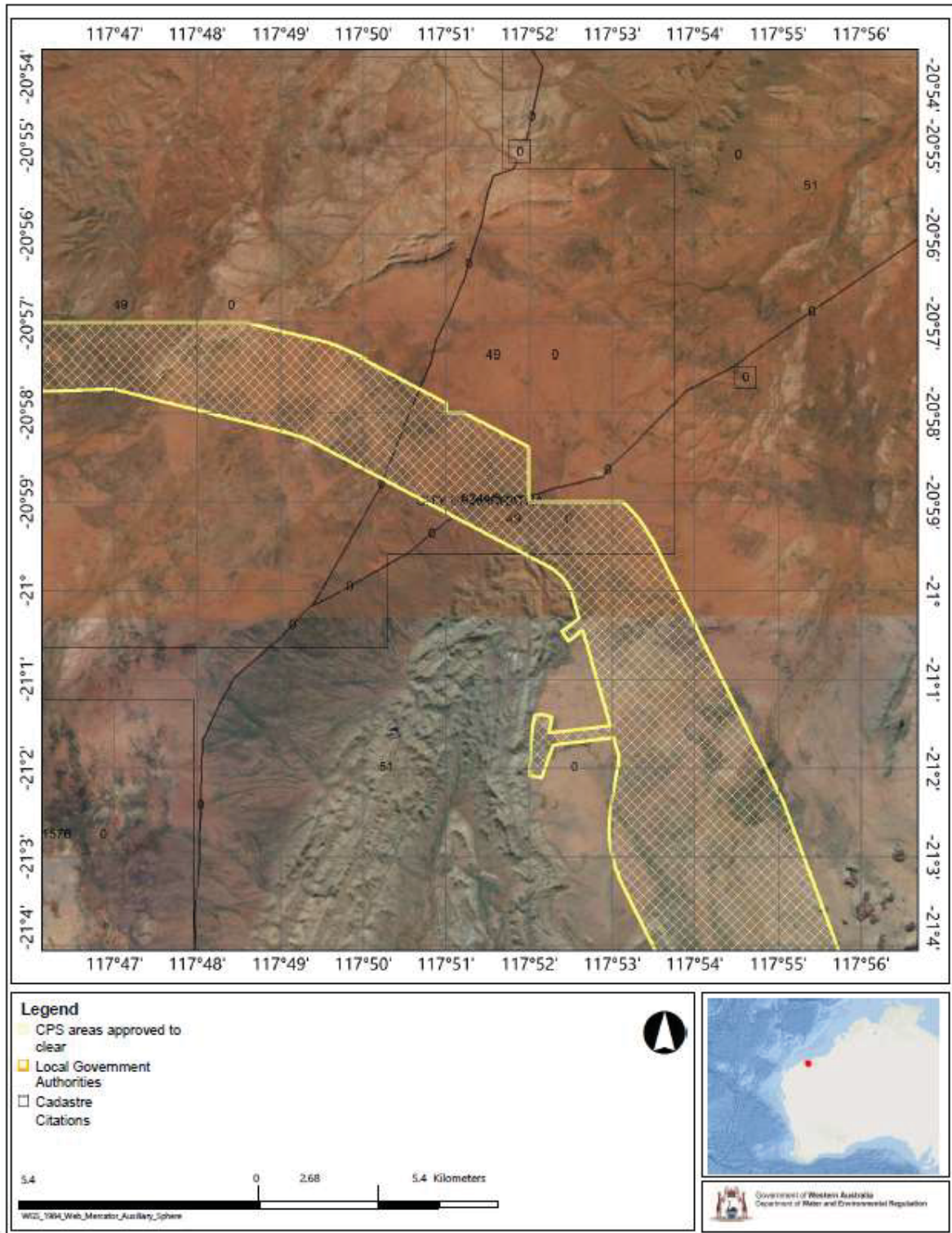


Figure 3: Map of the boundary of the area within which clearing may occur

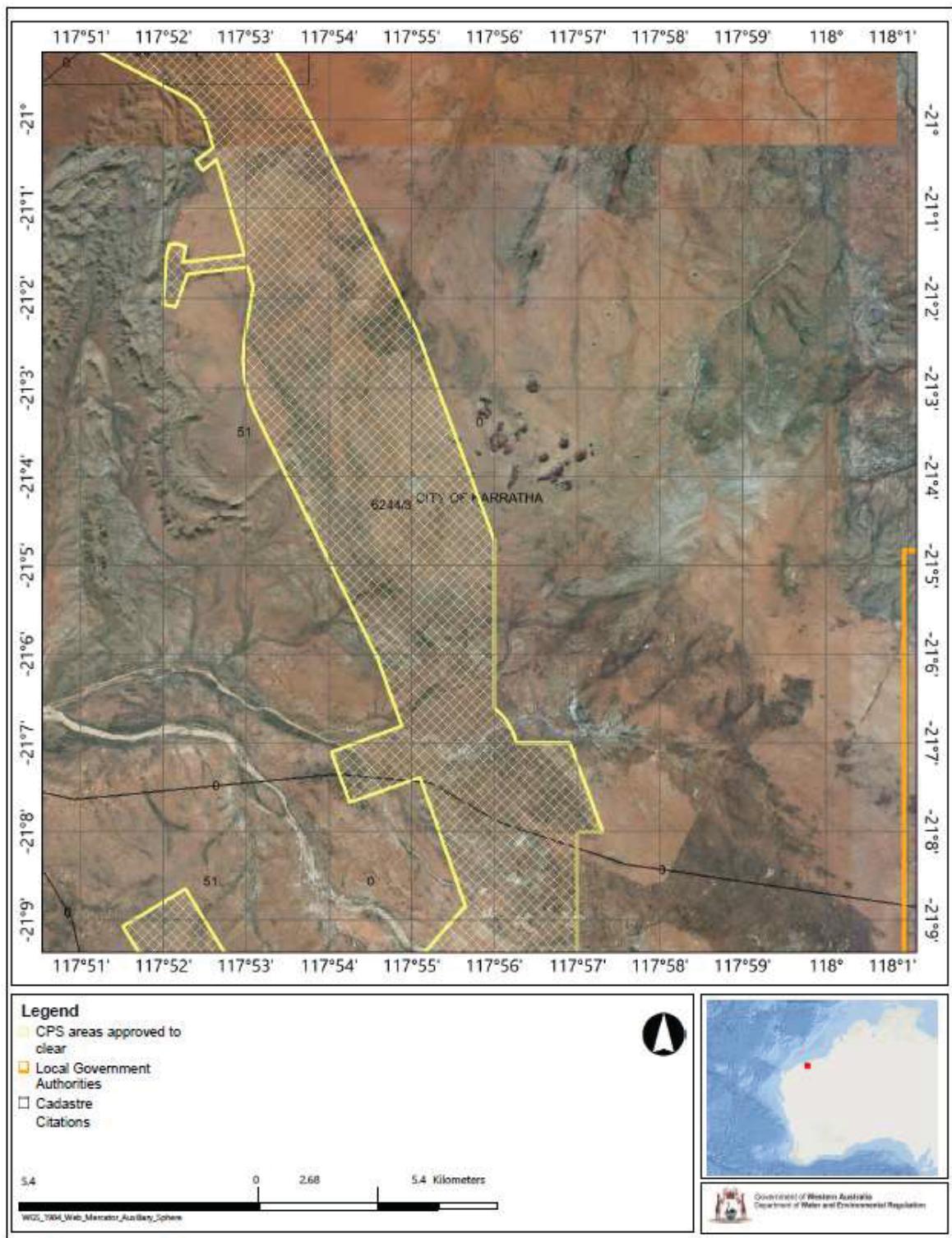


Figure 4: Map of the boundary of the area within which clearing may occur

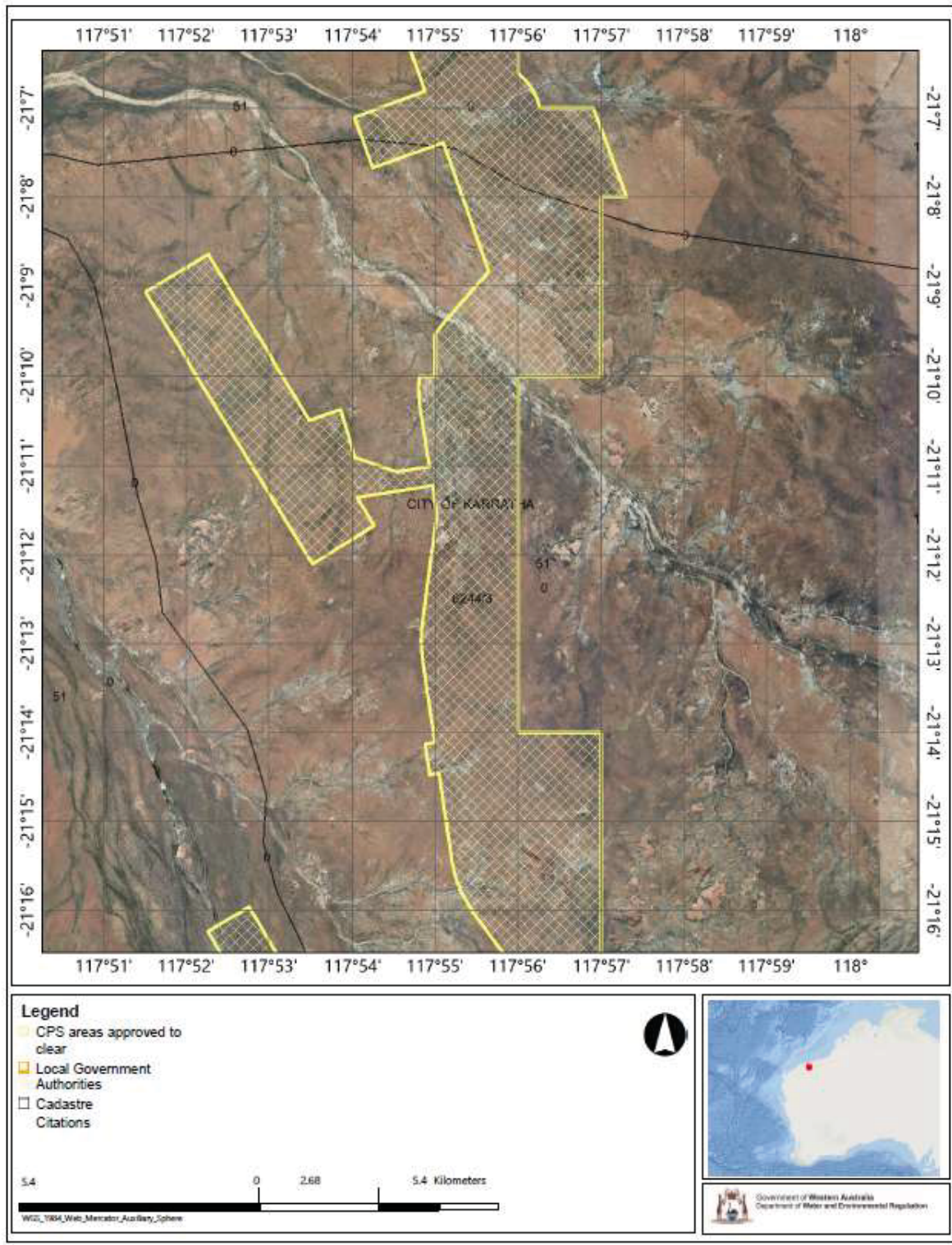


Figure 5: Map of the boundary of the area within which clearing may occur

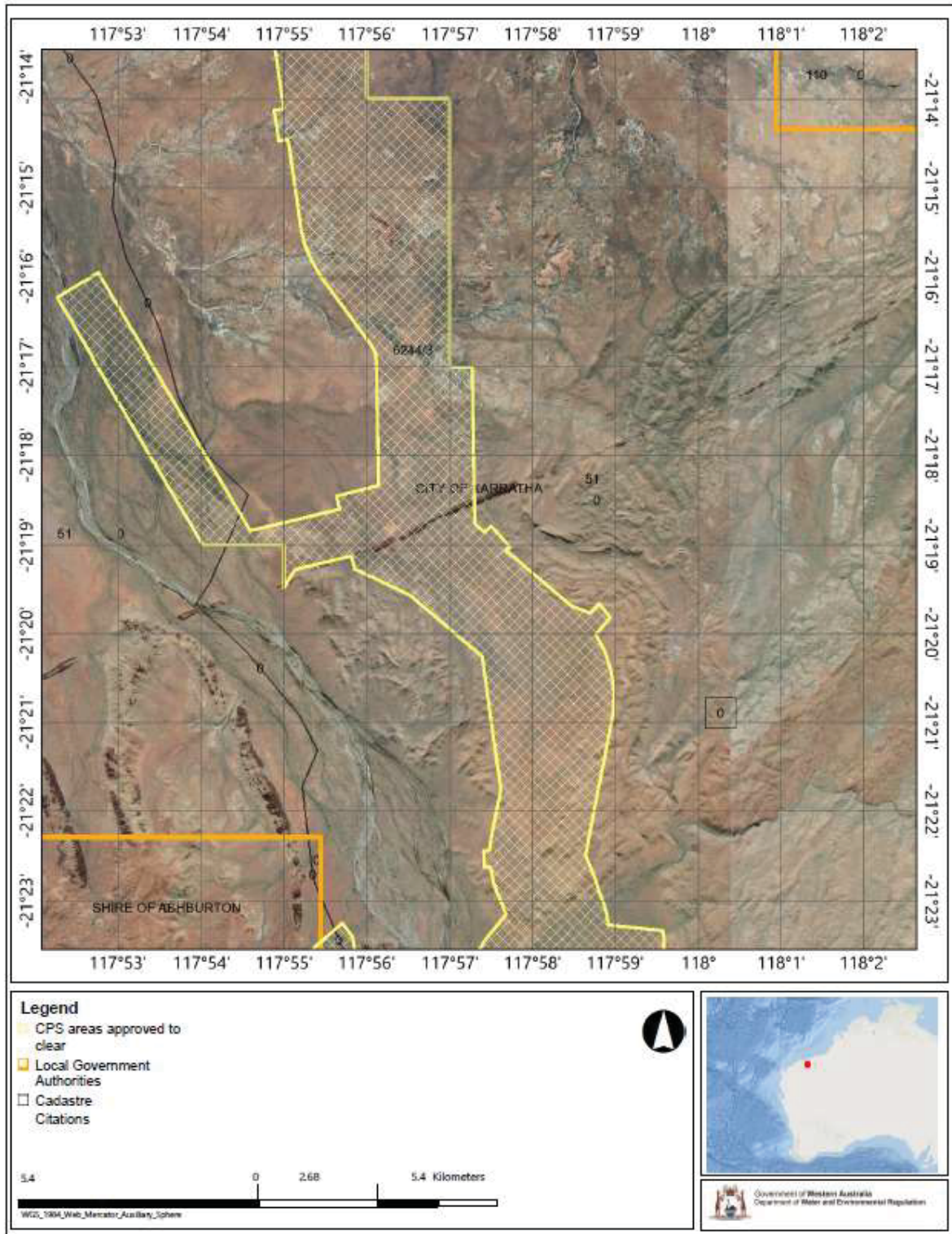


Figure 6: Map of the boundary of the area within which clearing may occur

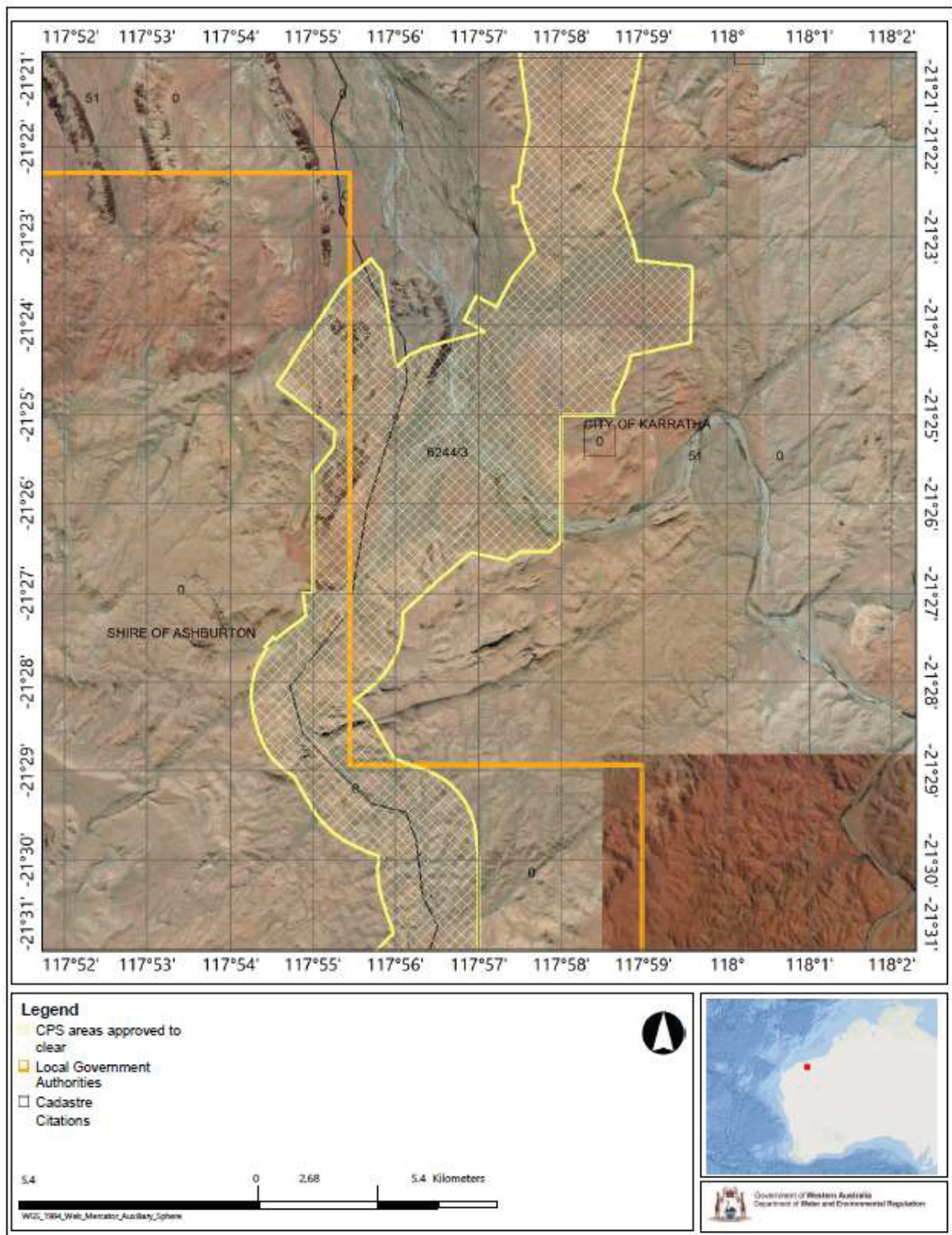


Figure 7: Map of the boundary of the area within which clearing may occur

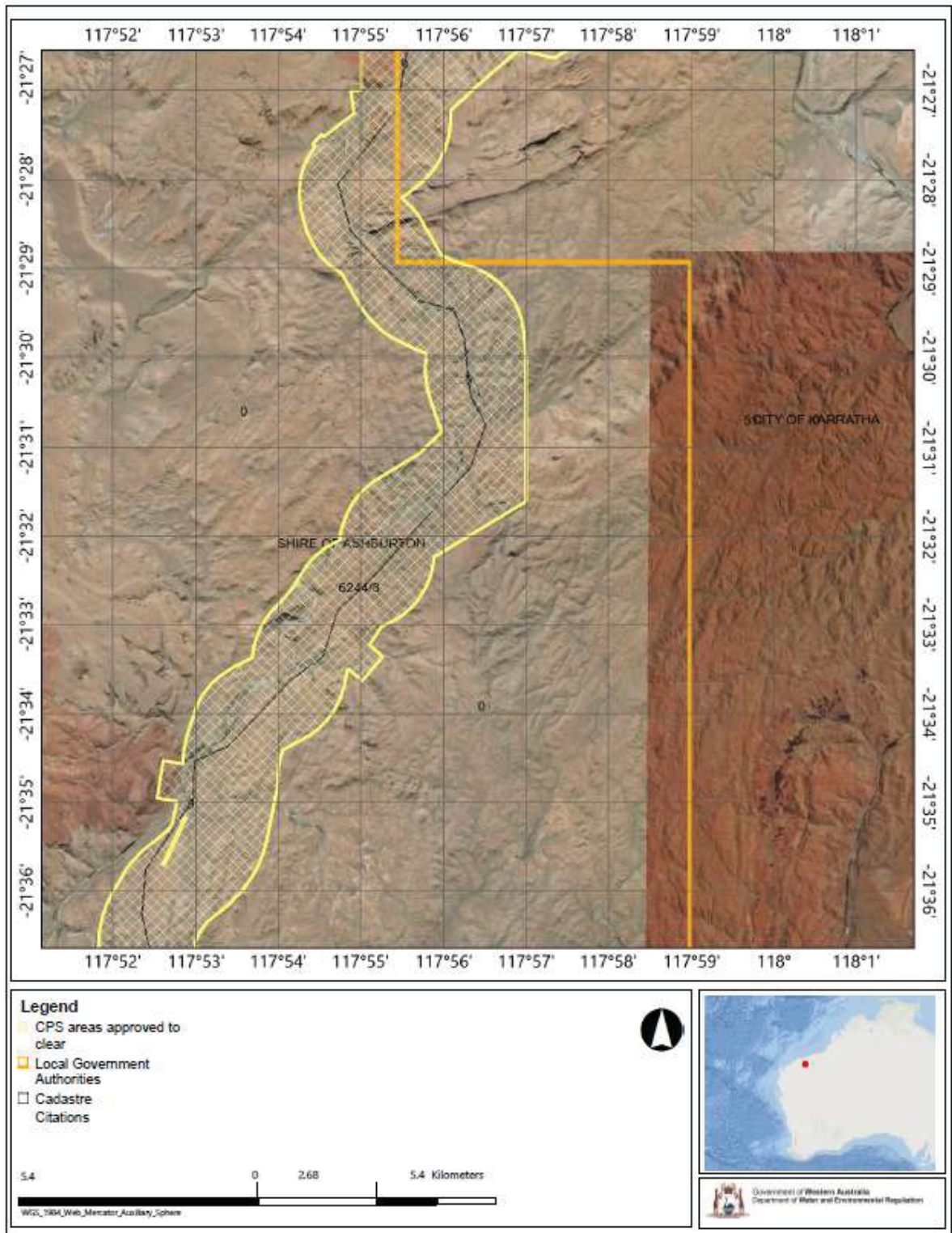


Figure 8: Map of the boundary of the area within which clearing may occur

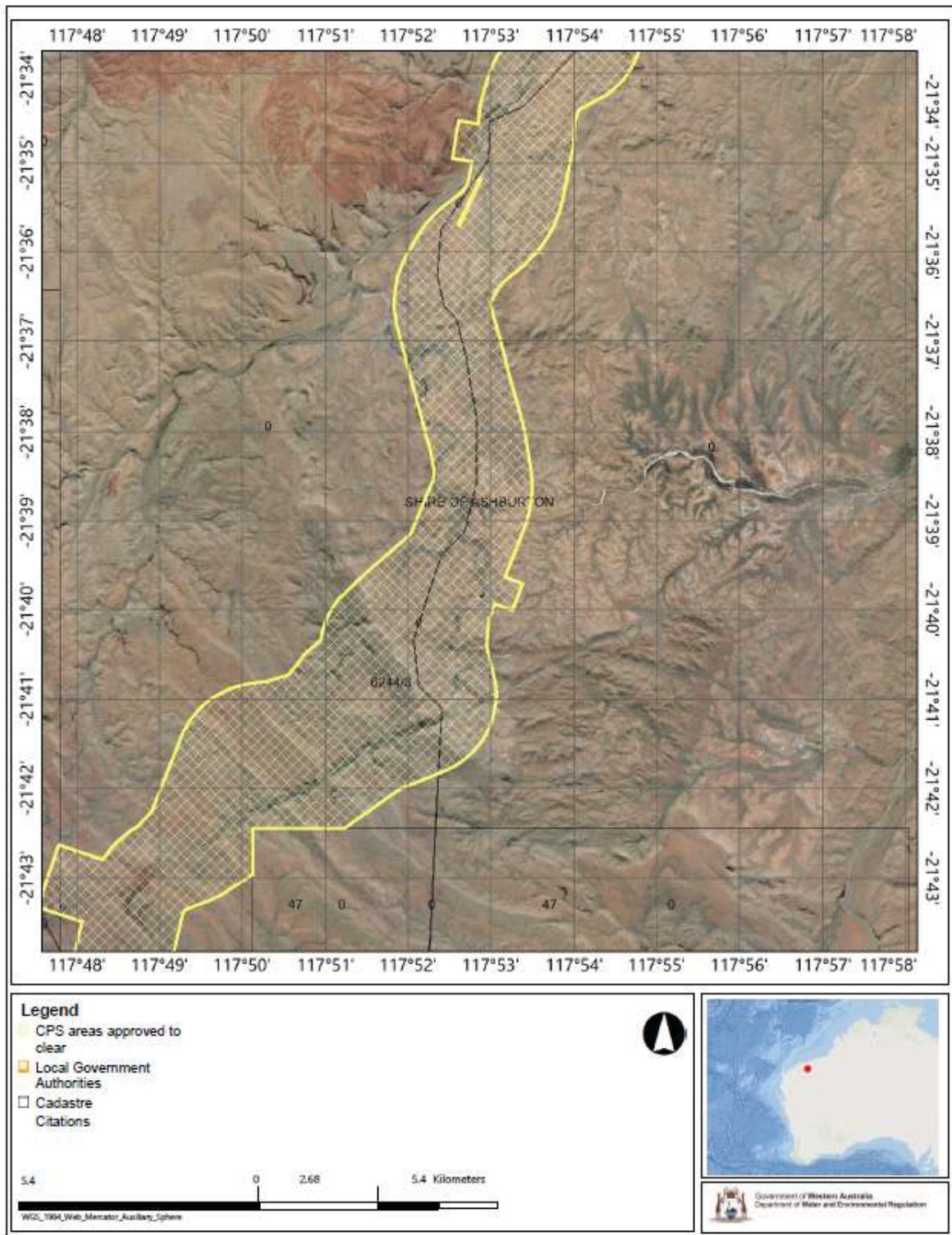


Figure 9: Map of the boundary of the area within which clearing may occur

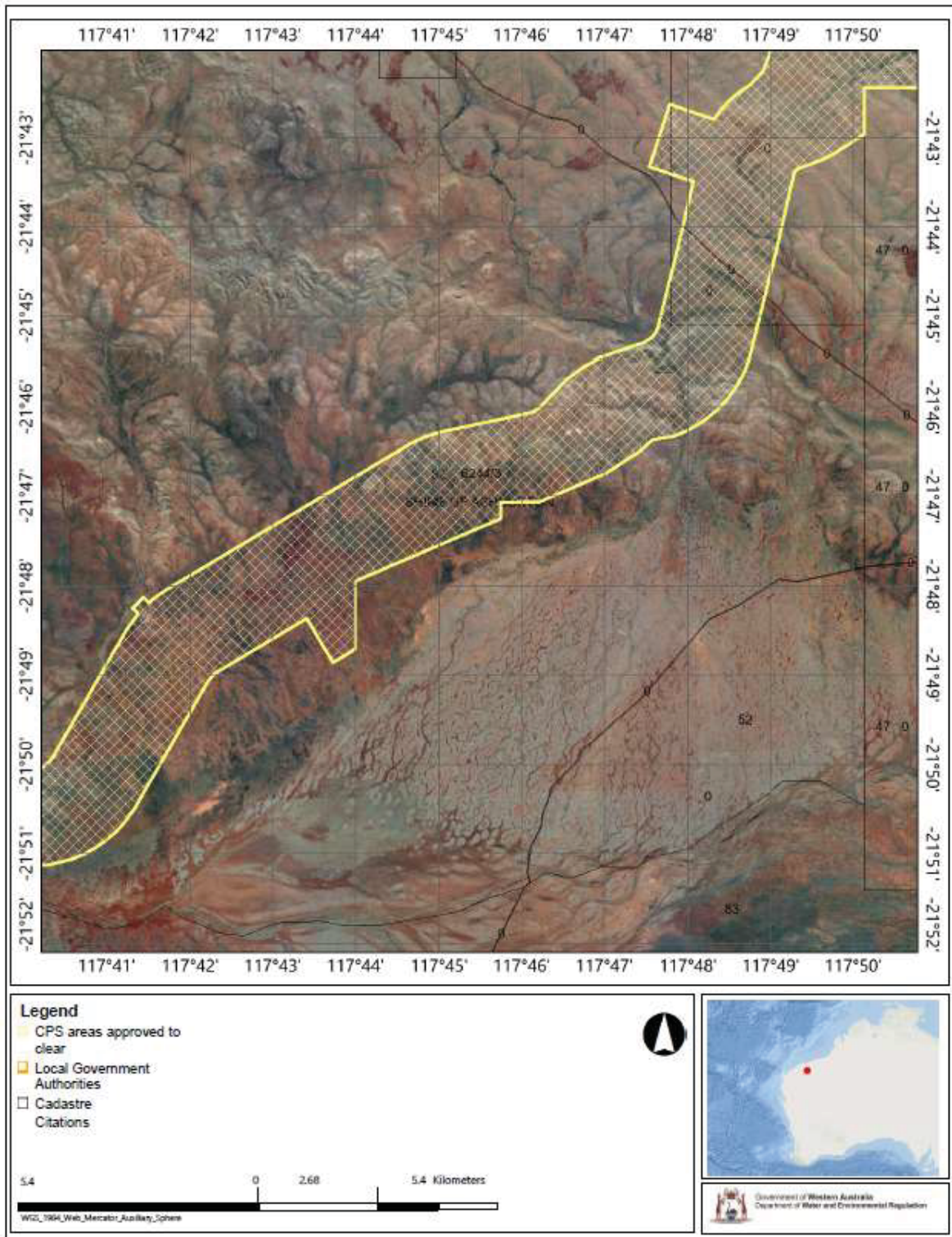


Figure 10: Map of the boundary of the area within which clearing may occur

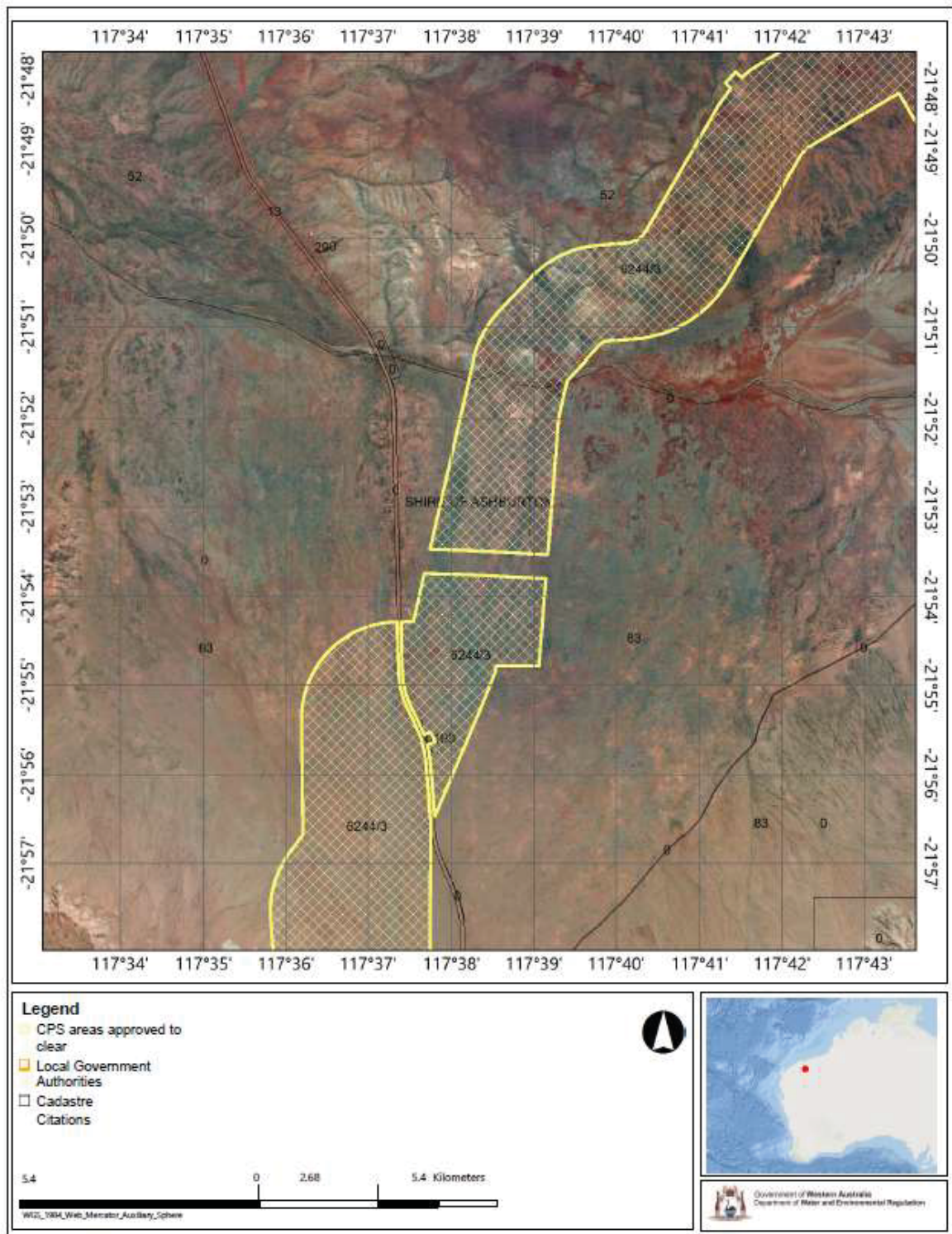


Figure 11: Map of the boundary of the area within which clearing may occur

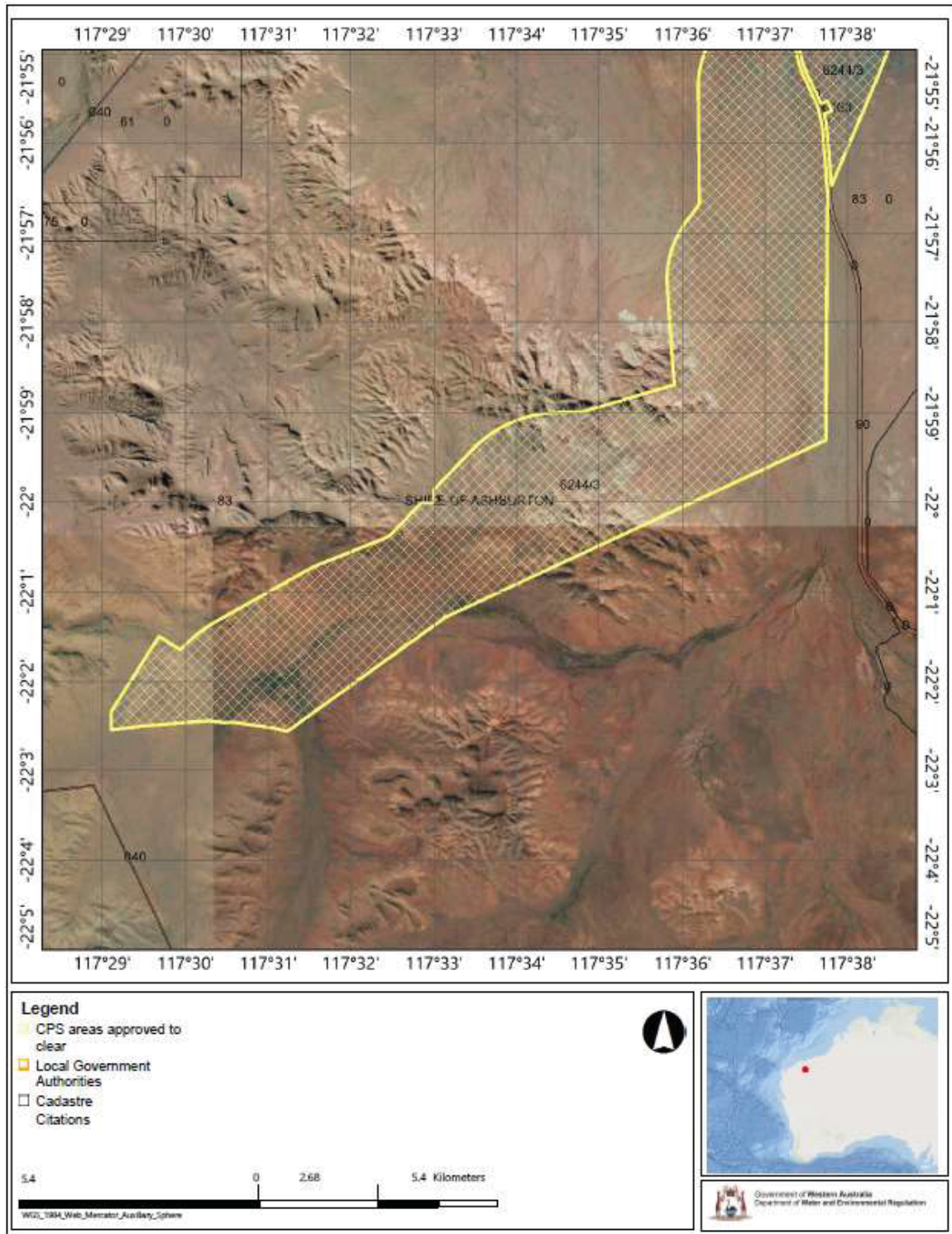


Figure 12: Map of the boundary of the area within which clearing may occur

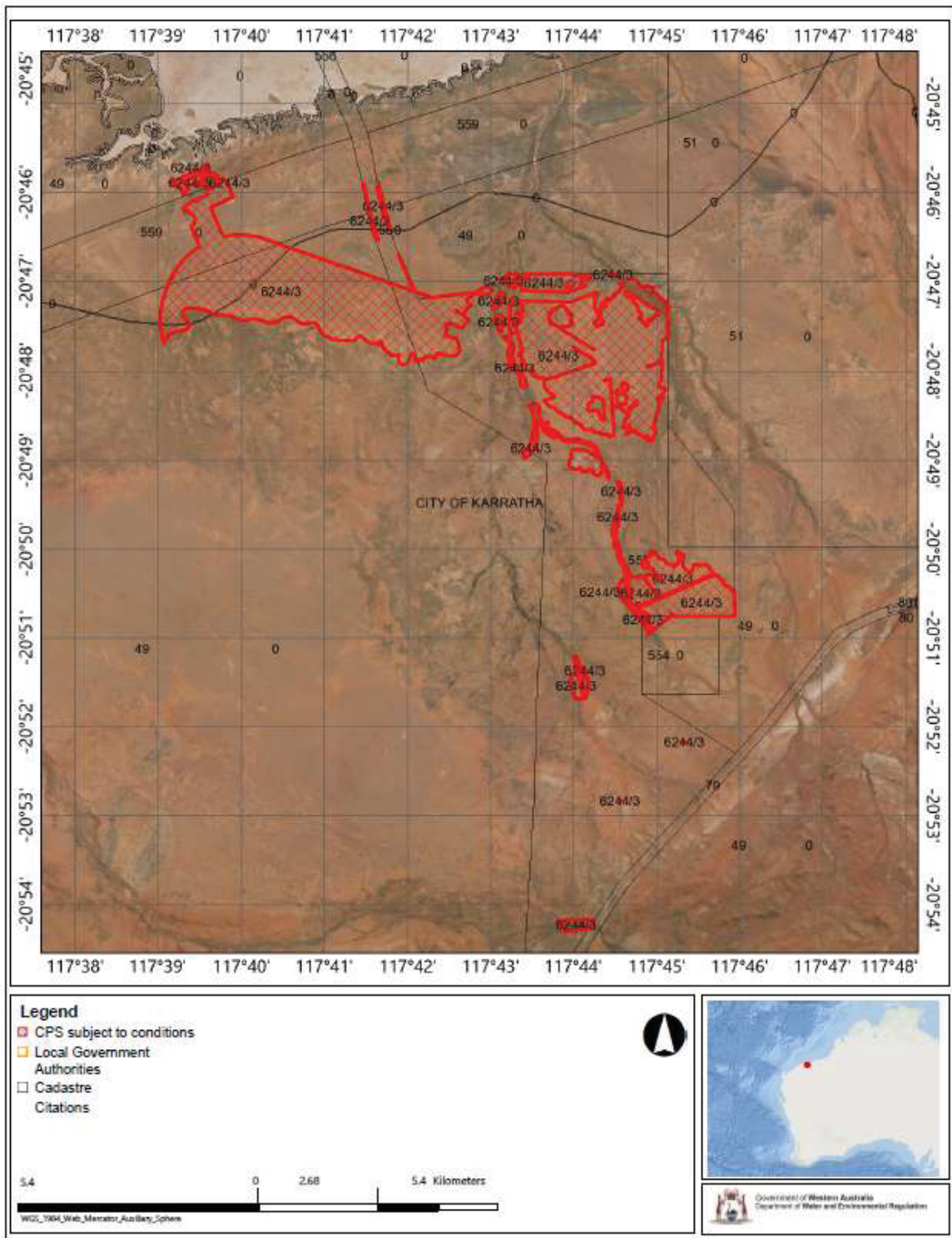


Figure 13: Map of the boundary of the area within which clearing may occur for the purpose of access tracks and associated drainage controls only

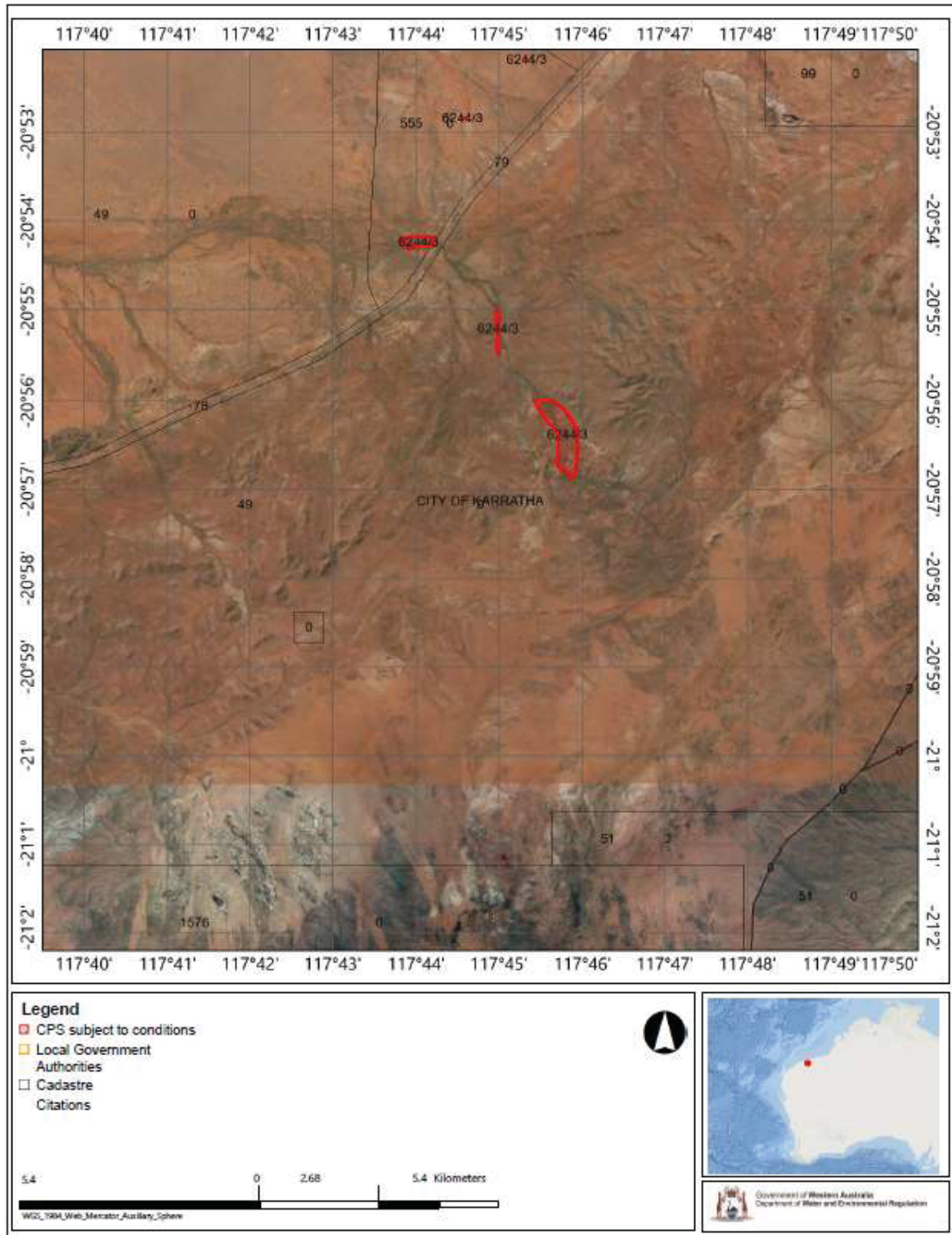


Figure 14: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks and associated drainage controls only*

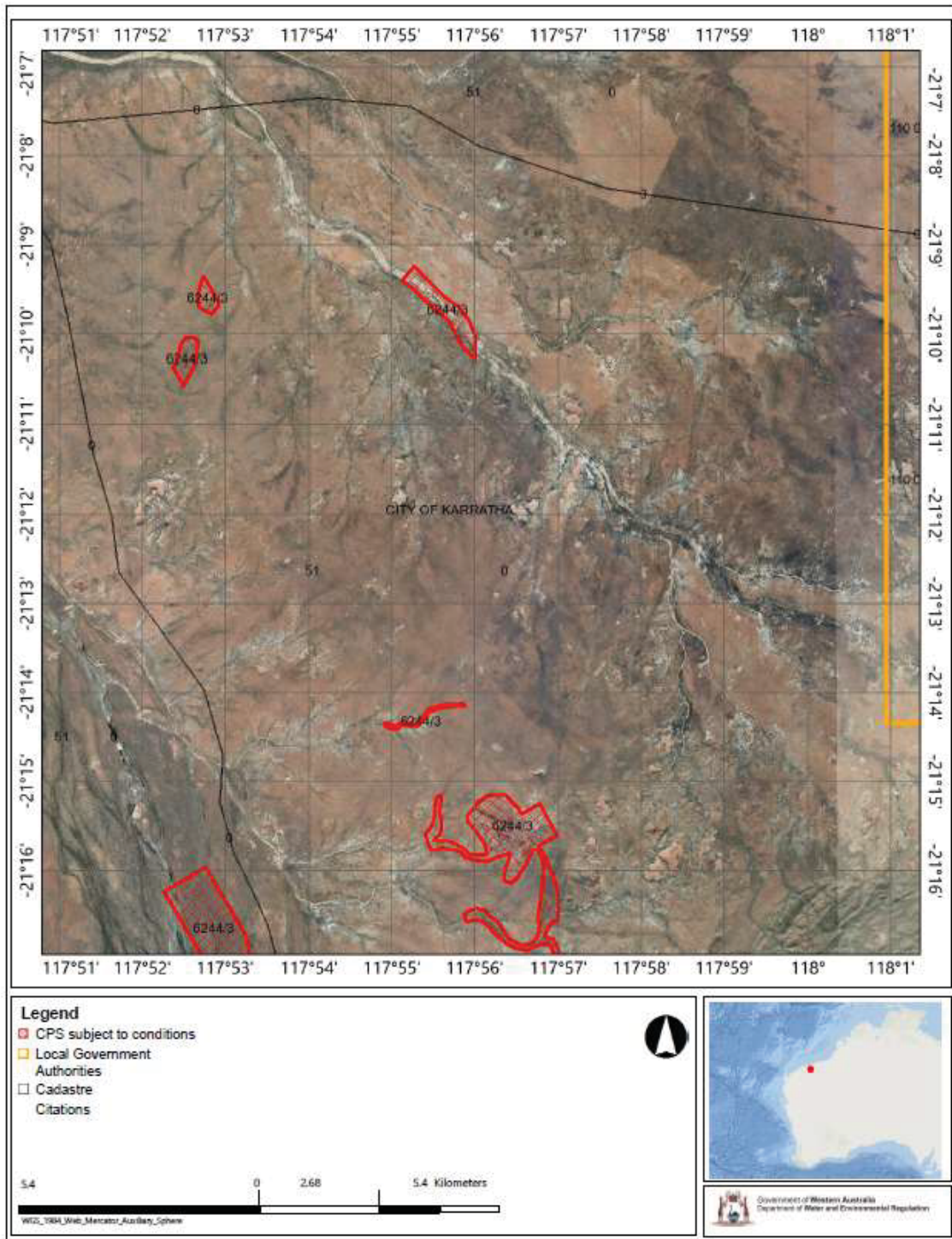


Figure 15: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks* and *associated drainage controls* only

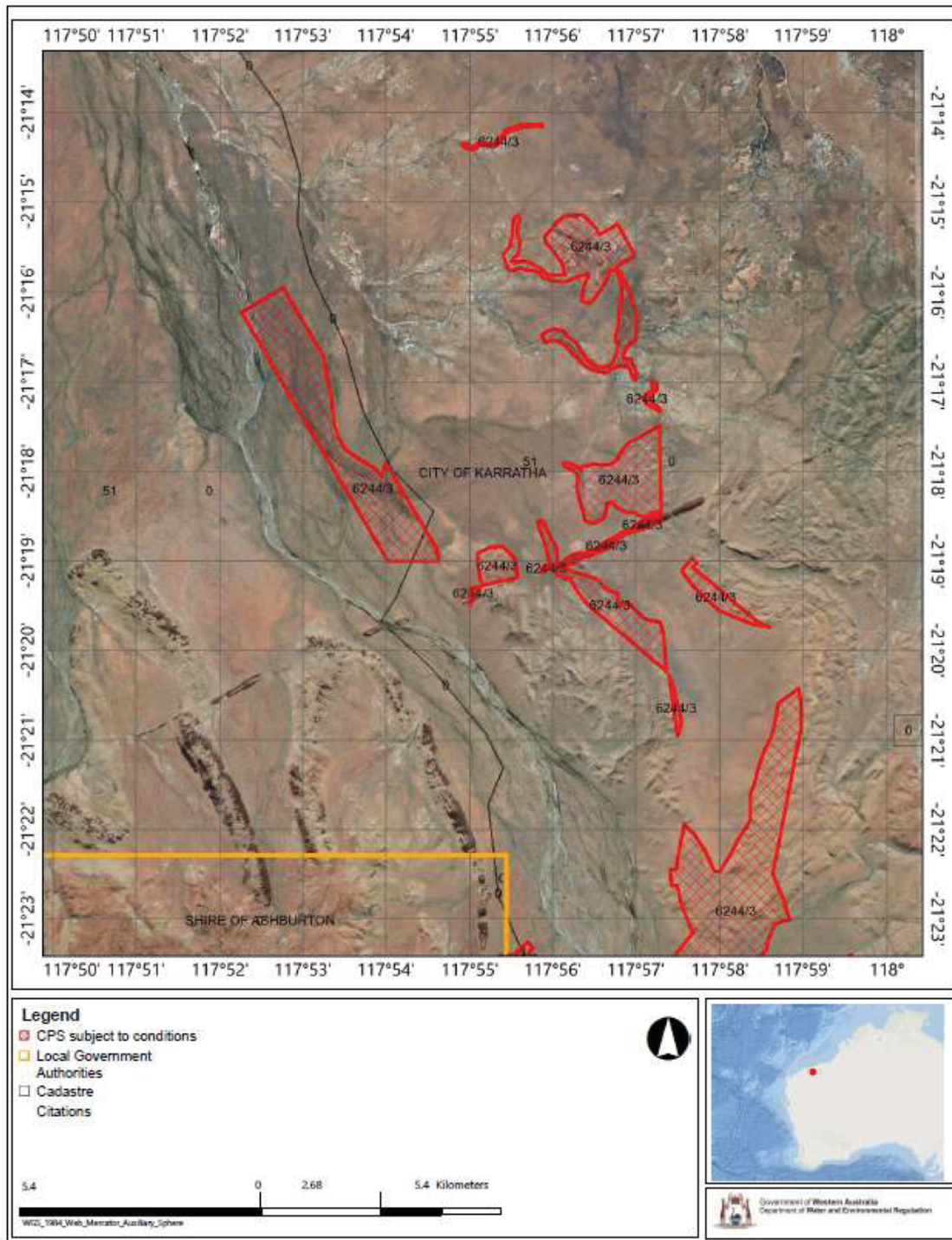


Figure 16: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks and associated drainage controls* only

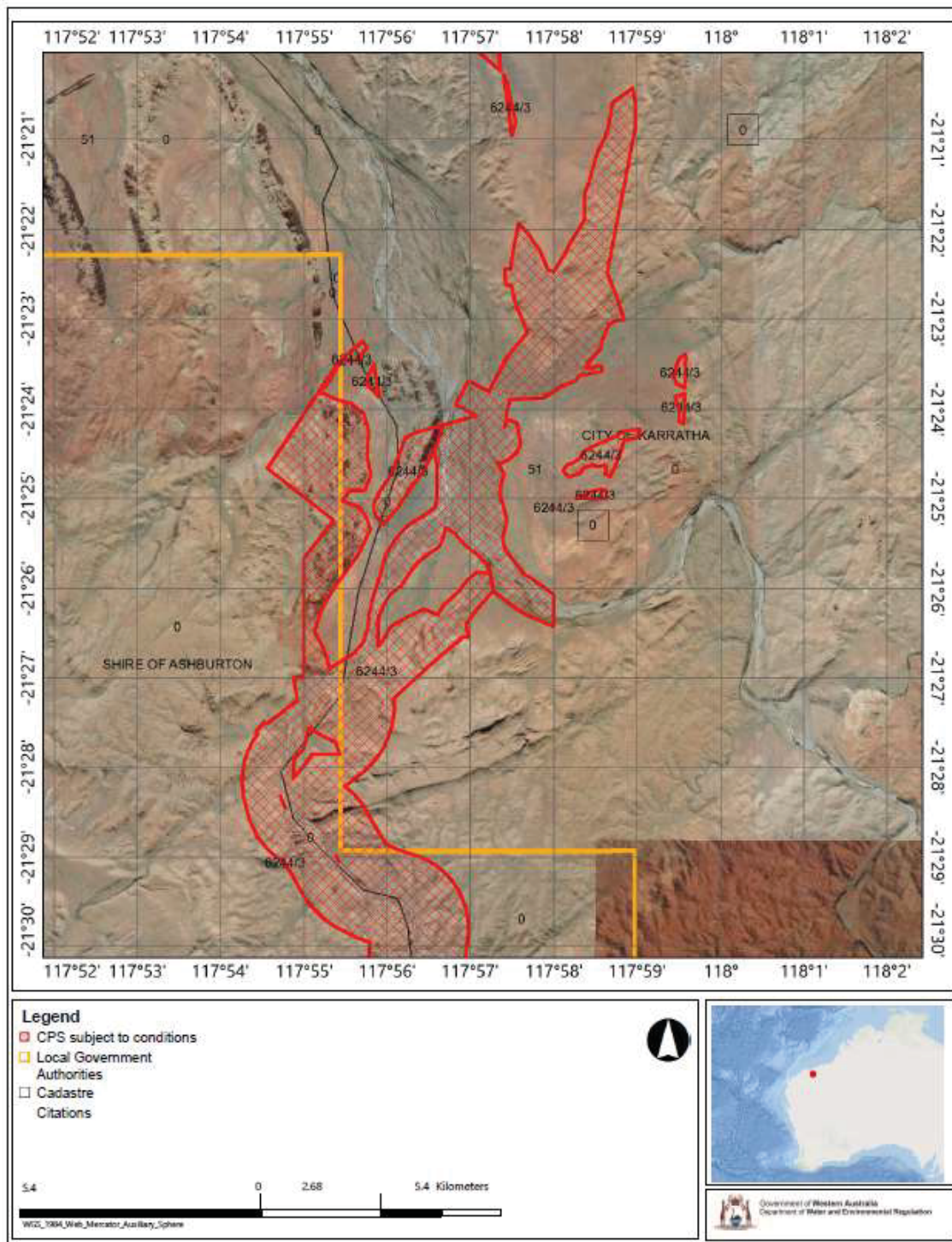


Figure 17: Map of the boundary of the area within which clearing may occur for the purpose of access tracks and associated drainage controls only

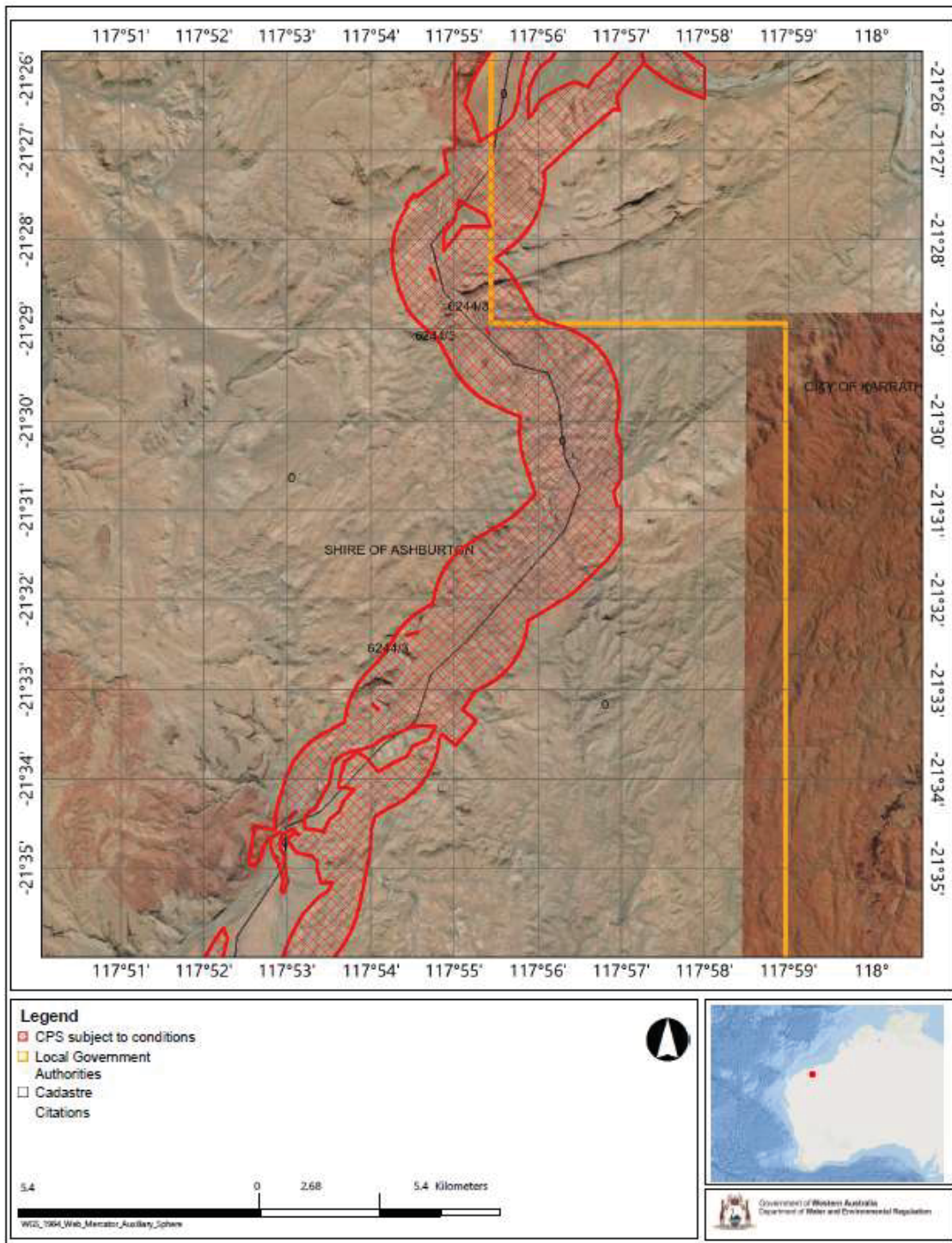


Figure 18: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks* and *associated drainage controls* only

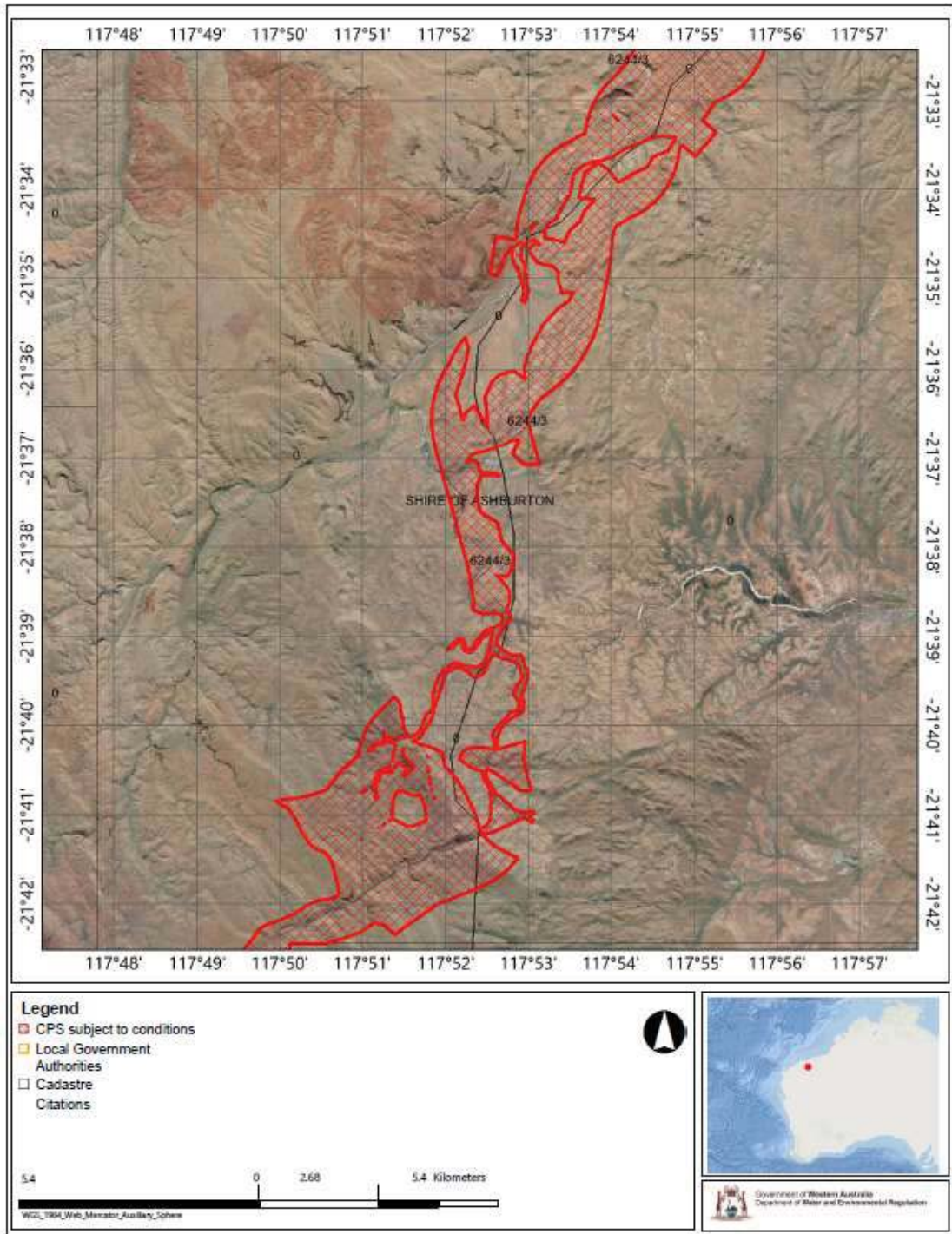


Figure 19: Map of the boundary of the area within which clearing may occur for the purpose of access tracks and associated drainage controls only

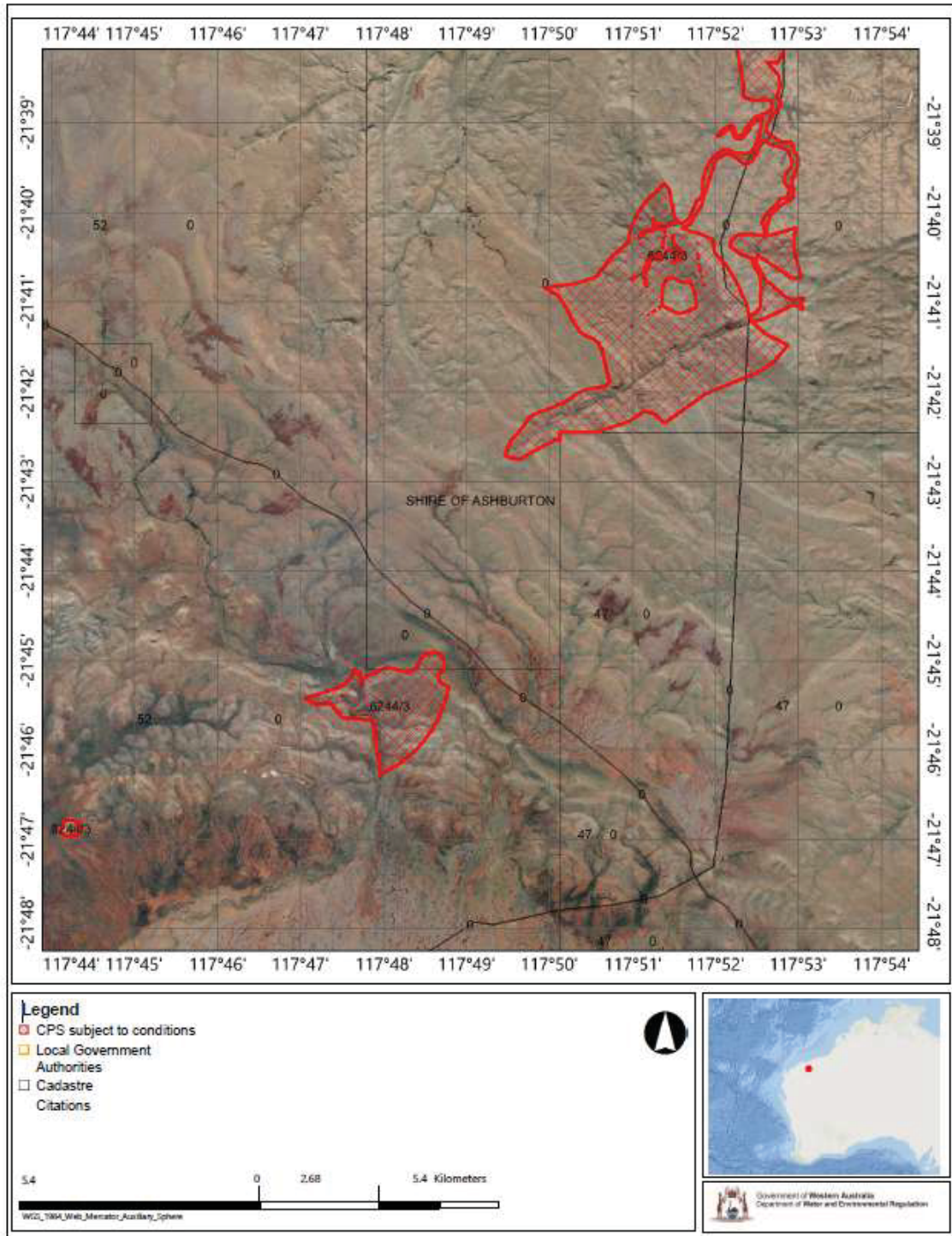


Figure 20: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks and associated drainage controls only*

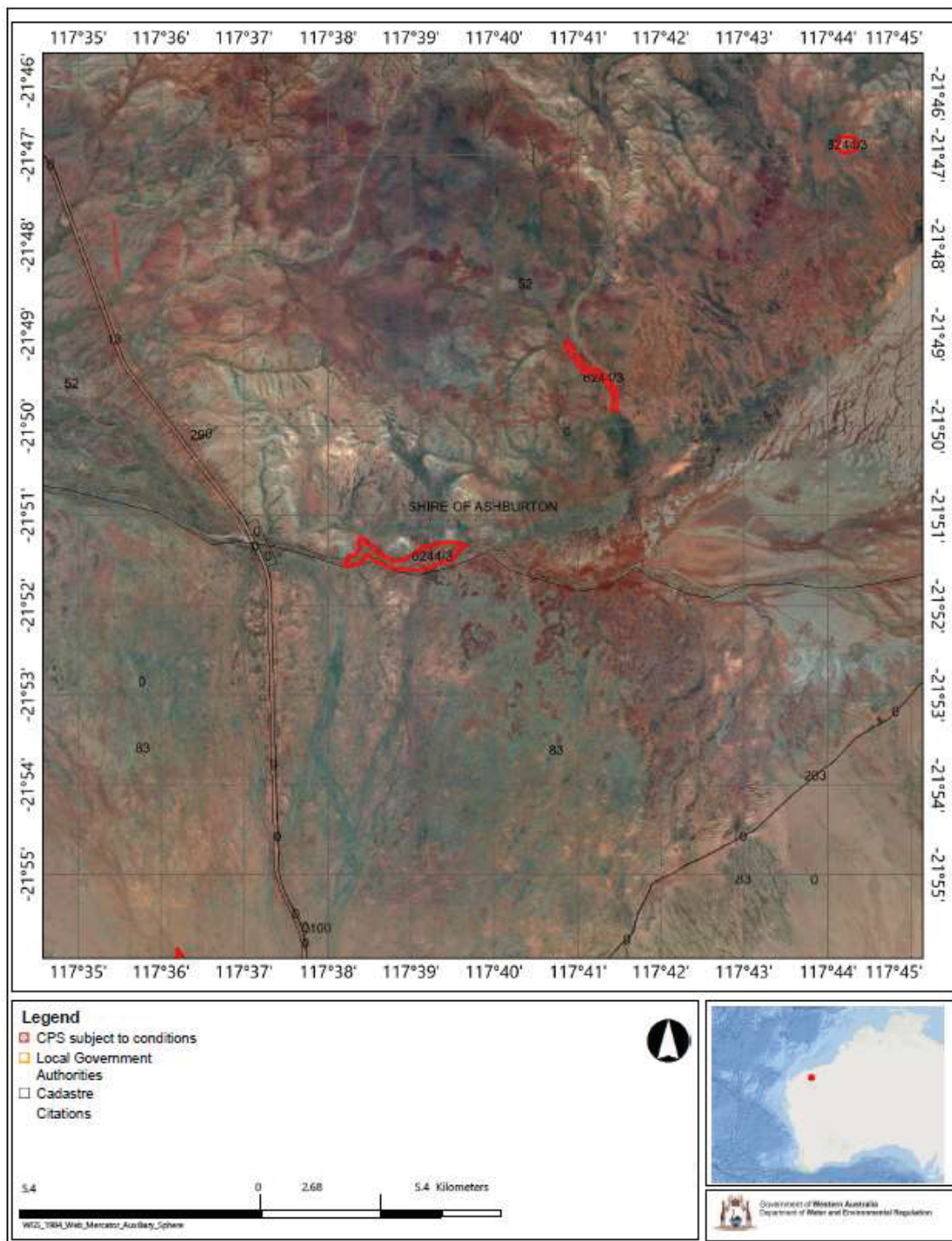


Figure 21: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks and associated drainage controls only*

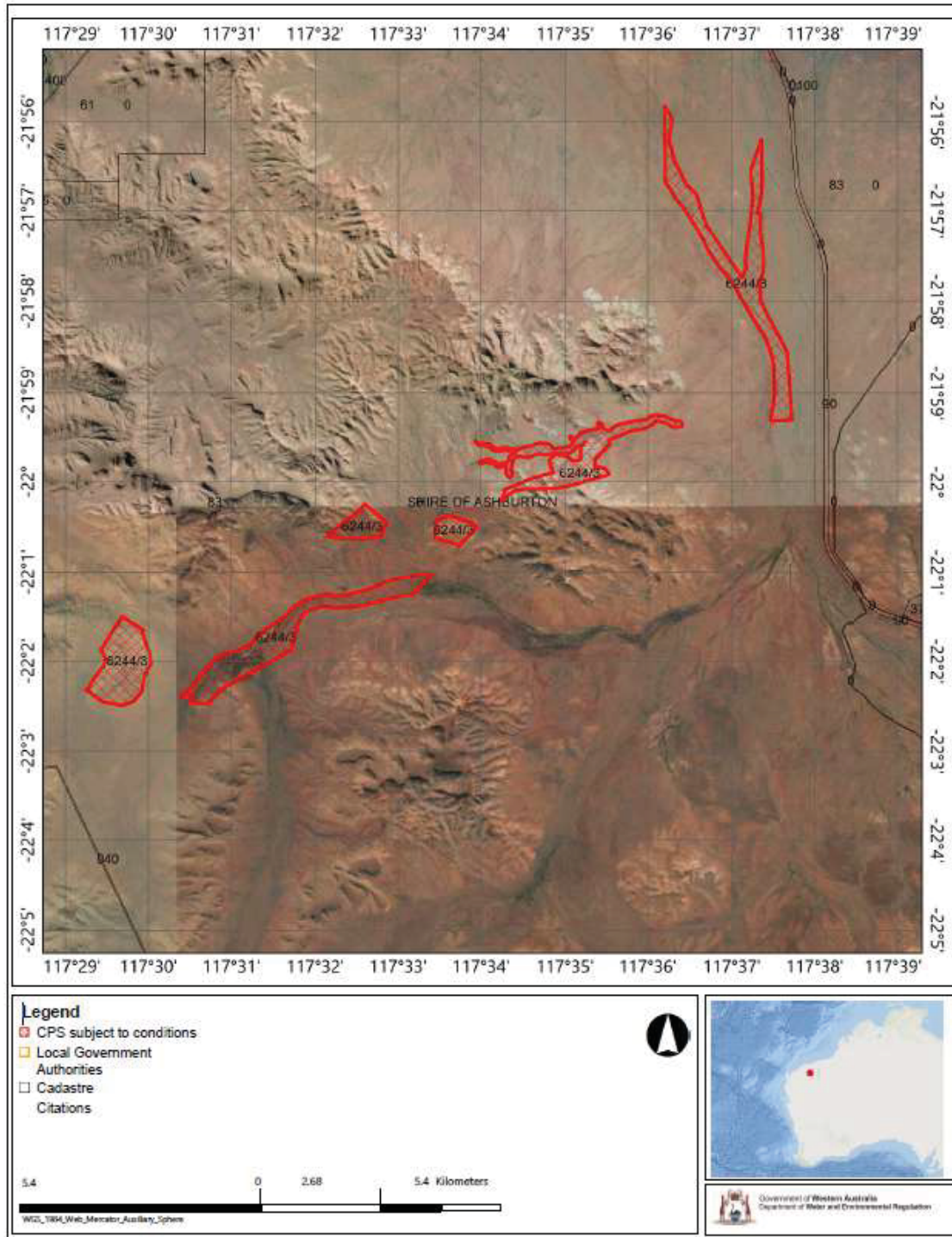


Figure 22: Map of the boundary of the area within which clearing may occur for the purpose of *access tracks* and *associated drainage controls* only



Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number: CPS 6244/3

Permit type: Purpose permit

Applicant name: Forge Resources Swan Pty Ltd

Application received: 14 September 2020

Application area: 63.5hectares (ha) of native vegetation

Purpose of clearing: Geotechnical, water and other investigations including associated access tracks

Method of clearing: Mechanical

Property	PIN/Property Identifier	Locality
Crown Reserve	R 53650	Balla Balla
Lot 49 on Deposited Plan 220711		Sherlock
Lot 51 on Deposited Plan 238028		Sherlock/Chichester
Lot 52 on Deposited Plan 238012		Chichester
Lot 83 on Deposited Plan 238012		Chichester
Lot 554 on Deposited Plan 407837		Sherlock
Lot 555 on Deposited Plan 415079		Sherlock/Balla Balla
Lot 556 on Deposited Plan 407838		Sherlock/Balla Balla
Lot 557 on Deposited Plan 407840		Sherlock/Balla Balla
Lot 558 on Deposited Plan 415079		Sherlock
Lot 559 on Deposited Plan 415079		Sherlock
Lot 78 on Deposited Plan 219351		Sherlock
Lot 79 on Deposited Plan 219326		Sherlock
Roebourne-Wittenoom Road	11732078	Chichester
Un-named Road	11732085	Chichester
Un-named Road	11732086	Chichester
Un-named Road	11732087	Chichester
Un-named Road	11732108	Sherlock
Un-named Road	11732109	Sherlock
Un-named Road	11732112	Sherlock
Croydon-Whim Creek Road	11732138, 11732330 and 11732331	Sherlock
Un-named Road	11732326	Chichester
Unallocated Crown Land	1017624	Chichester
Unallocated Crown Land	1019499	Chichester
Unallocated Crown Land	1019500	Chichester
Unallocated Crown Land	1019502	Chichester
Unallocated Crown Land	1180829	Chichester
Unallocated Crown Land	1180830	Chichester
Unallocated Crown Land	1258037	Sherlock

Location (LGA area/s): Shire of Ashburton
City of Karratha

Localities (suburb/s): Sherlock, Chichester, Balla Balla

1.2. Description of clearing activities

The vegetation applied to be cleared is 63.5 hectares within a larger footprint of 50,575 hectares contained within a single contiguous area (see Figure 1, Section 1.5).

The amendment is to increase the clearing footprint in response to an updated Section 91 Licence issued under the *Land Administration Act 1997*. The updated Section 91 Licence boundary is larger than the preceding Section 91 Licence although the proposed amount of clearing under the amendment remains the same. In addition to a change of boundary, this amendment extends the duration of the permit to align with further Permit conditions and the duration of the Section 91 Licence.

The larger footprint proposed under CPS 6244/3 is mostly within the three areas illustrated within Figures 1-3 below where CPS 6244/3 exceeded the footprint of CPS 6244/2.

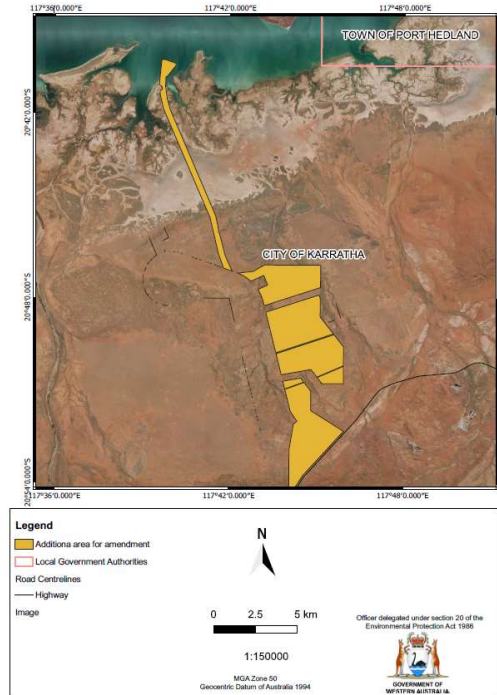


Figure 1: Area in dark yellow depicting the additional footprint applied for under CPS 6244/3

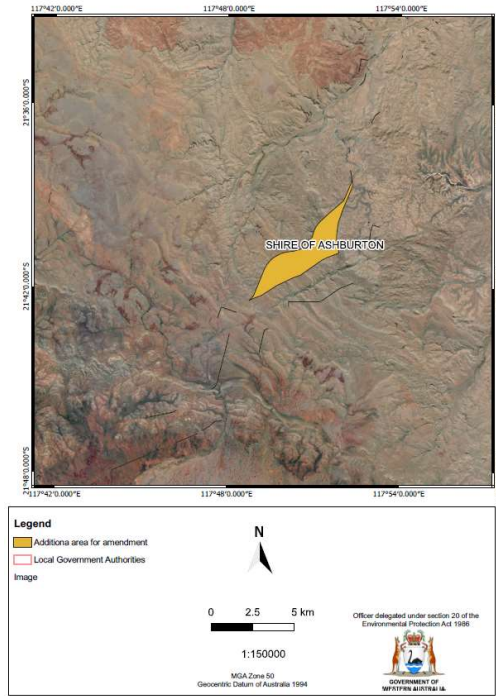


Figure 2: Area in dark yellow depicting the additional footprint applied for under CPS 6244/3

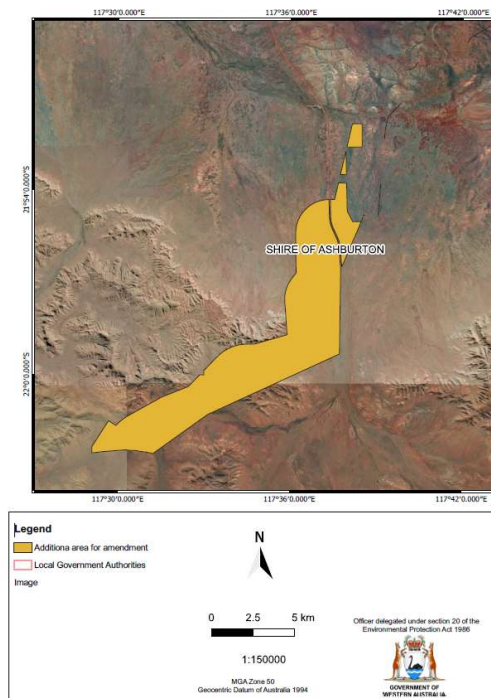


Figure 3: Area in dark yellow depicting the additional footprint applied for under CPS 6244/3

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	7 December 2020
Decision area:	63.5 (ha) of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit amendment application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E), the findings of various surveys, the clearing principles set out in Schedule 5 of the EP Act), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The determination of the proposed clearing against the ten clearing principles has not changed since the assessment for CPS 6244/2. During the assessment of this amendment, the Delegated Officer considered the additional environmental values of the extended footprint applied for under the amendment. A supporting survey (Phoenix, 2020) submitted with the application to amend noted additional areas of Priority Ecological Community 'Horseflat land system of the Roebourne Plains' and additional records of Priority flora recorded within the revised footprint, including the Priority 3 (P3) species *Heliotropium muticum* and *Oldenlandia* sp. Hamersley Station (AA Mitchell PRP 1479). The Delegated Officer imposed additional conditions on the amended permit to capture the additional locations of the conservation significant flora and community. It is considered that the management conditions imposed on the permit will mitigate potential impacts to sensitive environmental receptors within the clearing permit boundary.

The Delegated Officer determined that the proposed amendment to increase the clearing footprint is not likely to lead to an unacceptable risk to environmental values.

1.5. Site maps

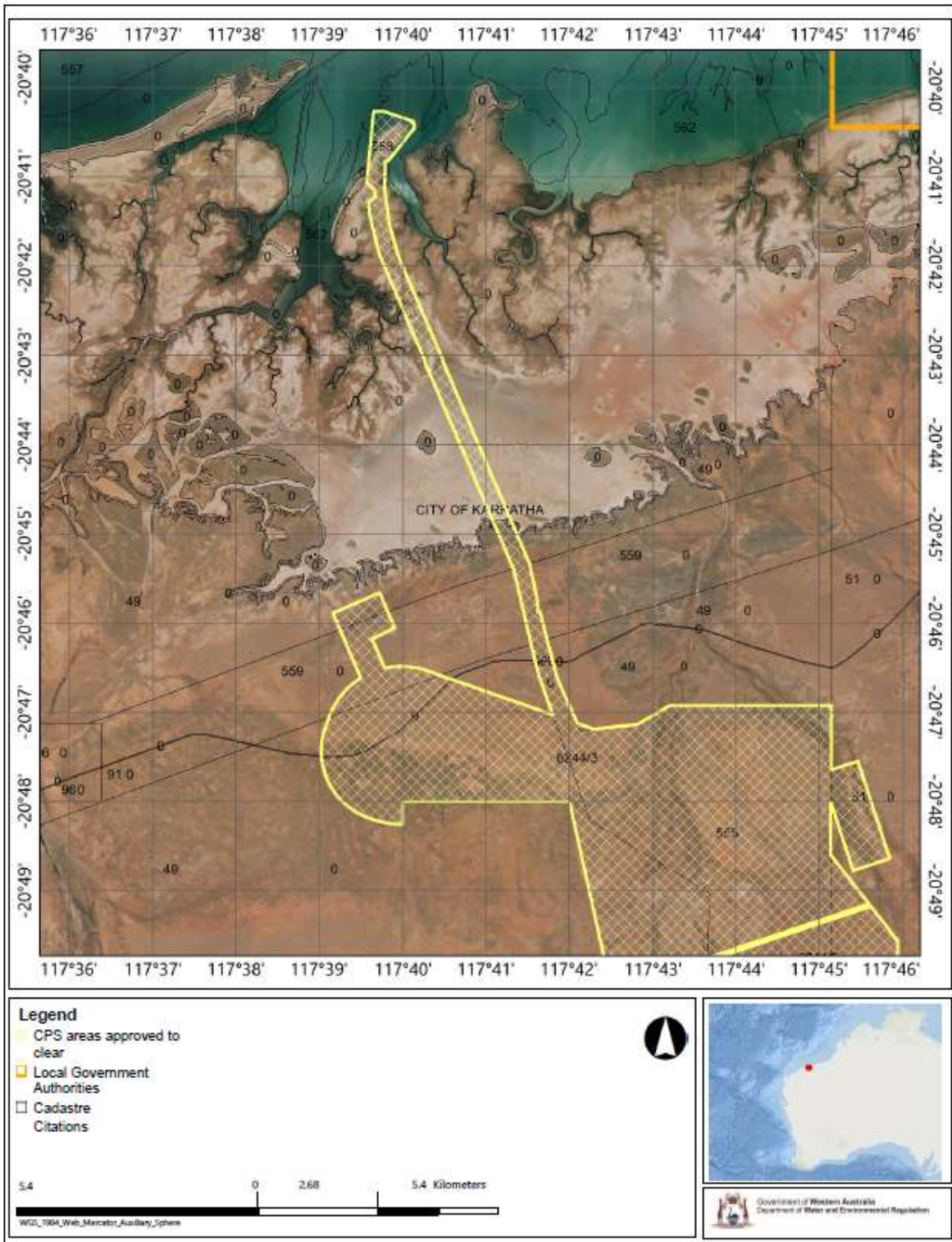


Figure 4. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

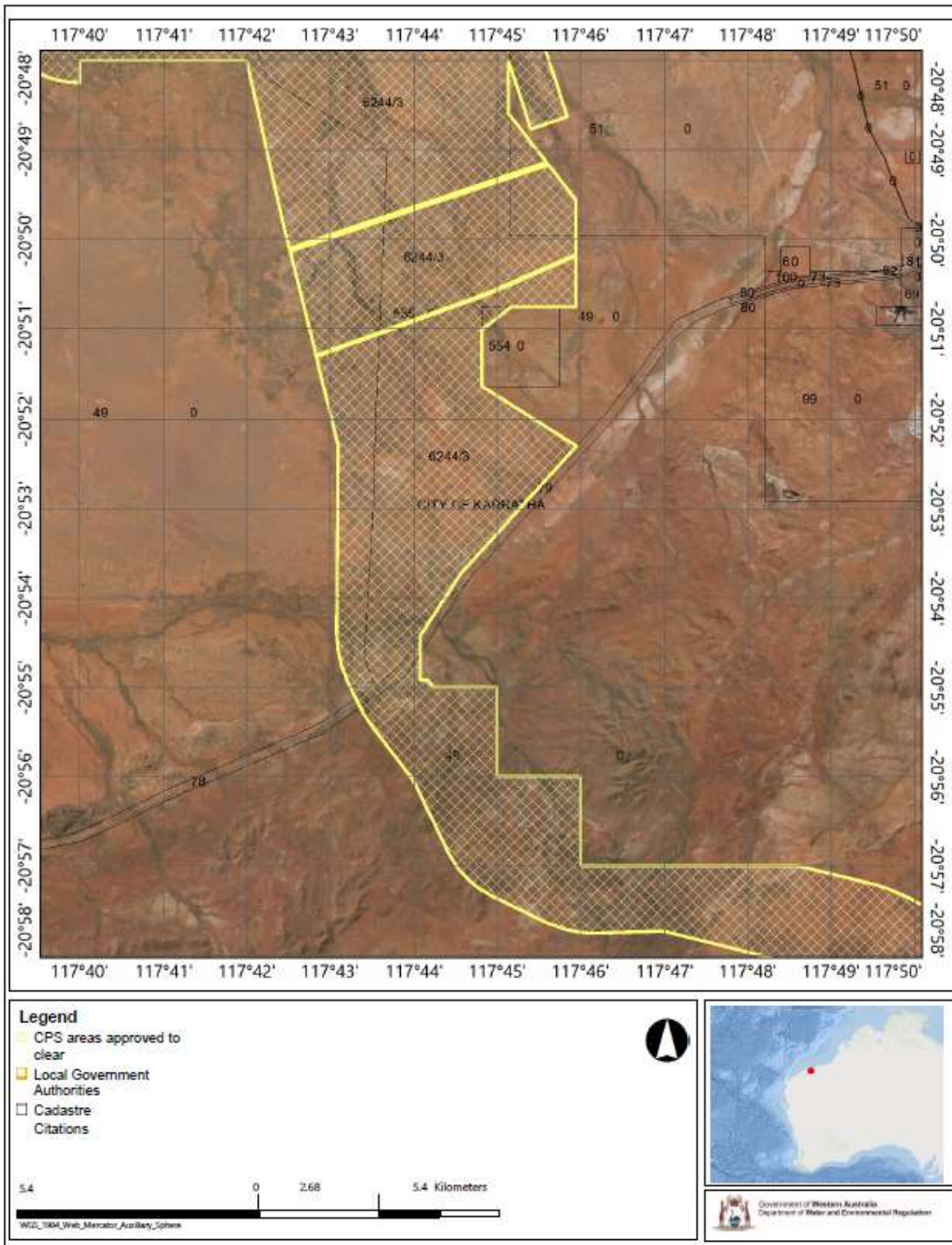


Figure 5. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

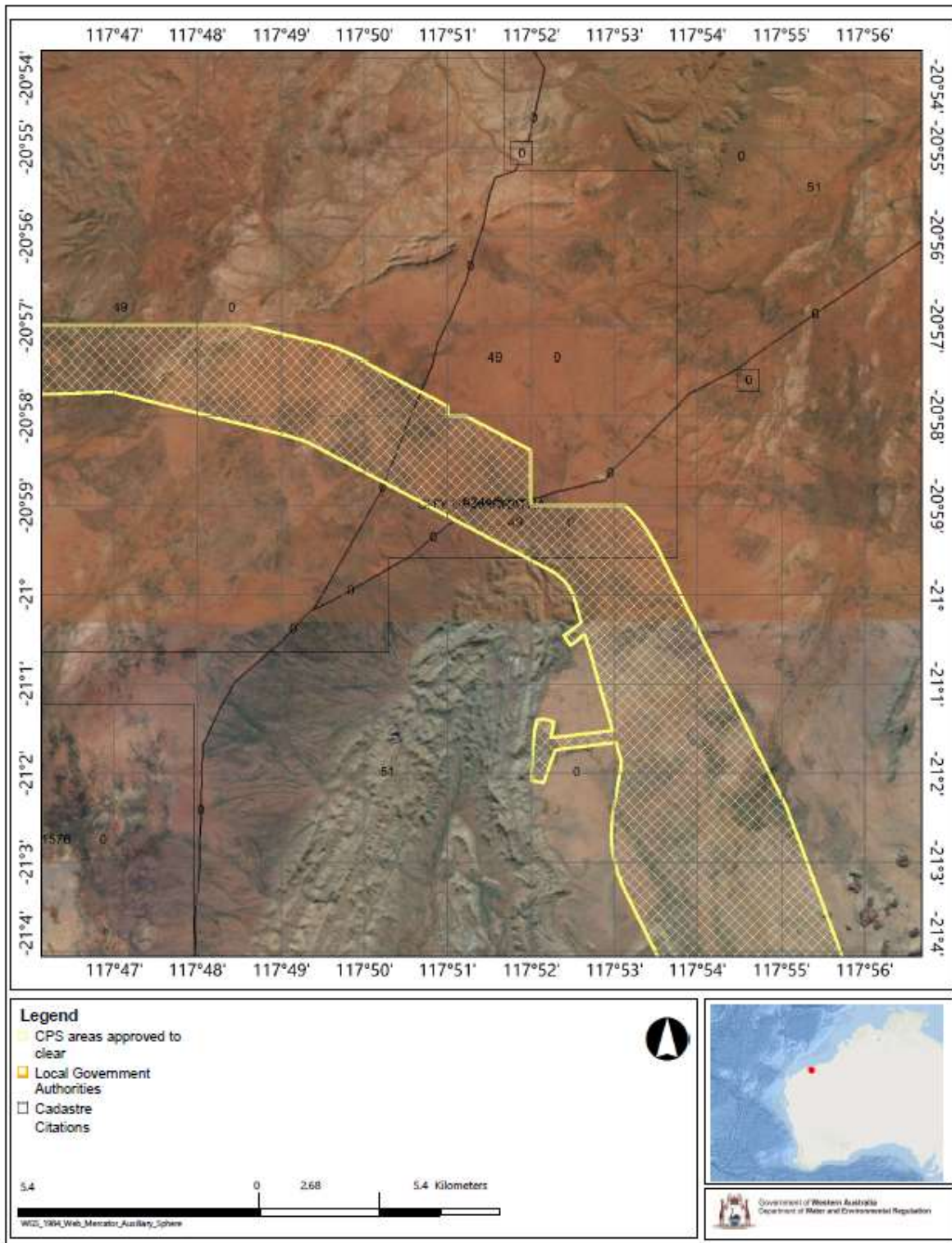


Figure 6. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

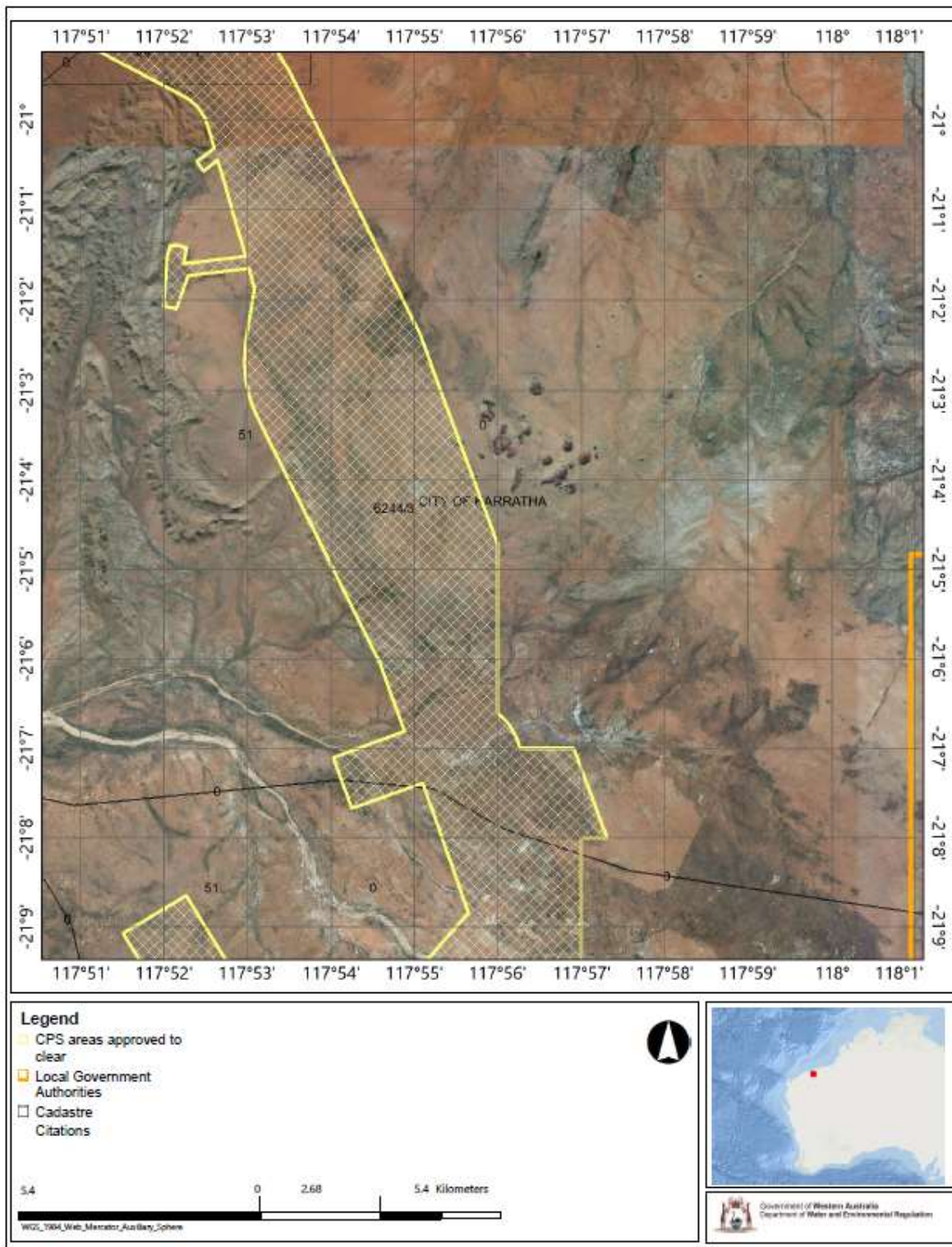


Figure 7. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

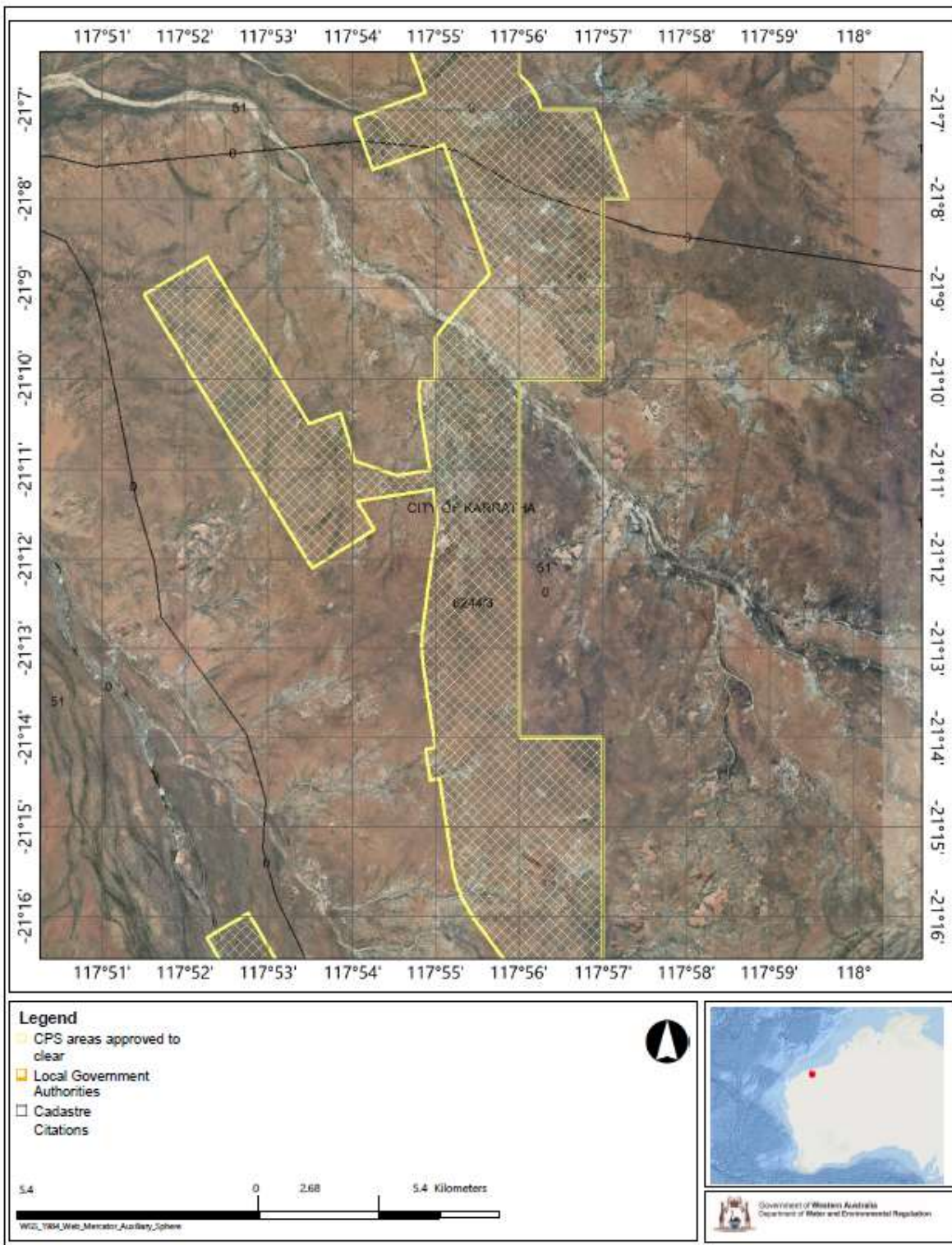


Figure 8. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

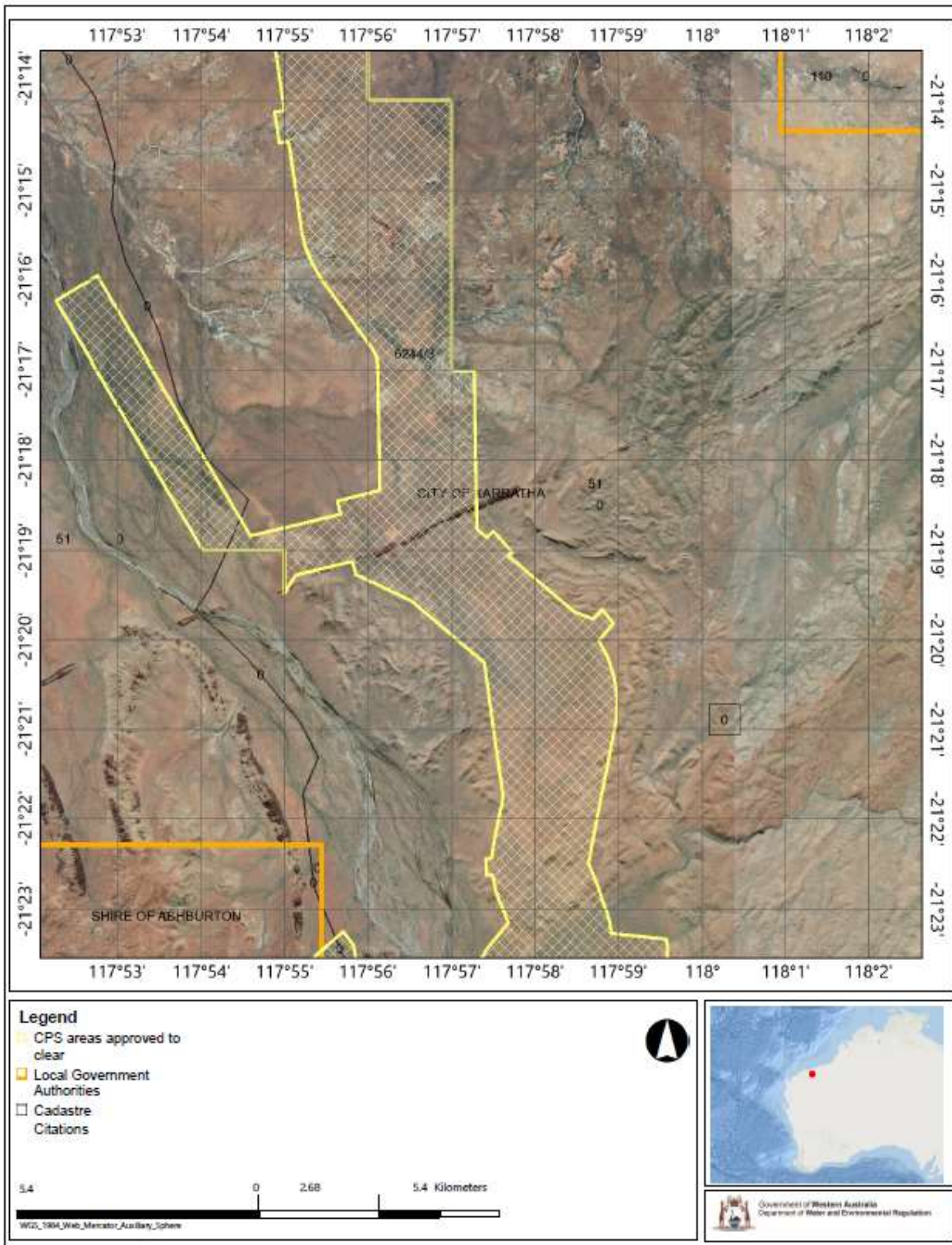


Figure 9. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

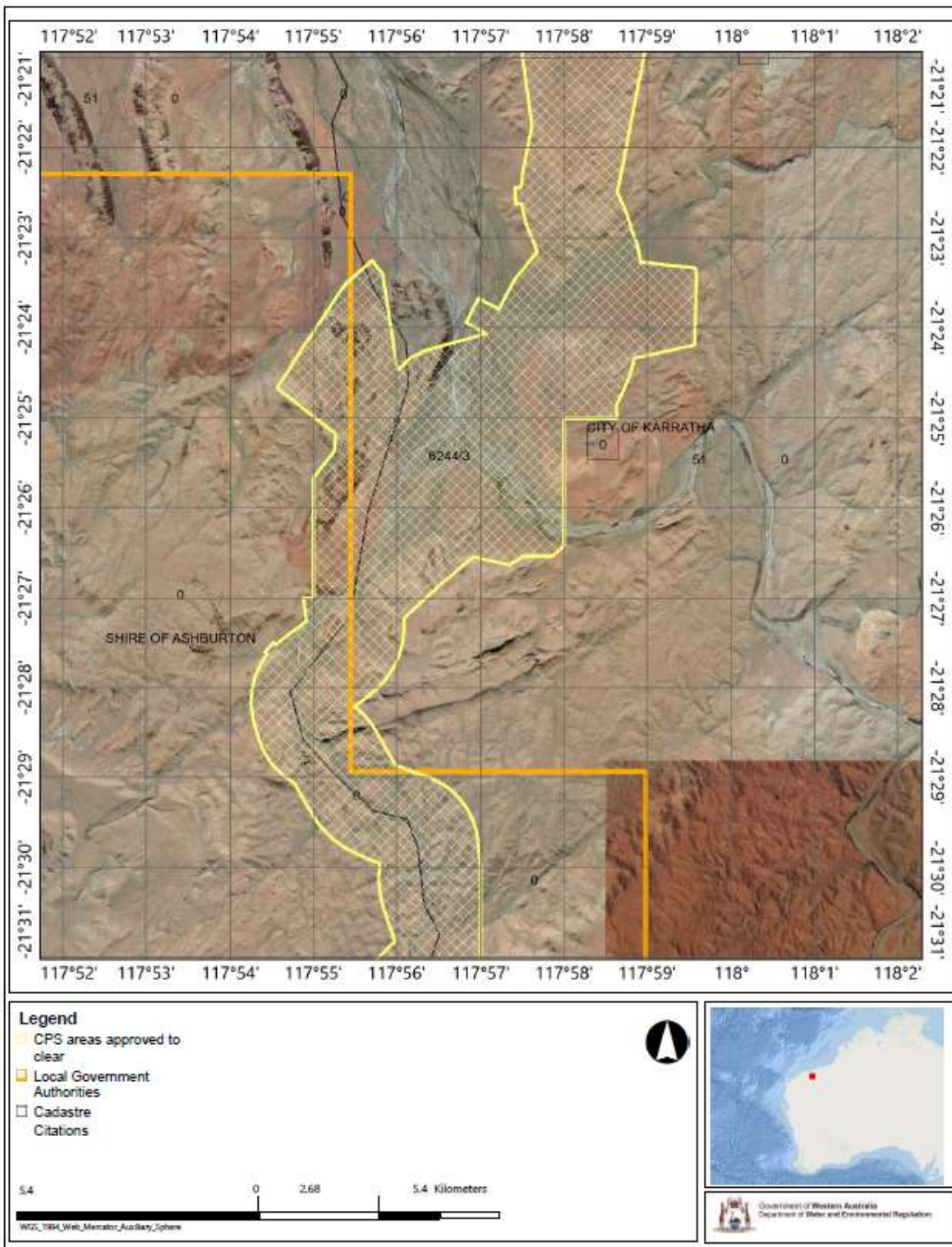


Figure 10. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

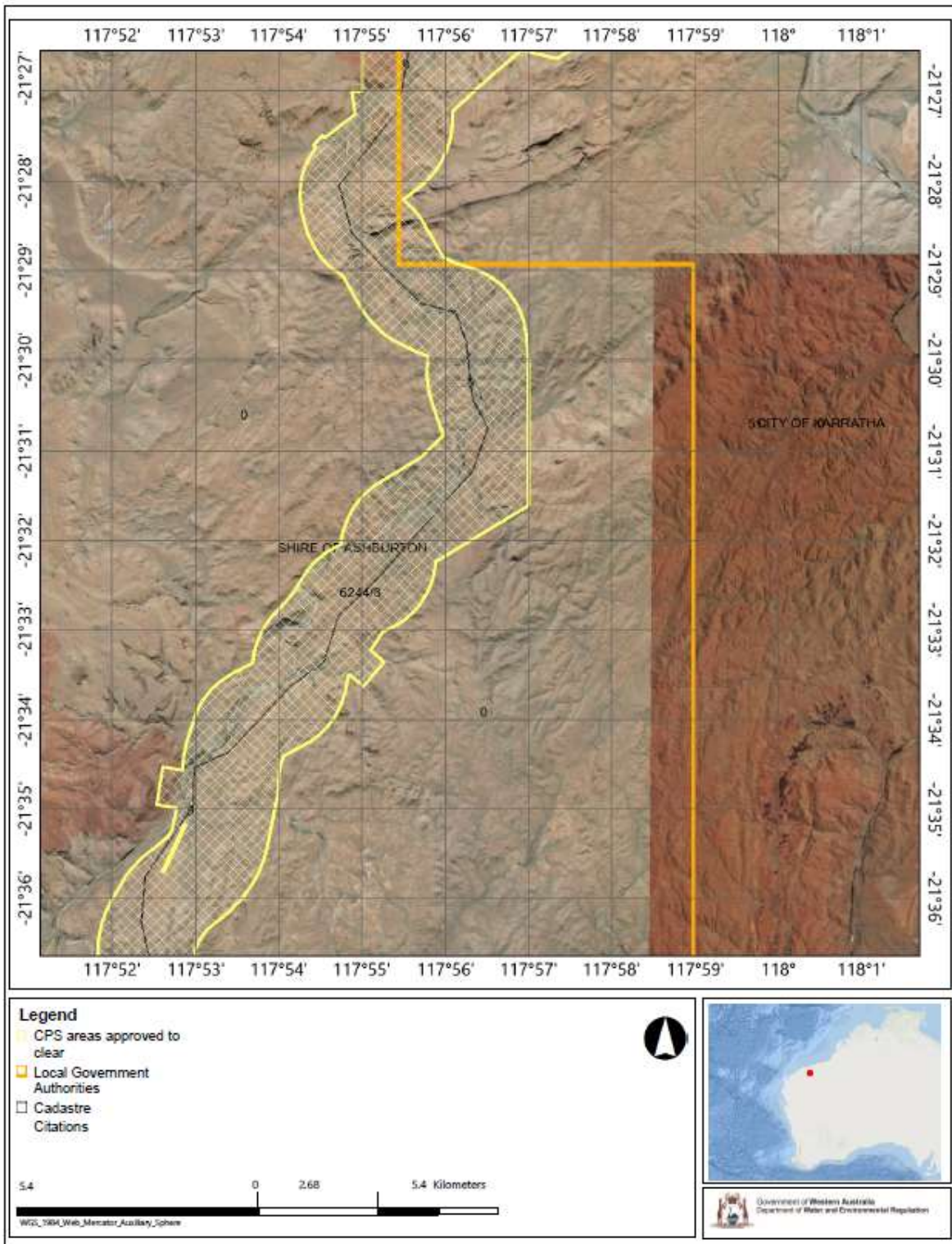


Figure 11. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

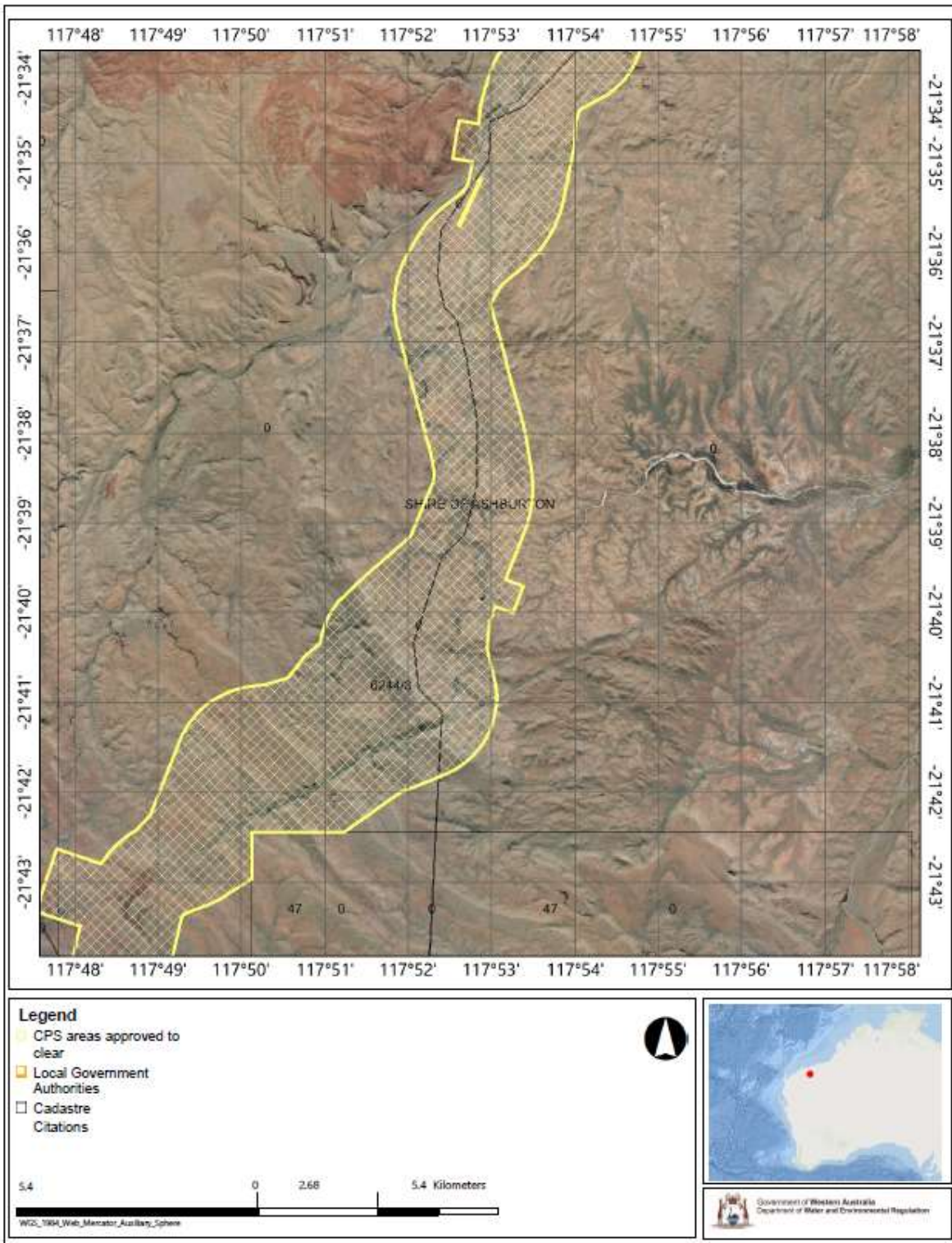


Figure 12. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

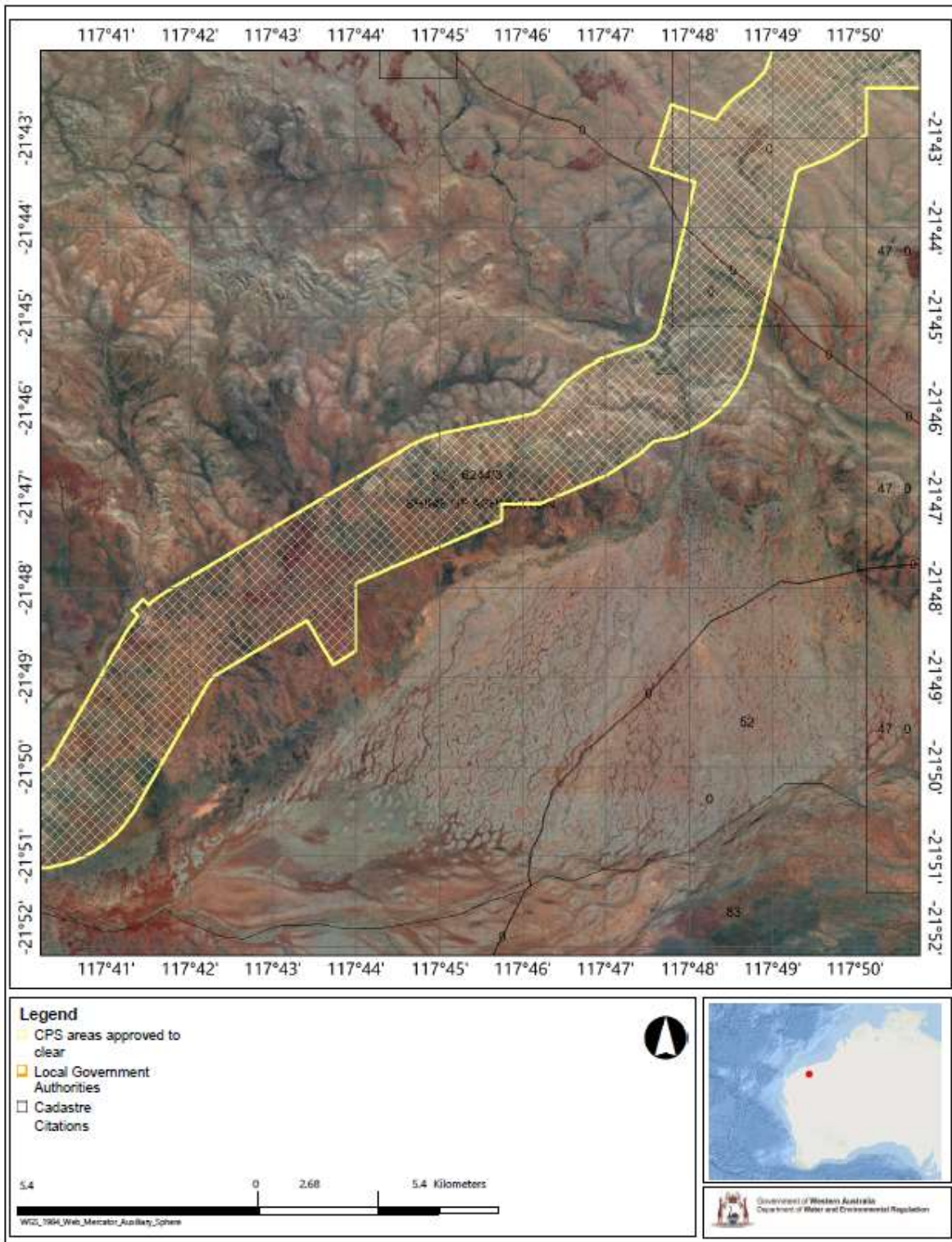


Figure 13. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

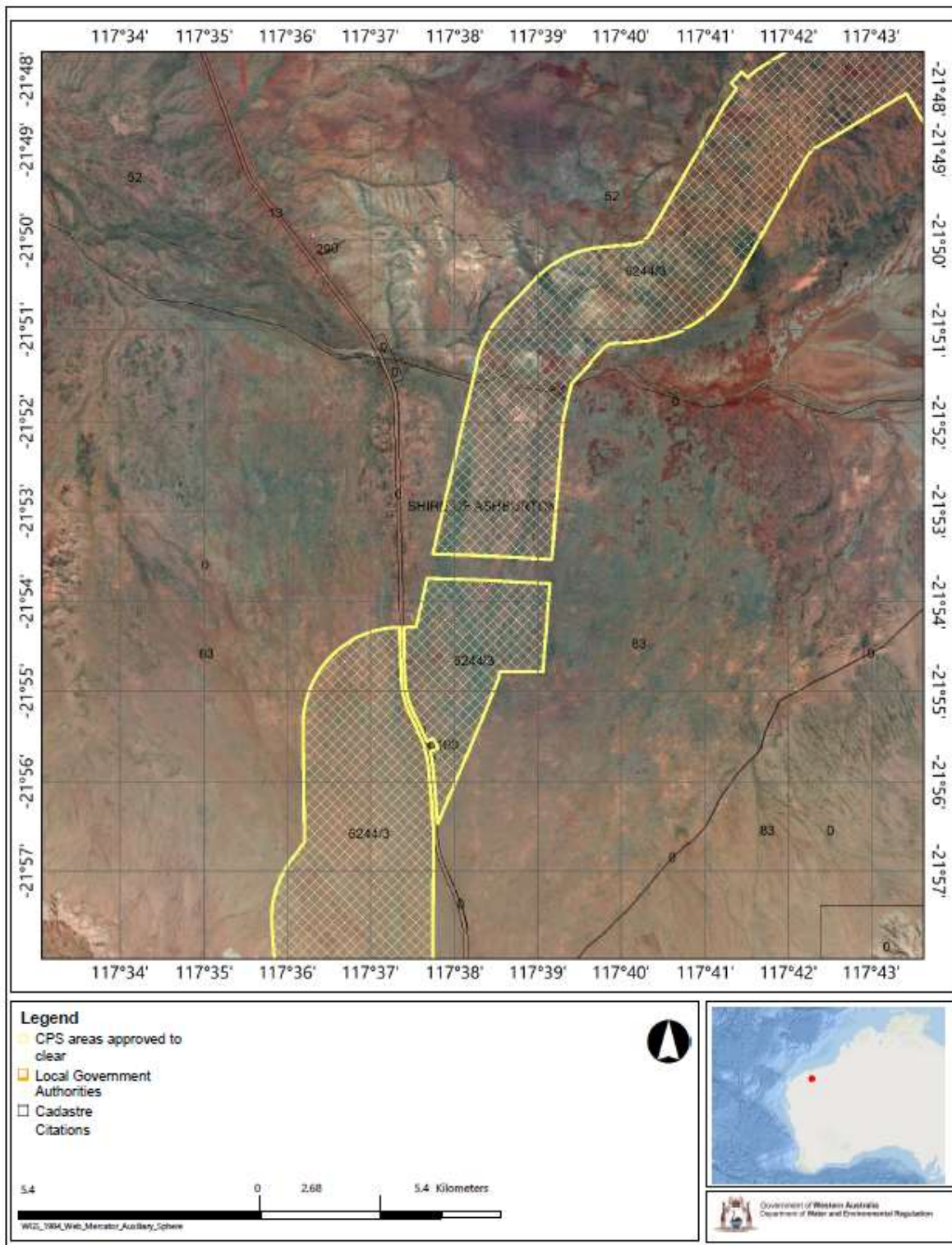


Figure 14. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area authorised to be cleared under the granted clearing permit.

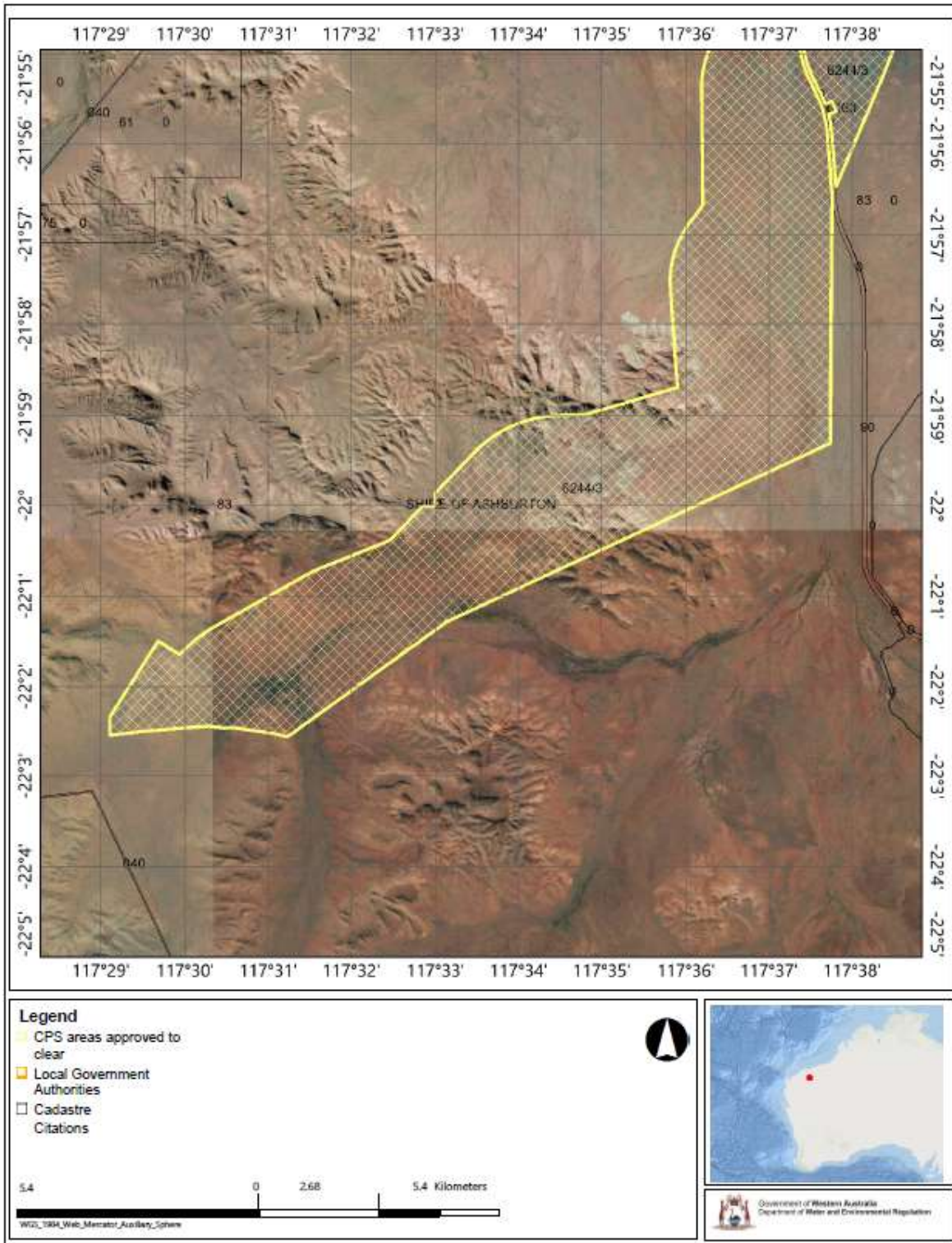


Figure 15. Map of the application area.

The area cross-hatched yellow indicate the footprint of the area 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 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

1. the precautionary principle;
2. the principle of intergenerational equity; and
3. 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)
- *Land Administration Act 1997*

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (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 advised that where possible, existing or previously cleared access tracks will be utilised and areas of environmental significance or known habitat of threatened species will be avoided.

This adequately demonstrated that all reasonable efforts had been taken to avoid and minimise potential impacts of the clearing on environmental values.

3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix A) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix B.

A review of current environmental information (Appendix A) reveals that the assessment against the clearing principles has not changed from Clearing Permit CPS 6244/2. The extended footprint of the proposed clearing contains similar values to those assessed within the Clearing Permit CPS 6244/2. The assessment of the environmental values in the extended footprint that required further consideration is below.

3.2.1. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment: According to available databases, 57 conservation significant fauna species have been recorded within the local area (DBCA, 2007), majority of which are migratory avian species protected under international agreements. The migratory species are known to breed in various locations around the world and migrate to Australia during the non-breeding season. As such they forage in shorelines, mudflats, mangrove systems, fresh water, saltwater and other habitats within Australia. Preferred non-breeding habitat for many of these species is found within the application area. Noting the small area of habitat for migratory birds that is intersected by the application area, mainly restricted to the coastal area, the proposed clearing is not likely to impact on migratory bird species.

Other conservation significant bird species found within the local area include *Calidris ferruginea* (curlew sandpiper), *Calidris tenuirostris* (great knot), *Numenius madagascariensis* (eastern curlew), *Charadrius mongolus* (lesser sand plover), *Calidris canutus* (red knot), and *Charadrius leschenaultii* (Greater sand plover) which are protected under the *Biodiversity and Conservation Act 2018* (BC Act) and/or the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). As noted above, non-breeding habitat for these species may be present in the application area but noting the small amount intersecting the application area, the proposed clearing is not likely to impact these bird species.

Numerous terrestrial species have been recorded within the local area including;

- *Dasyurus hallucatus* (northern quoll)
- *Petrogale lateralis* (Black-flanked rock-wallaby)
- *Lerista neviniae* (Nevin's slider)

- *Falco peregrinus* (Peregrine falcon);
- *Mormopterus cobourgianus* (North-western free-tailed bat);
- *Anilius ganei* (Gane's blind snake (Pilbara));
- *Underwoodisaurus seorsus* (Pilbara barking gecko);
- *Hydromys chrysogaster* (water rat);
- *Leggadina lakedownensis* (Northern short-tailed mouse);
- *Lagorchestes conspicillatus leichardti* (Spectacled hare-wallaby (mainland));
- *Pseudomys chapmani* (Western pebble-mound mouse);
- *Sminthopsis longicaudata* (Long-tailed dunnart);
- *Rhinonictes aurantia* (Orange leaf-nosed bat);
- *Notoscincus butleri* (Lined soil-crevice skink (Dampier));
- *Falco hypoleucos* (grey falcon);
- *Macroderma gigas* (ghost bat)
- *Macrotis lagotis* (bilby);
- *Rhinonictes aurantia* (Pilbara) (Pilbara leaf-nosed bat); and
- *Liasis olivaceus barroni* (Pilbara olive python).

The fauna surveys recorded evidence of the Northern Quoll (*Dasyurus hallucatus*) (Endangered), Pilbara Olive Python (*Liasis olivaceus barroni*) (Vulnerable), Lined Soil-crevice Skink (*Notoscincus butleri*) (P4), Brush-tail Mulgara (*Dasyercus blythi*) (P4), Northern Coastal Free-tailed Bat (*Chaerephon jobensis*) and Western Pebble-mound Mouse (*Pseudomys chapmani*) (P4) from within the application area (Phoenix, 2014; Phoenix, 2018). Based on the fauna habitats recorded, it was also determined that the application area also contains suitable habitat for numerous other conservation significant mammalian and avian species, including the threatened Greater Bilby (*Macrotis lagotis*) (Vulnerable) and Ghost Bat (*Macroderma gigas*) though not recorded during surveys (Phoenix, 2014; Phoenix, 2018, Phoenix 2020).

The abovementioned fauna recorded within the surveys provided are restricted to portions of the minor creek and drainage line, rocky hill slope, and gully fauna habitat types.

Outcome: To limit impacts within the areas of key habitat for conservation significant fauna, the permit to clear has limited clearing within these habitat types. Clearing is restricted to the purpose of access tracks and associated drainage controls only. The limited clearing that will occur within the suitable habitat of the abovementioned fauna will not significantly impact the fauna or their ability to occur within the landscape.

3.2.2. Environmental value: biological values (flora) – Clearing Principles (a) to (d)

Assessment: Available databases indicate 31 species of priority (P) flora have been recorded within the local area, five of these have been recorded within the application area; *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3), *Acacia fecunda* (P1), *Goodenia nuda* (P4), *Heliotropium muticum* (P3) and *Pentalepis trichodesmoides* subsp. *hispida* (P2). No threatened flora species were recorded in the surveys undertaken.

Surveys undertaken within the application area recorded the following 10 priority species within three surveys undertaken in 2014, 2018 and 2020 (Ecoscape 2014, Phoenix 2018, Phoenix 2020);

- *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)
- *Acacia fecunda* (P1)
- *Goodenia nuda* (P4)
- *Helichrysum oligochaetum* (P1)
- *Heliotropium muticum* (P3)
- *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) (previously known as *Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479))
- *Pentalepis trichodesmoides* subsp. *hispida* (P2)
- *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1)
- *Rhynchosia bungarensis* (P4)
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3)

The application area is within mapped occurrences of the Priority Ecological Community (PEC), 'Horseflat land system of the Roebourne Plains' (P3). Surveys within the application area have confirmed the occurrence of this community. The vegetation considered to be representative of this PEC is approximately 1933 hectares. In addition to this, a vegetation type identified during surveys (Ecoscape, 2014), was noted to be representative of the PEC now known as 'Four plant assemblages of the Wona Land System' (previously known as the 'Cracking clays of the

Chichester and Mungaroona Range' PEC). The vegetation considered to be representative of this PEC is approximately 31.8 hectares. Noting that both PECs are well-represented throughout the application area and are likely to be present outside of the application area, it is considered that conditions applied to the areas containing the PECs could be limited to reduce impacts.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing may impact on Priority flora and Priority Ecological Communities (PEC). Demarcating known priority flora locations and providing a 50 metre buffer where clearing is not able to occur will mitigate any potential impacts to priority flora. To mitigate impacts to the PECs identified, limiting clearing within the PECs for the purpose of access tracks and associated drainage controls only will not significantly reduce the extent of the PEC's within the application area.

3.2.3. Environmental value: land and water resources – Clearing Principles (f), (g) and (i)

Assessment: The proposed clearing intersects a number of major non-perennial watercourses including the Sherlock River, the Fortescue River, and a number of minor non-perennial watercourses. It is noted that the soil types within the application area may be susceptible to water erosion, particularly those associated with broad drainage zones such as the Coolibah and Jurrawarrina systems and those without a protective surface stony mantle or cryptographic crust. Sand plains and dune type systems are also susceptible to wind erosion, particularly when vegetation is removed.

Clearing native vegetation along watercourses may expose soils to a risk of localised water erosion which may cause localised sedimentation. Clearing native vegetation may also expose soils to risk of wind erosion within sand plain and dune systems. However, impacts are expected to be short term. Potential impacts may be minimised through the rehabilitation of disturbed areas following completion of activities.

Outcome: Based on the above assessment, the Delegated Officer has determined that retaining vegetative material and topsoil, revegetation and rehabilitation within six months of carrying out clearing authorised under the permit to stabilise the disturbed areas will mitigate impacts to watercourses and mitigate land degradation risks of water and wind erosion.

3.3. Relevant planning instruments and other matters

The permit holder has obtained a Licence to Occupy Crown Land under Section 91 of the *Land Administration Act 1997* (Licence 00155/2014_A10886674) (Forge Resources Swan Pty Ltd, 2020). A permit to clear has been aligned with the boundary of this licence and aligned with the expiry date of this licence being for the duration of two years (expiring on 24 June 2022).

It is the permit holder'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.

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 B.

1. Site characteristics

Site characteristic	Details
Local context	The proposed clearing area forms part of an expansive tract of native vegetation. It is surrounded by vast expanses of vegetation of similar types. Spatial data indicates the local area (30 km radius of the proposed clearing area) retains approximately 98% of the original native vegetation cover.
Vegetation description	<p>Vegetation surveys provided by the applicant (Ecoscape 2014, Phoenix 2018, Phoenix 2020) (Appendix D) indicate the vegetation recorded within the proposed clearing area is consistent with the following mapped vegetation type(s):</p> <ul style="list-style-type: none"> • Beard 82, which is described as Hummock grassland with scattered bloodwoods & snappy gum <i>Triodia</i> spp., <i>Corymbia dichromophloia</i>, <i>Eucalyptus leucophloia</i> (Shepherd et al, 2001) • Beard 93, which is described as Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp (Shepherd et al, 2001) • Beard 569, which is described as Hummock grassland with scattered bloodwoods & snappy gum <i>Triodia</i> spp., <i>Corymbia dichromophloia</i>, <i>Eucalyptus leucophloia</i> (Shepherd et al, 2001) • Beard 644, which is described as Hummock grassland with scattered bloodwoods & snappy gum <i>Triodia</i> spp., <i>Corymbia dichromophloia</i>, <i>Eucalyptus leucophloia</i> (Shepherd et al, 2001) • Beard 589, which is described as Short bunch-grass savanna / Grass-steppe (Shepherd et al, 2001) • Beard 641, which is described as Wheatbelt; York gum, salmon gum etc. <i>Eucalyptus loxophleba</i>, <i>E. salmonophloia</i>. Goldfields; gimlet, redwood etc. <i>E. salubris</i>, <i>E. oleosa</i>. Riverine; rivergum <i>E. camaldulensis</i>. Tropical; messmate, woollybutt (Shepherd et al, 2001) • Beard 647, which is described as Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp (Shepherd et al, 2001) • Beard 565, which is described as Hummock grassland with scattered bloodwoods & snappy gum <i>Triodia</i> spp., <i>Corymbia dichromophloia</i>, <i>Eucalyptus leucophloia</i> (Shepherd et al, 2001) • Beard 645, which is described as Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp (Shepherd et al, 2001) • Beard 175 which is described as Annual grasses <i>Enneapogon</i> spp. <i>Aristida</i> spp. etc on dry plains and salt water grasses <i>Sporobolus virginicus</i> on the coast (Shepherd et al, 2001) • Beard 607 which is described as Hummock grassland with scattered bloodwoods & snappy gum <i>Triodia</i> spp., <i>Corymbia dichromophloia</i>, <i>Eucalyptus leucophloia</i> (Shepherd et al, 2001) • Beard 626 which is described as Hummock grassland with sparse shrubs <i>Triodia</i> spp. <i>Acacia</i> spp. (Shepherd et al, 2001) • Beard 587 which is described as Sparse low tree-steppe / Sparse shrub-steppe (Shepherd et al, 2001) • Beard 649 which is described as Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp (Shepherd et al, 2001)

Site characteristic	Details
	<ul style="list-style-type: none"> • Beard 127 which is described as Tidal mud flat (Shepherd et al, 2001) • Beard 173 which is described as Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp (Shepherd et al, 2001) • Beard 626 which is described as Hummock grassland with sparse shrubs <i>Triodia</i> spp. <i>Acacia</i> spp. (Shepherd et al, 2001) <p>The full survey descriptions are available in Appendix D.</p>
Vegetation condition	Vegetation surveys (Ecoscape, 2014; Pheonix 2018; Phoenix, 2020) indicate the vegetation within the proposed clearing area is in Poor to Excellent (Trudgen, 1991) condition. The full Trudgen condition rating scale is provided in Appendix C.
Soil description	<p>The application area is mapped as containing the following soil types:</p> <ul style="list-style-type: none"> • Littoral System - Bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests. • Black System: Linear ridges of dolerite or basalt supporting hard spinifex grasslands, with unvegetated boulder slopes and rock piles along summits; • Boolaloo System: Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs; • Boolgeeda System: Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands; • Calcrete System: Low calcrete platforms and plains supporting shrubby hard spinifex grasslands; • Capricorn System: Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low acacia shrublands or hard spinifex grasslands with scattered shrubs; • Coolibah System: Flood plains with weakly gilgaied clay soils supporting coolibah woodlands with tussock grass understorey; • Granitic System: Rugged granitic hills supporting shrubby hard and soft spinifex grasslands; • Gregory System: Linear dunes and restricted sandplains supporting shrubby hard spinifex (and occasionally soft spinifex) grasslands; • Horseflat system: Gilgaied clay plains supporting Roebourne Plains grasslands and minor grassy snakewood shrublands; • Jurrawarrina System: Hardpan plains and alluvial tracts supporting mulga shrublands with tussock and spinifex grasses; • Macroy system: Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands; • Mallina system: Sandy surfaced alluvial plains supporting soft spinifex grasslands and minor hard spinifex and tussock grasslands; • McKay System: Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands with acacias and occasional eucalypts; • Newman System: Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands; • River system: Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex; • Rocklea System: Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs; • Ruth System: Hills and ridges of volcanic and other rocks supporting shrubby hard spinifex and occasionally soft spinifex grasslands; • Satirist System: Stony plains and low rises supporting hard spinifex grasslands, and gilgai plains supporting tussock grasslands;

Site characteristic	Details
	<ul style="list-style-type: none"> • Uaroo System: Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs; • Urandy System: Stony plains, alluvial plains and drainage lines supporting shrubby soft spinifex grasslands; and • Wona System: Basalt upland gilgai plains supporting Roebourne Plains grass and Mitchell grass tussock grasslands, minor hard spinifex grasslands or annual grasslands/herbfields.
Land degradation risk	The application area intersects 22 mapped soil types. It is noted that the soil types most affected by wind and water erosion are those within broad drainage zones and soil types with little or no stone cover (van Vreeswyk et al 2004) that can become exposed by the removal of vegetation including calcareous deep sands, red deep sands and red sandy earths.
Waterbodies	The desktop assessment and aerial imagery indicated that two major non-perennial rivers (Fortescue and Sherlock) and numerous minor non-perennial watercourses transect the application area.
Conservation areas	The application area does not intercept any conservation areas. The closest conservation areas are located approximately seven kilometres from the application area.
Climate and landform	The application area traverses a distance of over 150 kilometers through various elevations from 10 meters to approximately 620 meters. Rainfall is likely to vary greatly between the extents of the application area. The southernmost extent is likely to have a higher rainfall than the northern extent. Roebourne (closest to the northern extent) receives a mean annual rainfall of approximately 315 millimeters and Wittenoom (closest to the southern extent) receives a mean annual rainfall of approximately 465 millimeters.

2. Flora, fauna and ecosystem analysis

With consideration for the site characteristics set out above, relevant datasets (see Appendix E), and biological survey information, the following conservation significant flora and fauna species, and ecological communities may be impacted by the clearing.

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Flora and vegetation communities					
<i>Abutilon</i> sp. <i>Pritzelianum</i> (S. van Leeuwen 5095) (P3)	0	Y	Y		Y
<i>Acacia fecunda</i> (P1)	0	Y	Y		Y
<i>Goodenia nuda</i> (P4)	0	Y	Y		Y
<i>Helichrysum oligochaetum</i> (P1)	0	Y	Y		Y
<i>Heliotropium muticum</i> (P3)	0	Y	Y		Y

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3)	8.3	Y	Y		Y
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) Previously known as <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3)	0	Y	Y		Y
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2)	0	Y	Y		Y
<i>Rhynchosia bungarensis</i> (P4)	0	Y	Y		Y
<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3)	12	Y	Y		Y
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3)	0	Y	Y		Y
Horseflat Land System of the Roebourne Plains PEC (P3)	0	Y	Y		Y
Fauna					
Northern Quoll (<i>Dasyurus hallucatus</i>) (Endangered)	0			Y	Y
Brush-tailed Mulgara (<i>Dasymercus blythi</i>) (P4)	0			Y	Y
Northern Coastal Free-tailed Bat (<i>Ozimops cobourgianus</i>) (P1)	0			Y	Y
Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>) (P4)	0			Y	Y
Black-flanked rock-wallaby (<i>Petrogale lateralis</i>) (Endangered)	<30 kilometers			Y	Y
Nevin's slider (<i>Lerista neviniae</i>) (Endangered)	<30 kilometers			Y	Y
Gane's blind snake (<i>Anilius ganei</i>) (P1)	<30 kilometers			Y	Y
Pilbara barking gecko (<i>Underwoodisaurus seorsus</i>) (P2)	<30 kilometers			Y	Y
water rat (<i>Hydromys chrysogaster</i>) (P4)	<30 kilometers			Y	Y

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Northern short-tailed mouse (<i>Leggadina lakedownensis</i>) (P4)	<30 kilometers			Y	Y
Spectacled hare-wallaby (<i>Lagorchestes conspicillatus leichardti</i>) (P4)	<30 kilometers			Y	Y
Long-tailed dunnart (<i>Sminthopsis longicaudata</i>) (P4)	<30 kilometers			Y	Y
Orange leaf-nosed bat (<i>Rhinonictis aurantia</i>) (P4)	<30 kilometers			Y	Y
Lined soil-crevice skink (<i>Notoscincus butleri</i>) (P4)	<30 kilometers			Y	Y
grey falcon (<i>Falco hypoleucos</i>) (vulnerable)	<30 kilometers			Y	Y
ghost bat (<i>Macroderma gigas</i>) (ghost bat) (vulnerable)	<30 kilometers			Y	Y
bilby (<i>Macrotis lagotis</i>) (vulnerable)	<30 kilometers			Y	Y
Pilbara leaf-nosed bat (<i>Rhinonictis aurantia</i>) (vulnerable)	<30 kilometers			Y	Y
Pilbara olive python (<i>Liasis olivaceus barroni</i>) (vulnerable)	<30 kilometers			Y	Y
North-western free-tailed bat (<i>Mormopterus cobourgianus</i>) (P1)	<30 kilometers			Y	Y

3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
IBRA bioregion					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.12
Vegetation complex					
Hammersley_82	2,565,901.28	2,553,206.19	99.51	295,377.96	11.51
Abydos plain - chichester_93	3,044,293.40	3,040,639.40	99.88	59,536.96	1.96

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
Chichester plateau_569	101,470.94	101,242.00	99.77	2,202.57	2.17
Hammersley_644	27,199.82	27,068.69	99.52	0	0
Fortescue valley_175	525,952.95	524,484.39	99.72	40,277.79	7.66
Chichester plateau_607	120,789.19	120,599.81	99.84	15,509.10	12.84
Abydos plain_589	806,985.08	802,646.84	99.46	15,304.39	1.90
Abydos plain - chichester_641	29,027.63	29,027.58	100.00	1,320.61	4.55
Abydos plain - chichester_626	117,724.44	117,198.13	99.55	18,348.02	15.59
Chichester plateau_587	580,728.60	580,696.99	99.99	123,367.39	21.24
Abydos plain_647	195,859.95	191,710.92	97.88	0	0
Abydos plain - chichester_649	40,364.42	40,178.20	99.54	0	0
Chichester plateau_173	1,753,104.09	1,748,260.83	99.72	238,705.37	13.62
Hammersley_565	143,438.92	143,427.36	99.99	0	0
Hammersley_175	525,952.95	524,484.39	99.72	40,277.79	7.66
Abydos plain_127	716,160.82	691,516.26	96.56	83,831.67	11.71
Hammersley_645	84,670.25	84,658.03	99.99	0	0

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> The proposed clearing area contains priority listed flora species, fauna habitats and a priority listed ecological community.</p>	May be at variance	Yes Refer to Section 3.2.2 above.
<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> The proposed clearing area contains habitat for conservation significant fauna as recorded in surveys submitted by the applicant.</p>	May be at variance	Yes Refer to Section 3.2.2 above.
<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> The proposed clearing area is unlikely to contain flora species listed under the BC Act. Flora surveys within the application area noted no threatened flora were recorded.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> “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.”</p> <p><u>Assessment:</u> The proposed clearing area is not within any mapped occurrences of threatened ecological communities as listed by the Western Australian Minister for Environment. Surveys provided by the applicant indicate the vegetation within the application area is not representative of any state listed threatened ecological communities.</p>	Not likely to be at variance	No
Environmental values: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p> <p><u>Assessment:</u> The extent of the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. Vegetation in the proposed clearing area is not considered to be part of a significant ecological linkage in the local area or located within an extensively cleared landscape.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> “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.”</p> <p><u>Assessment:</u> The application area does not occur within any conservation areas. The Millstream Chichester National Park and the Mungaroon Range Nature Reserve occur approximately seven kilometres from the application area. Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any conservation areas.</p>	Not likely to be at variance	No
Environmental values: land and water resources		

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<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> A number of water courses intersect the application area. Riparian vegetation is likely to be cleared during the construction of access tracks and drainage control measures.</p>	Is at variance	Yes Refer to Section 3.2.2 above.
<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> Some of the mapped soils are moderately susceptible to forms of wind and water erosion if left exposed. Limiting the amount of time that bare soil is present on site will mitigate this risk.</p>	May be at variance	Yes Refer to Section 3.2.3 above.
<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> Given a number of water courses intersect the proposed clearing area, the clearing may impact surface or ground water quality. However, impacts considered to be short term and minimal. The application area is within a Public Drinking Water Sources Area, however, the proposed clearing is not considered likely to impact groundwater.</p>	May be at variance	Yes Refer to Section 3.2.2 above.
<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> The mapped soils within the application area and size of the proposed clearing along an extensive range does not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be 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.

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.
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 information excerpts / photographs of the vegetation

Noting the size of the footprint and the various surveys undertaken within it, numerous vegetation types have been observed within the application area as described in the table below.

Description	Reference
<i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> and <i>Acacia arida</i> tall-mid open to scattered shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> mid-low open hummock grassland	Ecoscape, 2014
<i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall-mid open-sparse shrubland over <i>Triodia lanigera</i> , <i>Triodia epactia</i> and <i>Acacia stellaticeps</i> mid-low hummock grassland/shrubland with occasional <i>Corymbia hamersleyana</i> and <i>Corymbia deserticola</i> subsp. <i>deserticola</i> low scattered trees	Ecoscape, 2014
Mosaic of: <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall-mid open-sparse shrubland over <i>Triodia lanigera</i> , <i>Triodia epactia</i> and <i>Acacia stellaticeps</i> mid-low hummock grassland/shrubland with occasional <i>Corymbia hamersleyana</i> and <i>Corymbia deserticola</i> subsp. <i>deserticola</i> low scattered trees And <i>Triodia secunda</i> , <i>Triodia wiseana</i> and <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Acacia arida</i> mid sparse shrubland over <i>Acacia stellaticeps</i> , <i>Triodia epactia</i> and <i>Bonamia erecta</i> low shrubland/hummock grassland with <i>Corymbia hamersleyana</i> scattered low trees	Ecoscape, 2014
<i>Acacia arida</i> and <i>Acacia ancistrocarpa</i> mid open shrubland over <i>Triodia lanigera</i> , <i>Acacia spondylophylla</i> and <i>Triodia epactia</i> mid (low) hummock grassland/shrubland	Ecoscape, 2014
<i>Acacia arida</i> and <i>Acacia ancistrocarpa</i> mid open shrubland over <i>Triodia lanigera</i> , <i>Acacia spondylophylla</i> and <i>Triodia epactia</i> mid (low) hummock grassland/shrubland	Ecoscape, 2014
<i>Acacia atkinsiana</i> , <i>Hakea chordophylla</i> and <i>Acacia ancistrocarpa</i> tall-mid sparse shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> low hummock grassland with	Ecoscape, 2014

<i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low scattered trees	
<i>Acacia citrinoviridis</i> low woodland or tall to mid shrubland over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia trachycarpa</i> and <i>Acacia pruinocarpa</i> tall mid shrubland over <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Acacia citrinoviridis</i> and <i>Corymbia hamersleyana</i> low woodland over <i>Triodia epactia</i> , <i>Themeda triandra</i> and <i>Chrysopogon fallax</i> mid-low hummock grassland/tussock grassland	Ecoscape, 2014
<i>Acacia inaequilatera</i> and <i>Acacia acradenia</i> tall sparse shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> mid tussock grassland	Ecoscape, 2014
<i>Acacia inaequilatera</i> and <i>Acacia ancistrocarpa</i> tall-mid sparse-scattered shrubland over <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Acacia inaequilatera</i> and <i>Acacia trachycarpa</i> mid sparse shrubland over <i>Triodia epactia</i> and <i>Pluchea tetranthera</i> mid(low) hummock grassland/shrubland with <i>Corymbia hamersleyana</i> low scattered trees	Ecoscape, 2014
<i>Acacia inaequilatera</i> tall sparse or scattered shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> mid-low hummock grassland	Ecoscape, 2014
<i>Acacia inaequilatera</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Hakea lorea</i> subsp. <i>lorea</i> tall sparse shrubland over <i>Triodia wiseana</i> , <i>Triodia epactia</i> and <i>Triodia brizoides</i> mid-low hummock grassland	Ecoscape, 2014
<i>Acacia inaequilatera</i> , <i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i> and <i>Acacia</i> sp. tall sparse shrubland over <i>Triodia wiseana</i> , <i>Triodia epactia</i> and <i>Triodia</i> aff. <i>melvillei</i> hummock grassland with <i>Corymbia hamersleyana</i> low scattered trees	Ecoscape, 2014
<i>Acacia melleodora</i> tall open shrubland over <i>Eragrostis eriopoda</i> and <i>Aristida holathera</i> var. <i>holathera</i> mid open tussock grassland	Ecoscape, 2014
<i>Acacia orthocarpa</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall open shrubland over <i>Triodia epactia</i> , <i>Indigofera monophylla</i> and <i>Triodia wiseana</i> mid hummock grassland/shrubland	Ecoscape, 2014
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia trachycarpa</i> and <i>Petalostylis labicheoides</i> tall-mid open shrubland over <i>Triodia epactia</i> , * <i>Cenchrus ciliaris</i> and * <i>Aerva javanica</i> mid-low tussock grassland/hummock grassland/shrubland	Ecoscape, 2014
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia ancistrocarpa</i> and <i>Acacia inaequilatera</i> tall sparse shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>Carissa lanceolata</i> tall shrubland over <i>Chrysopogon fallax</i> , <i>Eragrostis xerophila</i> and * <i>Cenchrus ciliaris</i> mid tussock grassland	Ecoscape, 2014
<i>Acacia stellaticeps</i> and <i>Triodia schinzii</i> low shrubland/mid hummock grassland	Ecoscape, 2014
<i>Acacia xiphophylla</i> tall shrubland over <i>Streptoglossa bubakii</i> , <i>Stemodia kingii</i> and <i>Triodia wiseana</i> low open shrubland/hummock grassland	Ecoscape, 2014
<i>Corymbia candida</i> mid woodland over <i>Acacia bivenosa</i> and <i>Acacia elachantha</i> tall open shrubland over <i>Bothriochloa ewartiana</i> , <i>Themeda triandra</i> and <i>Chrysopogon fallax</i> low sparse tussock grassland	Ecoscape, 2014
<i>Corymbia candida</i> low open woodland over <i>Eriachne benthamii</i> , <i>Triodia epactia</i> and <i>Chrysopogon fallax</i> mid tussock grassland/hummock grassland with <i>Acacia inaequilatera</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall scattered shrubs	Ecoscape, 2014
<i>Corymbia deserticola</i> subsp. <i>deserticola</i> , <i>Corymbia hamersleyana</i> and <i>Eucalyptus xerothermica</i> low open woodland over <i>Acacia atkinsiana</i> and <i>Grevillea wickhamii</i> tall open shrubland over <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia acradenia</i> , <i>Acacia ancistrocarpa</i> and <i>Acacia inaequilatera</i> tall sparse shrubland over <i>Triodia angusta</i> and <i>Triodia epactia</i> low hummock grassland	Ecoscape, 2014
<i>Corymbia hamersleyana</i> , <i>Eucalyptus gamophylla</i> and <i>Eucalyptus xerothermica</i> low open woodland over <i>Acacia atkinsiana</i> , <i>Grevillea wickhamii</i> and <i>Acacia ancistrocarpa</i> mid open-sparse shrubland over <i>Triodia epactia</i> and <i>Eulalia aurea</i> mid-low hummock grassland/tussock grassland	Ecoscape, 2014
<i>Corymbia hamersleyana</i> and <i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i> low open woodland or scattered trees over <i>Acacia bivenosa</i> and <i>Acacia arida</i> tall-mid sparse shrubland over <i>Triodia wiseana</i> , <i>Triodia epactia</i> and <i>Triodia angusta</i> mid open tussock grassland	Ecoscape, 2014

<i>Corymbia hamersleyana</i> and <i>Eucalyptus xerothermica</i> low open woodland over <i>Acacia elachantha</i> and <i>Maytenus</i> sp. Mt Windell (S. van Leeuwen 846) mid sparse shrubland over <i>Themeda triandra</i> , <i>Eulalia aurea</i> and <i>Chrysopogon fallax</i> mid tussock grassland	Ecoscape, 2014
<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia inaequilatera</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Eremophila longifolia</i> tall open shrubland over <i>Chrysopogon fallax</i> , <i>Triodia epactia</i> and <i>Themeda triandra</i> mid tussock grassland/hummock grassland	Ecoscape, 2014
<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall-mid sparse shrubland over <i>Triodia epactia</i> , <i>Themeda triandra</i> and <i>Paraneurachne muelleri</i> mid hummock grassland/tussock grassland	Ecoscape, 2014
<i>Eucalyptus gamophylla</i> and <i>Corymbia hamersleyana</i> low open mallee shrubland/woodland over <i>Acacia atkinsiana</i> , <i>Acacia inaequilatera</i> and <i>Acacia trachycarpa</i> (dwarf variant) tall-mid open-sparse shrubland over <i>Triodia epactia</i> , <i>Paraneurachne muelleri</i> and <i>Triodia wiseana</i> mid-low hummock	Ecoscape, 2014
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia deserticola</i> subsp. <i>deserticola</i> low open woodland over <i>Acacia ancistrocarpa</i> mid sparse shrubland over <i>Triodia</i> aff. <i>melvillei</i> and <i>Amphipogon sericeus</i> mid-low hummock grassland/tussock grassland	Ecoscape, 2014
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> low open woodland or scattered trees over <i>Acacia</i> sp., <i>Acacia inaequilatera</i> and <i>Acacia tumida</i> subsp. <i>pilbarensis</i> tall sparse shrubland over <i>Triodia epactia</i> low hummock grassland	Ecoscape, 2014
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>Eucalyptus gamophylla</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Acacia maitlandii</i> low open mallee shrubland/tall open shrubland over <i>Triodia wiseana</i> and <i>Waltheria virgata</i> low hummock grassland/shrubland	Ecoscape, 2014
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> mid open woodland to scattered trees over <i>Triodia epactia</i> , <i>Triodia brizoides</i> and <i>Triodia wiseana</i> hummock grassland	Ecoscape, 2014
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> low open woodland over <i>Triodia wiseana</i> and <i>Eriachne mucronata</i> mid-low hummock grassland/tussock grassland with <i>Grevillea wickhamii</i> and <i>Hakea chordophylla</i> tall-mid scattered shrubs	Ecoscape, 2014
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> low open woodland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> mid-low hummock grassland	Ecoscape, 2014
<i>Eucalyptus victrix</i> , <i>Corymbia hamersleyana</i> and <i>Acacia coriacea</i> subsp. <i>pendens</i> mid-low open woodland over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall sparse shrubland over * <i>Cenchrus ciliaris</i> , <i>Triodia angusta</i> and <i>Triodia epactia</i> low tussock grassland/hummock grassland	Ecoscape, 2014
<i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> mid open woodland-scattered trees over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Acacia tumida</i> var. <i>pilbarensis</i> tall shrubland-scattered shrubs over <i>Triodia epactia</i> , <i>Tephrosia rosea</i> var. Fortescue creeks (M.I.H Brooker 2186) and * <i>Cenchrus ciliaris</i> mid-low open hummock grassland/shrubland/tussock grassland	Ecoscape, 2014
<i>Eucalyptus victrix</i> mid woodland-open woodland over <i>Acacia trachycarpa</i> , <i>Acacia ampliceps</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> tall shrubland-sparse shrubland over <i>Triodia epactia</i> and * <i>Cenchrus ciliaris</i> mid open hummock grassland/tussock grassland	Ecoscape, 2014
<i>Eucalyptus victrix</i> low open woodland over <i>Cyperus bifax</i> and <i>Eriachne benthamii</i> low sedgeland/tussock grassland with * <i>Vachellia farnesiana</i> tall scattered shrubs	Ecoscape, 2014
<i>Eucalyptus victrix</i> and <i>Acacia citrinoviridis</i> mid woodland over <i>Melaleuca glomerata</i> and * <i>Vachellia farnesiana</i> tall sparse shrubland over <i>Eriachne benthamii</i> and <i>Cyperus bifax</i> low open tussock grassland/sedgeland	Ecoscape, 2014
<i>Eucalyptus victrix</i> , <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>Acacia coriacea</i> subsp. <i>pendens</i> mid-low woodland over <i>Melaleuca linophylla</i> , <i>Melaleuca glomerata</i> and <i>Acacia trachycarpa</i> tall open shrubland over <i>Cyperus vaginatus</i> , <i>Triodia epactia</i> and * <i>Cenchrus ciliaris</i> mid open sedgeland/hummock grassland/tussock grassland	Ecoscape, 2014
<i>Eragrostis xerophila</i> , <i>Dichanthium sericeum</i> subsp. <i>humilius</i> and <i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113) low tussock grassland/vineland	Ecoscape, 2014

<i>Ficus brachypoda</i> low open woodland over <i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i> and <i>Tephrosia rosea</i> var. <i>clementii</i> mid sparse shrubland over <i>Eriachne mucronata</i> , <i>Triodia wiseana</i> and <i>Triodia epactia</i> mid open tussock grassland/hummock grassland	Ecoscape, 2014
<i>Triodia epactia</i> , <i>Eragrostis xerophila</i> and <i>Eriachne benthamii</i> mid-low hummock grassland with tall <i>Acacia inaequilatera</i> and <i>Carissa lanceolata</i> scattered clumps of shrubs	Ecoscape, 2014
<i>Hakea chordophylla</i> and <i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i> tall sparse shrubland over <i>Triodia epactia</i> and * <i>Cenchrus ciliaris</i> mid hummock grassland/tussock grassland	Ecoscape, 2014
<i>Melaleuca argentea</i> and <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> mid open forest open woodland over <i>Melaleuca glomerata</i> , <i>Acacia ampliceps</i> and <i>Acacia coriacea</i> subsp. <i>pendens</i> tall sparse shrubland-scattered shrubs over <i>Cyperus vaginatus</i> and <i>Stemodia grossa</i> mid open sedgeland/forbland	Ecoscape, 2014
<i>Melaleuca argentea</i> and <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> low open woodland over <i>Melaleuca linophylla</i> tall open shrubland over <i>Cyperus ixiocarpus</i> mid sparse sedgeland	Ecoscape, 2014
<i>Streptoglossa bubakii</i> , <i>Sida fibulifera</i> and <i>Stemodia kingii</i> low open shrubland/herbland	Ecoscape, 2014
<i>Triodia angusta</i> and <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Triodia brizoides</i> and <i>Triodia epactia</i> mid-low hummock grassland with <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> low scattered trees	Ecoscape, 2014
<i>Triodia epactia</i> and <i>Triodia secunda</i> low hummock grassland	Ecoscape, 2014
<i>Triodia epactia</i> and <i>Triodia wiseana</i> low hummock grassland with <i>Corymbia hamersleyana</i> low scattered trees over <i>Acacia elachantha</i> tall scattered shrubs	Ecoscape, 2014
<i>Triodia epactia</i> , <i>Sclerolaena hostilis</i> and <i>Triodia angusta</i> mid-low open hummock grassland/chenopod shrubland with occasional low <i>Acacia xiphophylla</i> scattered trees	Ecoscape, 2014
<i>Triodia epactia</i> , <i>Triodia angusta</i> and <i>Triodia lanigera</i> mid hummock grassland with scattered low <i>Acacia xiphophylla</i> trees	Ecoscape, 2014
<i>Triodia secunda</i> , <i>Triodia wiseana</i> and <i>Triodia epactia</i> mid hummock grassland	Ecoscape, 2014
<i>Triodia wiseana</i> and <i>Eragrostis xerophila</i> mid hummock grassland/tussock grassland	Ecoscape, 2014
<i>Triodia wiseana</i> and <i>Triodia epactia</i> low open hummock grass with <i>Corymbia hamersleyana</i> low scattered trees over <i>Acacia inaequilatera</i> mid scattered shrubs	Ecoscape, 2014
Recently burnt; not able to be mapped	Ecoscape, 2014
Rock outcrop (not vegetated)	Ecoscape, 2014
Not assessed; not accessible	Ecoscape, 2014
Isolated plants of <i>Rhynchosia minima</i> and <i>Streptoglossa bubakii</i> over a low tussock grassland of <i>Eragrostis xerophila</i> and variably present <i>Dichanthium sericeum</i> subsp. <i>humilius</i> .	Phoenix, 2020
Mid open shrubland to shrubland of <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>Carissa lanceolata</i> over low isolated shrubs of <i>Solanum lasiophyllum</i> , <i>Ptilotus obovatus</i> , and <i>Cleome viscosa</i> over low isolated tussock grassland of <i>Eragrostis xerophila</i> and <i>Chrysopogon fallax</i> .	Phoenix, 2020
Mid to tall open shrubland to shrubland of <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia stellaticeps</i> and occasionally <i>Acacia arida</i> over a hummock grassland to closed hummock grassland of <i>Triodia wiseana</i> and <i>Triodia epactia</i> .	Phoenix, 2020
Low to mid open shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> and occasionally <i>Acacia bivenosa</i> over a hummock grassland of <i>Triodia epactia</i> and <i>Triodia wiseana</i> .	Phoenix, 2020
Variably present isolated trees of <i>Corymbia hamersleyana</i> , over variably present isolated shrubs of <i>Acacia pyrifolia</i> , <i>Acacia arida</i> and <i>Acacia bivenosa</i> over hummock grassland of <i>Triodia epactia</i> and <i>Triodia wiseana</i> .	Phoenix, 2020

Low to mid sparse shrubland of <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> and <i>Acacia ancistrocarpa</i> over an open hummock grassland to hummock grassland of <i>Triodia wiseana</i> (with minor presence of <i>Triodia epactia</i>).	Phoenix, 2020
Broad drainage or drainage plains with variably present mid open woodland of <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> , over mid open shrubland of <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> and <i>Acacia pyrifolia</i> over sparse hummock grassland of <i>Triodia epactia</i> .	Phoenix, 2020
Drainage of low sparse to open woodland of <i>Corymbia candida</i> subsp. <i>dipsodes</i> over mid sparse shrubland of <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Acacia bivenosa</i> and occasionally <i>Acacia trachycarpa</i> over sparse hummock grassland of <i>Triodia epactia</i> with <i>Cenchrus ciliaris</i> .	Phoenix, 2020
Drainage lines of mid woodland of <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> over tall sparse shrubland to shrubland of <i>Acacia trachycarpa</i> over mid isolated shrubs of <i>Carissa lanceolata</i> , <i>Cajanus cinereus</i> and <i>Acacia pyrifolia</i> over sparse hummock grassland of <i>Triodia epactia</i> .	Phoenix, 2020
Mid open shrubland to shrubland of <i>Acacia stellaticeps</i> and <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> over hummock grassland of <i>Triodia epactia</i> .	Phoenix, 2020
Isolated shrubs of mixed <i>Acacia</i> spp. (often <i>Acacia synchronicia</i> and <i>Acacia pyrifolia</i>), over a hummock grassland of <i>Triodia epactia</i> .	Phoenix, 2020
Mid sparse shrubland of <i>Acacia inaequilatera</i> with occasional stands of <i>Acacia sclerophylla</i> , over isolated shrubs of <i>Carissa lanceolata</i> , <i>Corchorus walcottii</i> , and <i>Solanum lasiophyllum</i> , over a hummock grassland of <i>Triodia epactia</i> .	Phoenix, 2020
Mosaic of Ex and AaTe(Tw) vegetation units	Phoenix, 2020

Appendix E – References and databases

1. GIS datasets

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

- Aboriginal Heritage Places (DPLH-001)
- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

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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