

BHP NICKEL WEST

Northern Operations

Leinster Town Site Native Vegetation Clearing Permit (NVCP) Application

**Supporting Information
March 2022**



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1. Introduction

BHP Nickel West Pty Ltd (BHP NiW) operates a number of open-cut and underground mines, and associated infrastructure, collectively referred to as the Northern Operations. BHP NiW Northern Operations consists of the Leinster nickel mine (NLN) and the Mt Keith nickel mine (NMK), including the Mt Keith Satellite mine (MKS). The Northern Operations are located approximately 720 kilometres (km) north-east of Perth and 430 km north of Kalgoorlie in the north-eastern Goldfields region of Western Australia (WA) (Figure 1).

Located approximately 10 km south of NLN is Leinster Town (Figure 1). The town supports a population of approximately 1400, comprising both residents and 'fly in fly out' personnel.

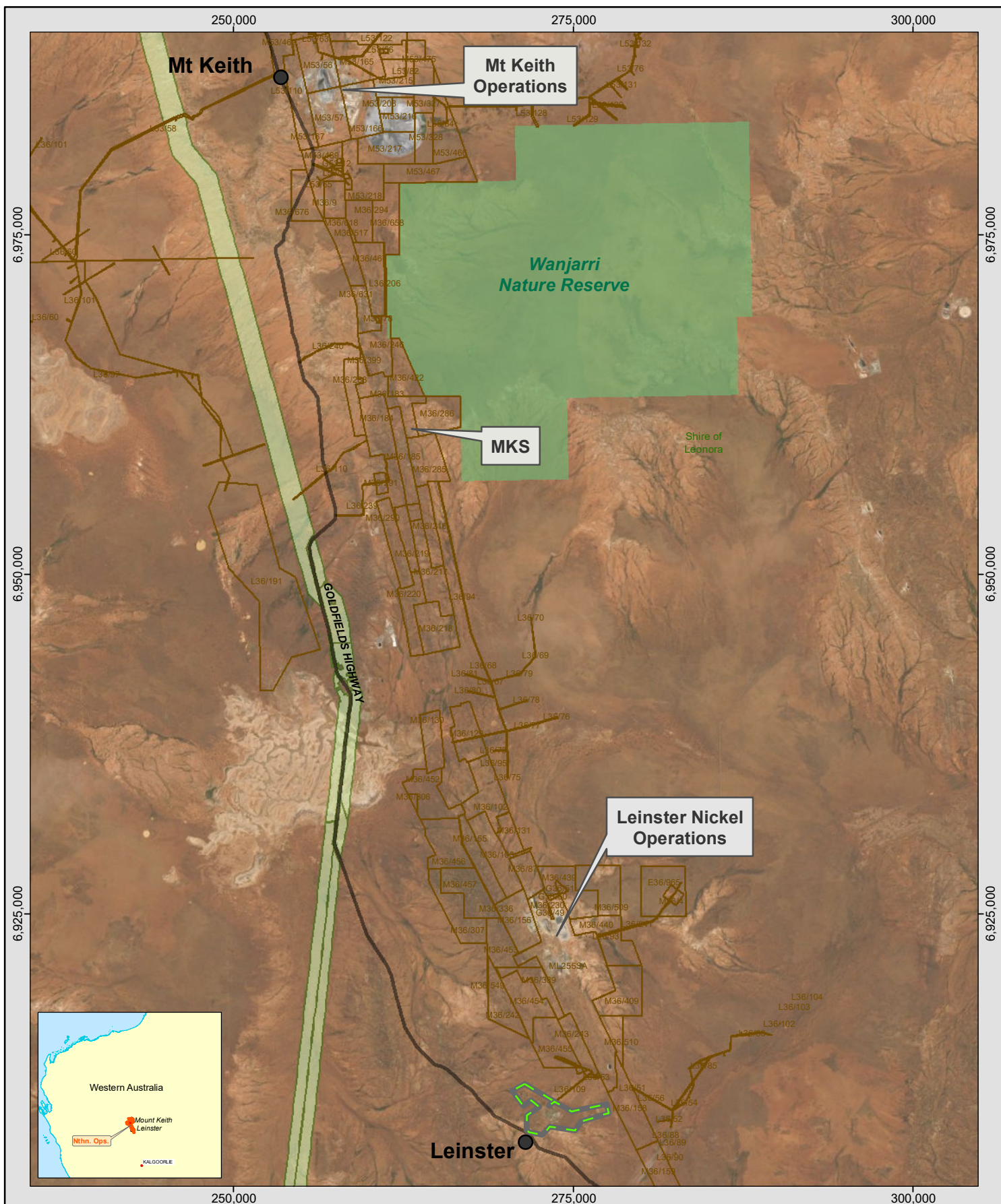
2. Purpose of Document

BHP NiW has identified that a Native Vegetation Clearing Permit (NVCP) is required to cover clearing activities in areas within and surrounding Leinster Town (Figure 2). The NVCP is to ensure any disturbance associated with activities required for the maintenance of, or expansion at, the town site are adequately assessed.

This document provides supporting information to accompany BHP NiW's Application Form *C2: Application for a clearing permit (purpose permit)* (Appendix 1).

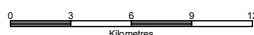
3. Tenure

The application area includes lease of crown land (O260893L), Leinster Downs pastoral lease (N049438 – Lot 59 on Deposited Plan 220367) Shire of Leonora (Lot 163 on Deposited Plan 30116), refer Figure 2. BHP NiW has provided further relevant details regarding this tenure in Appendix 2.



Legend

-  Roads
-  Permit Area
-  BHP Tenement
-  Wanjarri Nature Reserve
-  Stock Route Reserve



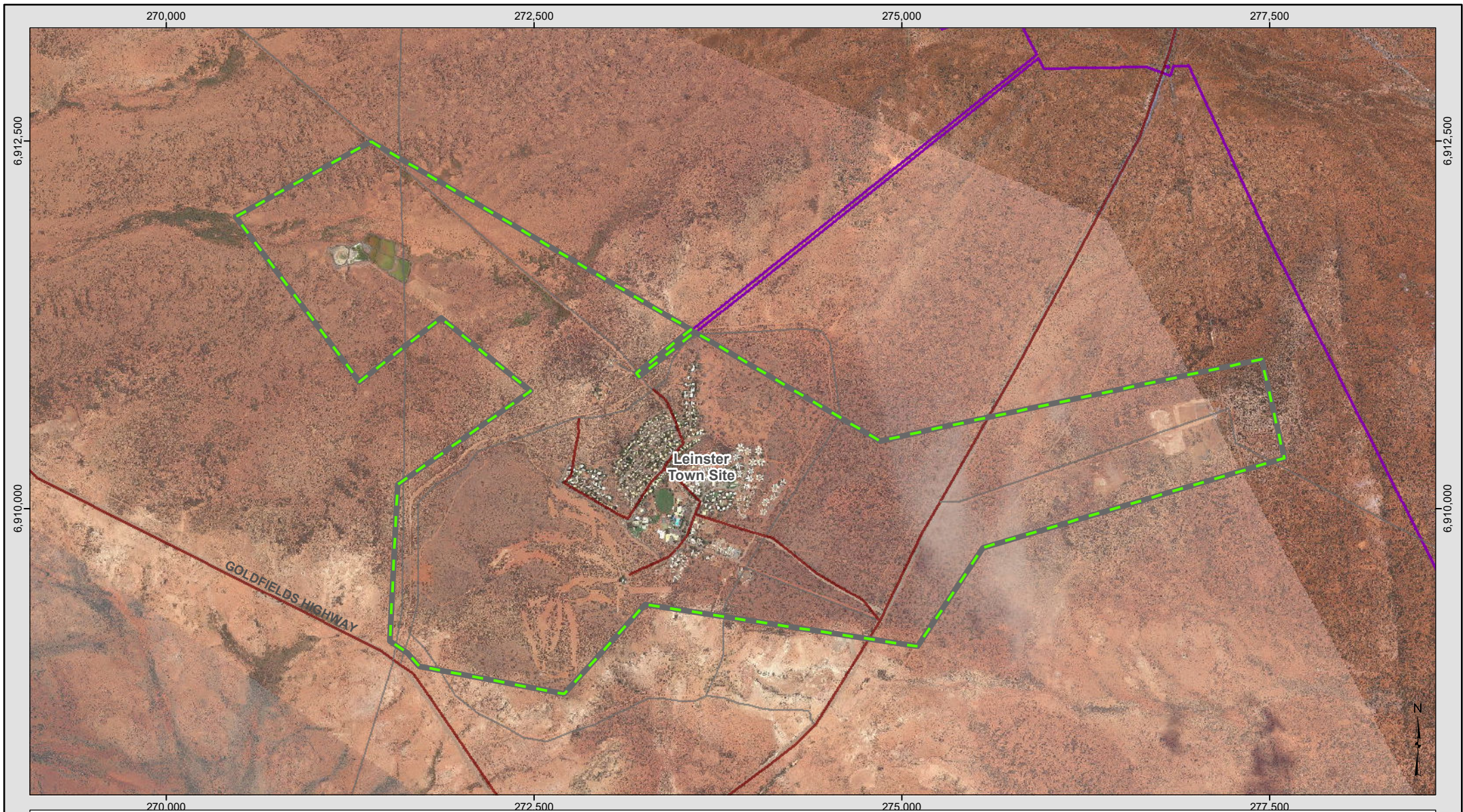
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BHP NiW - Northern Operations
Nickel West

Leinster Town Site NVCP Location

Coordinate System: GDA 1994 MGA Zone 51 Transverse Mercator

Scale @ A4: 1:375,000	Prepared: J Gifford	Figure: 1
Date: 1/03/2022		



Legend

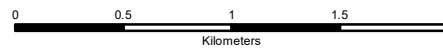
ROADS

— Sealed

— Unsealed

 Permit

 Strategic NVCP Application



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Nickel West

Leinster Town Site NVCP Clearing Permit Application Area

Scale: 1:35,000

Date: 1/03/2022

Coordinate System: GDA 1994 MGA Zone 51

Prepared: J Gifford

Figure: 2

4. Proponent

The proponent for this NVCP is BHP Nickel West Pty Ltd, and the contact details are provided in Table 1.

Table 1: BHP NiW Contact Details

Contact	BHP NiW Details
Address for Correspondence	BHP Nickel West Land Services PO Box 8301 PERTH BUSINESS CENTRE 6849 nickelwestGLS@bhp.com
Contact (Perth Office)	Stacey Cook Environmental Specialist Ph: 0409 935 554 Email: stacey.cook@bhp.com
Site Contact	Tony Baker Manager HSE Northern Operations Ph: 0459 834 958 Email: tony.baker1@bhp.com

5. Proposed Activities

The purpose of the NVCP is disturbance associated with activities required for the maintenance of, or expansion at, the town site. Including clearing activities required for, but not limited to, infrastructure, drainage, services, roads / access tracks, buildings, waste management, commercial and recreational activities and laydown areas.

Refer to Figure 2 for the proposed clearing permit application area at the Leinster town site.

6. Proposed NVCP Instruments

BHP NiW commits to undertaking clearing activities in accordance with the content and commitments of Table 2.

The application area is the extent shown in Figure 2 and provided as spatial files in Appendix 3.

Table 2: Proposed NVCP content and commitments

Proposed Content	
Authorising agency	Department of Mining, Industry Regulation and Safety
Permit title	BHP Nickel West Leinster Town Site NVCP
Area of clearing	150 ha
Application area	1,073 ha
Purpose of clearing	Maintenance and expansion activities at the town site
Tenure	Crown Lease O2608993L Leinster Down Pastoral Lease N049438 - Lot 59 on Deposited Plan 220367 Lot 163 on Plan 30116
Duration of permit	10 years
Proposed annual reporting date	Reporting period (1 July – 30 June previous financial year), report due 31 October
Proposed final reporting date	10 years post grant of permit
Proposed Commitments	
Avoidance and minimise clearing	Where practical, BHP NiW will utilise previously disturbed areas rather than clearing native vegetation. Where clearing is unavoidable it will be minimised as far as practical. Prior to any land disturbance an internal Environmental and Heritage Impact Assessment (EHIA) process will be undertaken to ensure that alternatives to clearing and minimisation of the clearing footprint has been considered.
Temporary clearing	All temporary areas of clearing are progressively and immediately rehabilitated within six months of that area no longer being required, unless otherwise approved by DMIRS in writing.
Soil & land conservation	No soil will be removed from the proposed NVCP area. Topsoil will be stockpiled and reused for landscaping/rehabilitation where practical. Clearing and topsoil to be managed in accordance with BHP NiW Topsoil Stripping and Handling Procedure (NIW-HSEC-PRO-0035). Clearing will not occur more than two months ahead of planned ground disturbance/use, unless otherwise approved by DMIRS in writing.

6.1 Legislative requirements and associated approvals

Clearing and associated activities at the Leinster town site will maintain compliance with State and Commonwealth legislation, including but not limited to:

- *Aboriginal Heritage Act 1972 (Aboriginal Cultural Heritage Act 2021 (when in force))*
- *Biodiversity Conservation Act 2016 (State) (BC Act)*
- *Conservation and Land Management Act 1984*
- *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (EPBC Act)*
- *Environmental Protection Amendment Act 2020*
- *Mining Act 1978.*

Any other relevant additional approvals will be sought as required. BHP NiW employs internal environmental and heritage review procedures prior to any clearing and/or ground disturbance.

7. Existing Environment

7.1 Climate

The Leinster town site is located within the Shire of Leonora, with long-term weather data collected from the Bureau of Meteorology (BoM) station at Leinster Aero (station number 012314).

The climate of the town site is characterised by arid conditions with hot, wet summers and mild, dry winters. The average maximum temperature for the locality ranges from 37.2°C in January to 19.0°C in July (BOM 2021). In an arid climate evaporation exceeds precipitation, and most rainfall occurs in the summer months. The average seasonal rainfall pattern reflects the influence of summer thunderstorms during the period January to March and shows a particularly dry spring season from August to November (Figure 3).

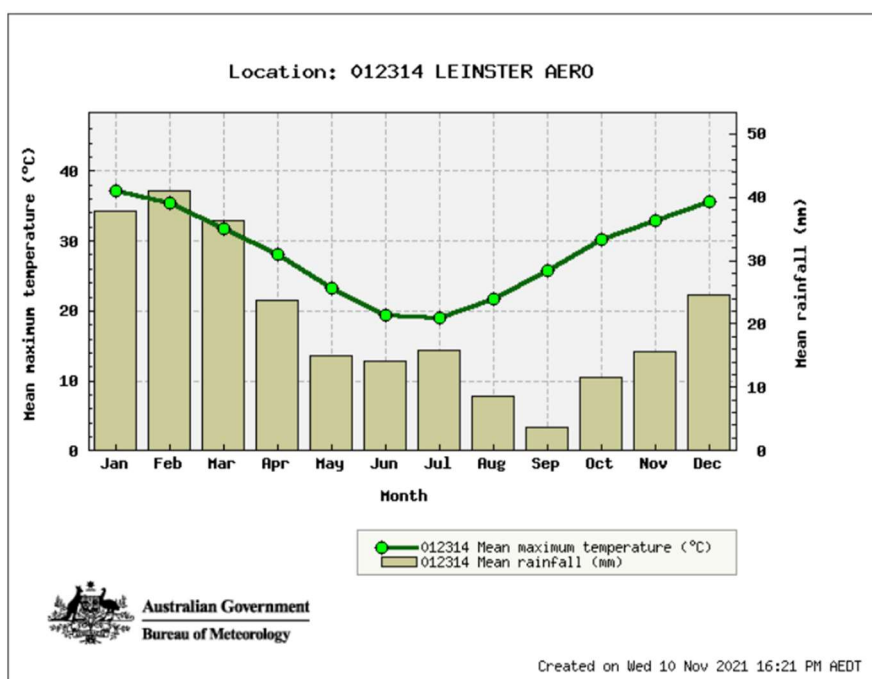


Figure 3: Long term climate averages for Leinster (BoM 2019)

7.2 Landforms and soil types

The town site is located within the East Murchison subregion of the Murchison bioregion. The dominant land use in this subregion is grazing, with smaller areas of crown reserves and mining. This subregion is characterised by: internal drainage; extensive areas of elevated red desert sand plains with minimal dune development; salt lake systems associated with occluded Palaeodrainage system; and broad plains of red-brown soils and granitic breakaway complexes as well as red sand plains (Cowan 2001).

For the north-eastern Goldfields, 59 land systems have been mapped; of which, four occur within the town site application area: Bullimore, Gransal, Monk and Tiger (Pringle *et al.* 1994) (Figure 4, Table 3). The area is dominated by two land systems, the Bullimore and Tiger land systems, together comprising 97% of the application area. The Bullimore and Monk land systems represent the two most common land systems in the north-eastern Goldfields. The proportion of each land system represented within the application area is less than 0.4% of its occurrence in the north-eastern Goldfields (Table 3).

The application area almost wholly comprises plains; sand plains dominating the centre of the area (Bullimore) and gravelly hardpan plains occur over much of the eastern and western extent (Tiger and Monk). Gransal is the only exception as it occurs in association with rocky outcropping at the southern boundary of the application area, however, the main body of this breakaway occurs outside the area (Biota 2021) (Figure 4).

Table 3: Land systems within the application area

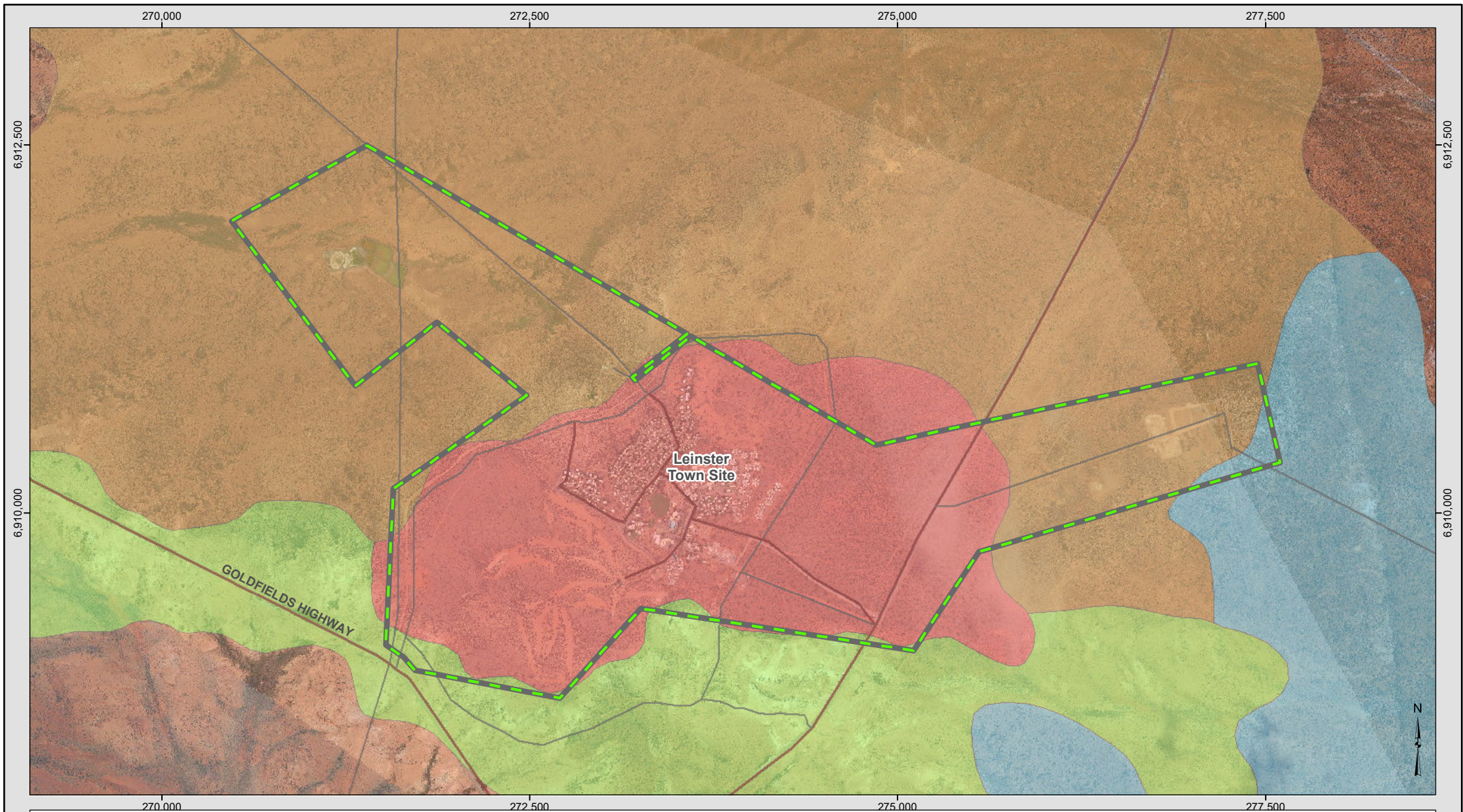
Land System	Description	Area within NVCP (ha)	Total extent (ha)	% occurrence
Bullimore	Extensive sand plains supporting spinifex hummock grasslands.	619	4,418,100	0.01
Gransal	Stony plains and low rises based on granite supporting mainly halophytic shrublands.	21	360,813	<0.01
Monk	Hardpan plains with occasional sandy banks supporting mulga tall shrublands and wanderrie grasses.	11	997,994	<0.01
Tiger	Gravelly hardpan plains and sandy banks with mulga shrublands and wanderrie grasses.	422	110,810	0.38

Seven geological units have been mapped occurring within the application area (Figure 5), with their description and extent in the application area detailed in Table 4.

Sandplain deposits dominate the central portion of the application area (Czs/Czl, Czs). Sheet wash and alluvium deposits of higher clay and silt content are included at the eastern and western extents of the application area (Cza, Qa). The remaining three geological units have very small occurrences at the southern boundary of the area associated with the granitic outcrop found there (Czg, Ag, Czl/Ag) (Biota 2021) (Figure 5).

Table 4: Geological units within the application area

Unit code	Description	Area within NVCP (ha)
Czs/Czl	Sandplain deposits - unconsolidated sand and minor silt and clay; includes low vegetated dunes.	586
Czs	Sandplain deposits - unconsolidated sand and minor silt and clay; includes low vegetated dunes.	176
Cza	Sheet wash deposits - clay; silt; and sand as extensive fans; commonly ferruginous.	221
Qa	Alluvium - clay; silt; sand; and gravel in channels and floodplains.	69
Czg	Sand over granitoid rock - quartzo-feldspathic sand; includes areas of low weathered outcrop.	12
Ag	Granitoid rock; undivided; mainly monzogranite.	5
Czl/Ag	Lateritic deposits - lateritic duricrust; massive and rubbly; iron-rich over mafic rock.	4



Legend

Permit

ROADS

Sealed

Unsealed

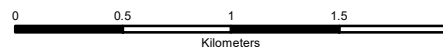
LAND SYSTEM

Bullimore

Gransal

Monk

Tiger



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Leinster Town Site NVCP Land Systems

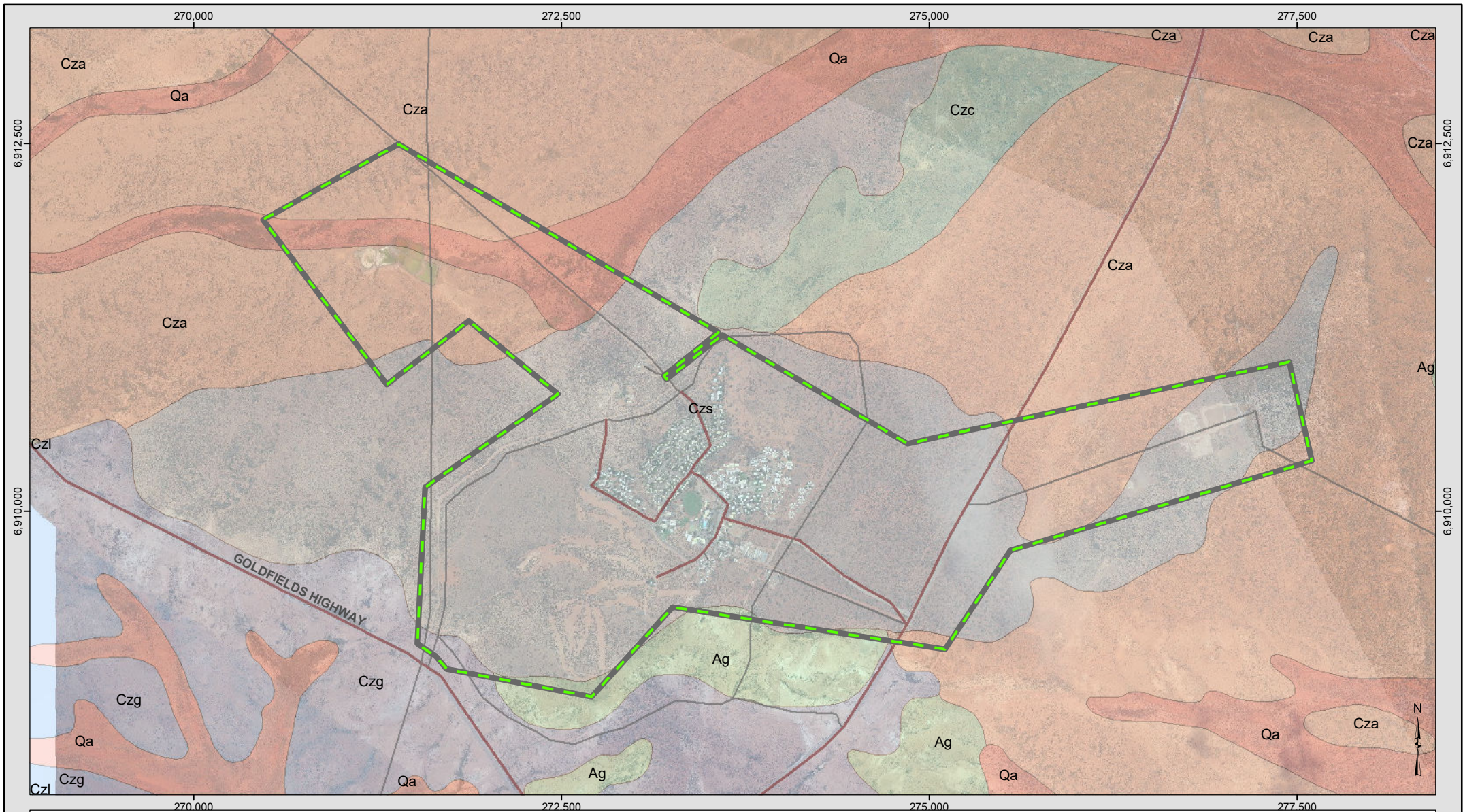
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Date: 1/03/2022

Coordinate System: GDA 1994 MGA Zone 51

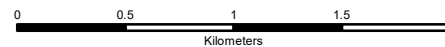
Prepared: J Gifford

Figure: 4



Legend

Permit Area	Geology Units	Czg
ROADS	Ag	Czl
Sealed	Cza	Czs
Unsealed	Czc	Qa



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Leinster Town Site NVCP Geology

Scale: 1:35,000		Prepared: J Gifford
Date: 1/03/2022	Coordinate System: GDA 1994 MGA Zone 51	Figure: 5

7.3 Hydrology

The application area is located wholly within the Lake Carey catchment. The catchment comprised a number of wetlands with the closest being Lake Miranda, located approximately 26 km north-west of the application area.

There are no hydrological features within, or adjacent to, the application area. There are minor unnamed ephemeral drainage channels situated south of the application area associated with the granite outcropping.

7.4 Contaminated sites

There is no contaminated site known from within, or adjacent to, the application area according to the Contaminated Site Database (DWER 2021).

7.5 Flora and vegetation

The town site is located within the Wiluna vegetation association as mapping by Beard *et al.* (2013). The association is described as: low woodland, open low woodland or sparse woodland; Mulga and associated species.

Biota Environmental Sciences (Biota) completed a flora and vegetation survey of the town site area in April 2021. The survey delineated eight vegetation associations (Biota 2021) (Figure 6, Table 5). The condition of each vegetation type ranged from very good to excellent (Biota 2021). In addition to the eight vegetation associations described, there are also cleared and disturbed areas that are lacking of vegetation (Figure 6).

Table 5: Vegetation units within the application area

Vegetation Type	Vegetation Association Description
Hardpan Mulga shrubland (SS Ele AinAanAmu ErllErffEfo Tb)	<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i> scattered low trees over <i>Acacia incurvaneura</i> , <i>A. aneura</i> , <i>A. mulganeura</i> tall shrubland over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>E. forrestii</i> subsp. <i>forrestii</i> , <i>E. foliosissima</i> open shrubland over <i>Triodia basedowii</i> scattered hummock grasses.
Sandplain Mulga - Mallee shrubland over Spinifex hummock grassland (SA EluEh AanAaAc ErffErll Tb)	<i>Eucalyptus lucasii</i> , <i>E. horistes</i> low woodland over <i>Acacia aneura</i> , <i>A. aptaneura</i> , <i>A. craspedocarpa</i> tall shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>E. latrobei</i> subsp. <i>latrobei</i> open shrubland over <i>Triodia basedowii</i> open hummock grassland.
Broad drainage Wanderrie Acacia banks (SS AinAmuArl EfoErffSol ErerErhThm)	<i>Acacia incurvaneura</i> , <i>A. mulganeura</i> , <i>A. ramulosa</i> var. <i>linophylla</i> tall shrubland over <i>Eremophila foliosissima</i> , <i>E. forrestii</i> subsp. <i>forrestii</i> , <i>Solanum lasiophyllum</i> low open shrubland over <i>Eragrostis eriopoda</i> , <i>Eriachne helmsii</i> , <i>Thyridolepis mitchelliana</i> very open hummock grassland.
Sand plain Spinifex hummock grassland with Wattles (SA EloEk AeFFAclo Tb)	<i>Eucalyptus oldfieldii</i> , <i>E. kingsmillii</i> low open woodland over <i>Acacia effusifolia</i> , <i>A. longispinea</i> tall shrubland over <i>Triodia basedowii</i> open hummock grassland.
Sandplain Eucalyptus woodland over Spinifex hummock grassland (SA EgoEol AeFFAja ErffSeafScsp TbErh)	<i>Eucalyptus gongylocarpa</i> , <i>E. oldfieldii</i> low woodland over <i>Acacia effusifolia</i> , <i>A. jamesiana</i> tall open shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Scaevola spinescens</i> (spiny, narrow leaf variant) open shrubland over <i>Triodia basedowii</i> and <i>Eriachne helmsii</i> open hummock and tussock grassland.
Stony Acacia Eremophila shrubland (SS AanEra AteErll PtoSol ErmuErerThm)	<i>Acacia aneura</i> , <i>Eremophila ramiflora</i> , <i>Acacia aptaneura</i> tall open shrubland over <i>Acacia tetragonophylla</i> , <i>Eremophila latrobei</i> subsp. <i>latrobei</i> scattered shrubs, over <i>Ptilotus obovatus</i> , <i>Solanum lasiophyllum</i> scattered low shrubs over <i>Eriachne mucronata</i> , <i>Eragrostis eriopoda</i> , <i>Thyridolepis mitchelliana</i> scattered tussock grasses.

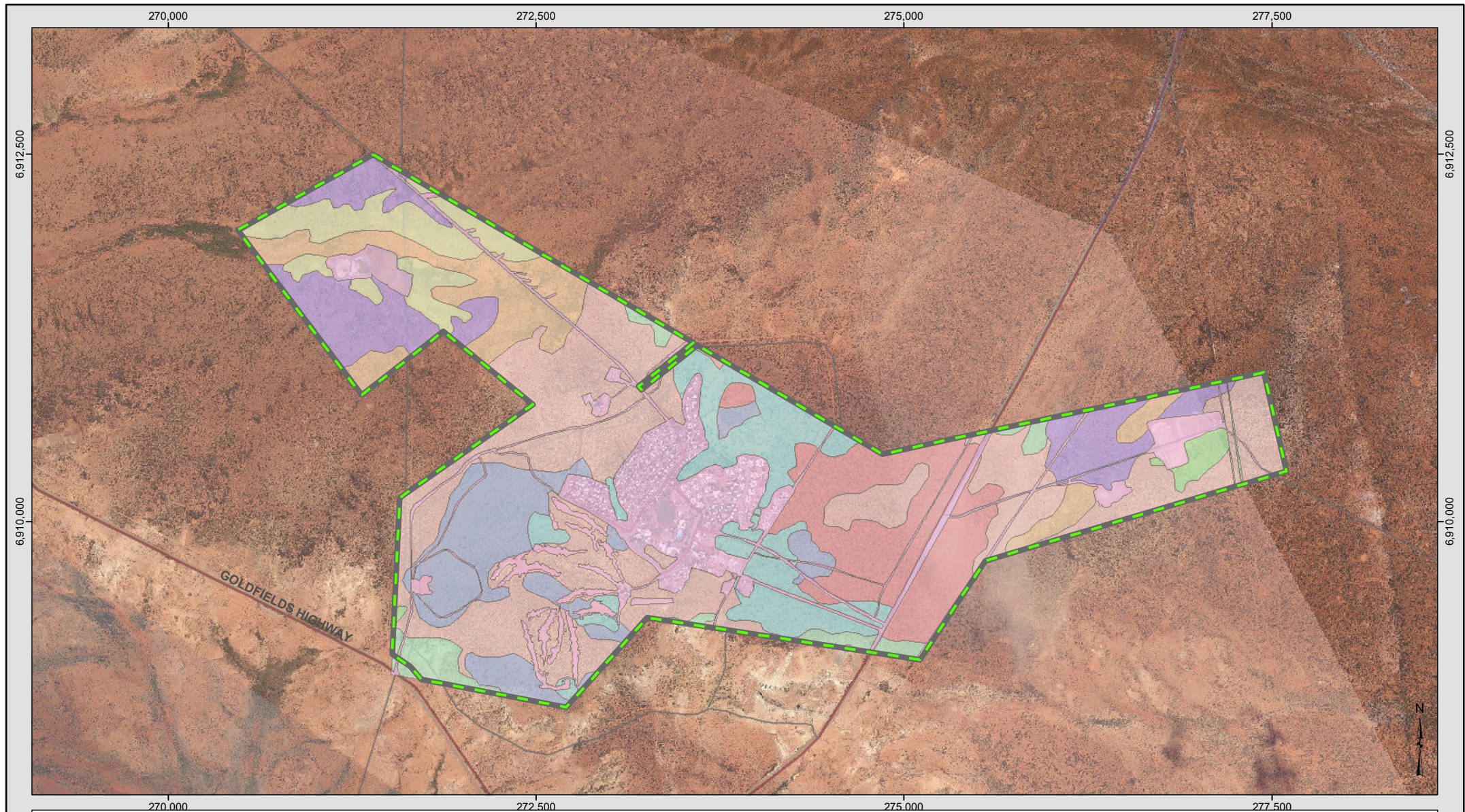
Vegetation Type	Vegetation Association Description
Drainage line Mulga shrubland (ME AanAa ErpcThmPtg)	<i>Acacia aneura</i> , <i>A. aptaneura</i> tall shrubland over <i>Eriachne pulchella</i> subsp. <i>pulchella</i> , <i>Thyridolepis mitchelliana</i> open tussock grassland and <i>Ptilotus gaudichaudii</i> very open herbland.
Granite outcrop stony Mulga shrubland (SS AqAanAin AanErllScsp ArcErpcMati)	<i>Acacia quadrimarginea</i> , <i>A. aneura</i> , <i>A. incurvaneura</i> tall open shrubland over <i>Acacia aneura</i> , <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>Scaevola spinescens</i> (spiny, narrow leaf variant) open shrubland over <i>Aristida contorta</i> , <i>Eriachne pulchella</i> subsp. <i>pulchella</i> , <i>Maireana triptera</i> scattered tussock grasses and scattered herbs.

None of the vegetation types recorded in the application area constitute significant ecological communities (Biota 2021), and no such communities are expected to occur.

A total of 134 native flora species from 70 genera and 30 families were recorded by Biota from within the application area. The species richness and composition were assessed as typical of the locality (Biota 2021). No Threatened Flora as listed under the BC Act have been recorded within or surrounding the application area, and none are expected to occur (Biota 2021).

No Priority Flora, as listed by the Department of Biodiversity, Conservation and Attractions (DBCA), have been recorded from within the application area (Biota 2021). There are a few records of the Priority 3 species, *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) and *Verticordia jamiesonii*, occurring to the south of the application area (Figure 7) (DBCA 2020). *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) is described as a sprawling shrub, which occurs on rocky Archaean granite breakaways, stony rises and rocky granite outcroppings (Western Botanical 2017). *Verticordia jamiesonii* is a shrub that occurs on sandy clay soils on lateritic breakaways (Biota 2021). There is only very minor areas of suitable habitat for these species within the application area and it is therefore considered highly unlikely that they will occur (Biota 2021); additionally, targeted surveying of the area did not locate their presence within the application area. The records of these species occurring to the south of the application area are associated with the granite outcropping and were recorded in 2000 to 2007 (DBCA 2020).

Four weeds have been recorded in low densities from within the application area: **Cenchrus ciliaris*, **Citrus amarus*, **Digitaria ciliaris* and **Rumex vesicarius* (Biota 2021). None of these are Weed of National Significance or Declared pests under the WA Biosecurity and Agriculture Management Act 2007 (BAM Act) (Biota 2021).



Legend

Permit Area

ROADS

Sealed

Unsealed

Vegetation Code

Cleared

Disturbed

ME AanAa ErpcThmPtg

SA EgoEol AeFFAja ErffSeafScsp TbErh

SA EloEk AeFFAclo Tb

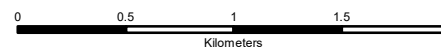
SA EluEh AanAaAc ErffErll Tb

SS AanEra AteErll PtoSol ErmuErerThm

SS AinAmuArl EfoErffSol ErerErhThm

SS AqAanAin AanErllScsp ArcErpcMati

SS Ele AinAanAmu ErllErffEfo Tb



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Leinster Town Site NVCP Vegetation Units

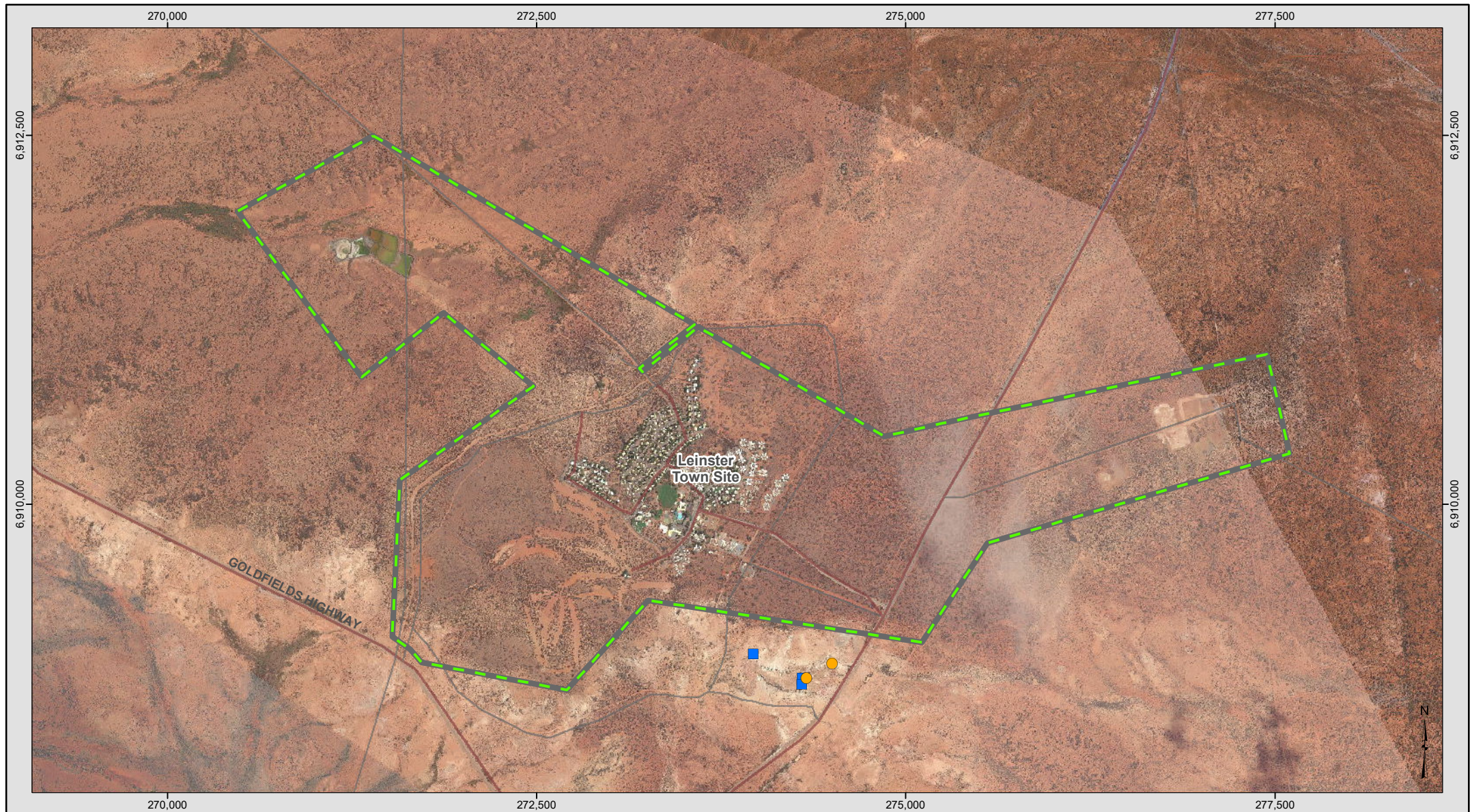
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Date: 1/03/2022

Coordinate System: GDA 1994 MGA Zone 51

Prepared: J Gifford

Figure: 6



Legend

 Permit Area

ROADS

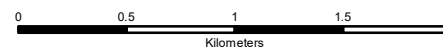
Sealed

Unsealed

SPECIES

■ Thryptomene sp. Leinster (B.J. Lepschi & L.A. Craven 4362)

● Verticordia jamiesonii



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Nickel West

Leinster Town Site NVCP Priority Flora Species

Scale: 1:35,000

Date: 1/03/2022

Coordinate System: GDA 1994 MGA Zone 51

Prepared: J Gifford

Figure: 7

7.6 Fauna and fauna habitats

In conjunction with the flora and vegetation survey of the town site, Biota also completed a vertebrate fauna survey of the application area.

The survey delineated four naturally occurring fauna habitat (Biota 2021) (Figure 8):

- Drainage line Mulga shrubland (Drainage Area/ Floodplain);
- Granite outcrop stony Mulga shrubland (Granite Outcrop/ Domes);
- Hardpan Mulga shrubland (Hardpan Plains); and
- Sandplain with *Eucalyptus* and *Acacia* woodlands over shrubs and spinifex grassland (Sand Plain).

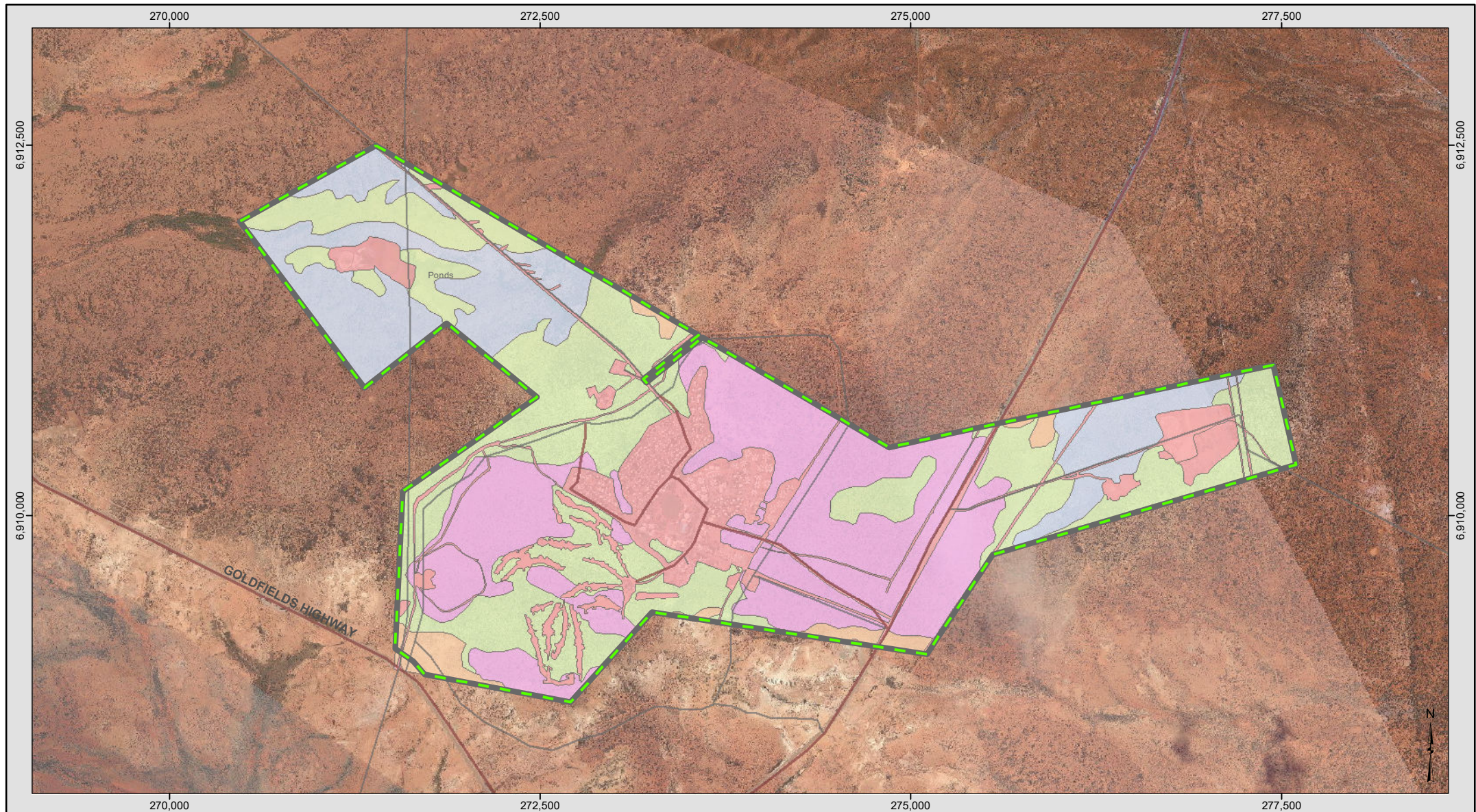
The application area was dominated by plains that varied in soil property, floristic composition and vegetation structure, and by mulga (*Acacia aneura* complex) occurrence which generally was in the form of shrublands but in some areas occurring as woodland (Sand Plain and Hardpan Plain). Significant through-drainage was absent but broad shallow drainage tracts represented some of the more densely wooded areas (Drainage Area/ Floodplain). A small area of low rocky outcropping was identified at the southernmost extent of the area, which included small overhangs and boulders (Granite Outcrops/ Domes), but the main body of this breakaway occurred outside the application area to the south (Biota 2021) (Figure 8).

There are also cleared and disturbed areas within the application area; these areas have not been defined as fauna habitat as were entirely clear of vegetation or supported only lone trees or newly regenerating *Triodia* making the areas inhabitable by fauna (Biota 2021) (Figure 8). There is one exception to this however; the ponds of the waste-water treatment plant representing potential habitat for fauna, specifically birds (Figure 8).

Biota recorded 53 vertebrate species, comprising five mammals (two native and three introduced), 45 birds and five reptiles, during the survey of the town site (Biota 2021). No species of conservation significance (Threatened or Priority fauna) were recorded from within the application area. There are also no records of the conservation significant species from within 25km of the application area (DBCA 2020).

Based on the habitats present within the application area, and the known records of the significant fauna in the region, Biota assessed the Priority 4 species, the Brush-tailed Mulgara, as likely to occur in the area. The Brush-tailed Mulgara is known to inhabit sandplain habitat types, and as such the Spinifex sandplains habitat of the application area may provide suitable habitat for this species (Biota 2021).

Targeted searching (via foot traverses) for secondary evidence of this species within the most prospective areas of this habitat type were undertaken, however no evidence of this species was recorded (Biota 2021).



Legend

Permit Area

ROADS

Sealed

Unsealed

Habitat Type

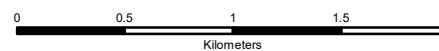
Cleared/ Disturbed

Drainage Area/ Floodplain

Granite Outcrops/ Domes

Hardpan Plain

Sand Plain



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Nickel West

Leinster Town Site NVCP Fauna Habitat

Scale: 1:35,000

Date: 1/03/2022

Coordinate System: GDA 1994 MGA Zone 51

Prepared: J Gifford

Figure: 7

7.7 Aboriginal and European heritage

BHP NiW is committed to undertaking heritage surveys in the area of its operations and ensures that both archaeological and ethnographic surveys are completed with the participation of Traditional Owners. The results of all heritage surveys and location of Aboriginal heritage sites are recorded in BHP NiW's spatial database, which is used in the internal Environmental and Heritage Impact Assessment (EHIA) process, prior to land disturbance to ensure heritage sites are not impacted. The Section 18 process will apply to any sites that are not avoidable in consultation with Native Title holder, the Tjiwarl.

BHP NiW has in place with the Tjiwarl people a Comprehensive Agreement and an agreed Cultural Heritage Management Plan.

8. Environmental Management

8.1 Corporate level plans and procedures

BHP's *Our Purpose* and *Our Charter*, available on the BHP website, outlines BHP's purpose and values and provides measurements for success.

Our Environment Approach, also available on the BHP website, is based on the robust identification, assessment and control of material risks across all phases of our business, from exploration to development, operation and closure. *Our Requirements Environment and Climate Change* outlines the minimum environmental management requirements for all our businesses.

BHP NiW manages the environment through the application of the BHP NiW Environmental Management System (EMS). The EMS provides the framework for compliance to legislative requirements, internal operating procedures and corporate standards, as appropriate to the nature and scale of the BHP NiW Operations.

The EMS ensures BHP NiW activities meet applicable legislative and other obligations, are conducted in a manner consistent with the intent of Our Purpose and Charter, Our Approach, Our Requirements and broadly aligned with Australian/New Zealand Standards (AS/NZS) ISO14001:20015.

8.2 Site specific plans and procedures

To support corporate level documents BHP NiW has an internal *Environment Approvals Handover Checklist* (NIW-HSEC-FRM-0009) and an *Environment and Heritage Impact Approval* process. The EHIA process is used to manage any potential environmental impacts of any proposal and to ensure compliance with regulatory requirements, environmental, Aboriginal heritage, land tenure and legal commitments are clearly communicated and understood prior to and during land disturbance.

All personnel carrying out works associated with clearing activities are required to comply with BHP NiW's organisational level requirements, plans and policies, site level procedures, and any relevant legislative and licensing requirements.

8.3 Impact assessment

As discussed in Section 7, there are no known occurrences of conservation significant flora or fauna from within the application area, and none are expected to occur (due to recent targeted surveying not recording any evidence). There are also no significant ecological communities known from within or surrounding the application area. The vegetation associations and habitats of the application area not unique and are well represented within the region (Biota 2021). Additionally, a high portion of the application area has already been cleared or disturbed, in association with the existing town.

BHP NiW consider that the proposed clearing within the application area will not result in any significant environmental or social impacts, and complies with the Ten Clearing Principles (as demonstrated in the assessment in Section 9).

9. Assessment against the Ten Clearing Principles

An assessment of the application area against the Ten Clearing Principles has been based on the findings of the recently completed flora, vegetation and fauna survey (Biota 2021), as well as DBCA database records for significant flora, fauna and communities (DBCA 2020).

PRINCIPLE A - Native vegetation should not be cleared if it comprises a high level of biological diversity

The proposed clearing is not at variance to this Principle.

The vegetation within the application area is represented in the same or better condition within the broader region, and is not considered to be of outstanding biodiversity or higher genetic diversity than the remaining native vegetation in the bioregion or surrounds. The vegetation is contiguous with adjacent native vegetation and has no special features. Additionally, the vegetation within sections of the application area have been cleared or disturbed previously (up to 188 ha) in association with the existing town.

The application area is wholly within the Wiluma vegetation association (as mapped by Beard *et al.* 2013). The total area of this association in Western Australia is 4,313,796 ha so the application area at approximately 1,073 ha represents 0.02%. As discussed in Section 7, there are no ecological communities or conservation significant flora known from within the application area (Biota 2021).

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 indigenous to Western Australia

The proposed clearing is not at variance to this Principle.

The habitats within the application area are not considered significant habitat for fauna species within the local area. Similar habitat to that proposed to be cleared is located in the surrounding area with no unique features occurring within the application area. The clearing of native vegetation is not considered to alter ecological functions and processes that protect significant habitat for fauna. The habitats of the application area not unique and are well represented within the region.

As discussed in Section 7, there are no ecological communities or conservation significant fauna known from within the application area. Targeted searched of suitable habitat did not record any evidence of conservation significant fauna species (Biota 2021).

PRINCIPLE C - Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora

The proposed clearing is not at variance to this Principle.

No flora listed under the EPBC Act nor gazetted as Threatened under the BC Act is known from, or recorded in, the application area. The habitats of the application area do not provide habitat to support Threatened flora.

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

The proposed clearing is not at variance to this Principle.

No ecological communities are known from within, or adjacent to, the application area. The vegetation within the application area neither comprises nor is necessary for the maintenance of a threatened ecological community.

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

The proposed clearing is not likely to be at variance to this Principle.

The vegetation and habitats within the application area are well represented in the land systems of the region (Section 7.2). The area is dominated by the Bullimore and Tiger land systems, together comprising 97% of the application area. The Bullimore and Monk land systems represent the two most common land systems in the north-eastern Goldfields. The proportion of each land system represented within the application area is less than 0.4% of its occurrence in the north-eastern Goldfields (Table 3).

The application area is neither within an extensively cleared region nor will the proposed clearing contribute to a significantly decreased representation of local or regional vegetation types. As discussed above, the application area is wholly within the Wiluma vegetation association and represents only 0.02% of the mapped extent of the association. The application area is not considered a significant remnant of native vegetation in an area that has been extensively cleared.

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

The proposed clearing is not likely to be at variance to this Principle.

The application area is located in the Lake Carey catchment with no hydrological features occurring within the application area (Section 7.3). There are no permanent watercourses or wetlands within, or associated with, the application area. The closest wetland, Lake Miranda (ephemeral salt lake), occurs over 25 km away.

PRINCIPLE G Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation

The proposed clearing is not likely to be at variance to this Principle.

Land degradation may include impacts such as erosion, changes to pH, water logging, salinisation or spread of weeds. The proposed clearing will be minimised and clearing undertaken progressively as needed. Clearing will not occur more than two months ahead of planned ground disturbance/use. Temporarily cleared areas will be progressively revegetated. Activities will be managed during to ensure no appreciable land degradation results.

No soil will be removed from the application area. Where practical topsoil will be stockpiled and reused for landscaping/ rehabilitation where practical. Clearing and topsoil to be managed in accordance with BHP NiW Topsoil Stripping and Handling Procedure (NIW-HSEC-PRO-0035).

Four introduced flora species (weeds) were recorded in low densities within the application area: **Cenchrus ciliaris*, **Citrus auratus*, **Digitaria ciliaris* and **Rumex vesicarius* (Biota 2021). None of these are Weed of National Significance or Declared pests under the BAM Act. Control of established weed populations will be carried out according to the BHP NiW's Weed Control and Management Procedure (NOR-HSE-PRO-0001).

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

The proposed clearing is not likely to be at variance to this Principle.

The application area is not within or adjacent any conservation areas. The closest conservation area is the Wanjarri Nature Reserve. The reserve is a Class A Nature Reserve for the conservation of flora and fauna and is located approximately 46 km north of the application area. The application area is not considered to form an ecological linkage to this conservation area.

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

The proposed clearing is not likely to be at variance to this Principle.

The activities will be managed so that no erosional activities or impacts to riparian zones result from the proposed clearing. The groundwater of the area is already saline and the limited clearing will not significantly increase surface or groundwater salinity levels. Surface water is a rare occurrence which results only after a significant rainfall event, usually immediately following summer thunderstorm activity and does not persist for extended periods. The progressive and managed clearing is not likely to result in any deterioration of surface or groundwater quality.

PRINCIPLE J - Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding

The proposed clearing is not likely to be at variance to this Principle.

Surface water runoff and localised flooding occurs following intense rainfall events, usually as a result of summer thunderstorm following cyclonic events off the north-west coast of WA. The incidence or intensity of flooding is not likely to be significantly influenced by the progressive and managed clearing. It is highly improbable that surface runoff generated from cleared areas could create sufficient concentrated water volumes to cause even a localised flood event.

9.1 Planning and other matters

BHP NiW holds the relevant authority to apply for and undertake approved or exempt clearing activities within the Leinster town site.

The application area intersects with Tjiwarl Native Title. BHP NiW is committed to undertaking heritage surveys in the area of its operations and ensures that both archaeological and ethnographic surveys are completed with the participation of Traditional Owners. The results of all heritage surveys and location of Aboriginal heritage sites are recorded in the BHP NiW's database, which is used in the internal *Environmental and Heritage Impact Assessment* process, prior to land disturbance to ensure heritage sites are not accidentally impacted.

Registered heritage sites have been identified in the vicinity of Leinster town site, however no sites will be impacted by the prescribed activities. A Comprehensive Agreement is in place between BHP NiW and the Tjiwarl, along with an agreed Cultural Heritage Management Plan.

9.2 Conclusion

The proposed clearing within the application area is not likely to be at variance to any of the clearing principles.

BHP NiW will manage the clearing to ensure no direct or indirect significant residual impacts to biodiversity or resultant land degradation occurs. Commitments to ensure no negative residual impacts to biodiversity or soil and land conservation are outlined in Table 2.

10. References

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