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Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator

0

0.8

1.6


2.4


3.2


Kms


1:100,000 (when printed at A3)


Legend


 Towns


 Existing Rail Network


 Conceptual Alignment


 Major Roads


 Major Rivers

 Study Area


 Protected areas


 Essential habitat


 State Boundary

 Adjacent Inland Rail Project


Remnant Vegetation


 Category A or B area containing endangered regional ecosystems

 Category A or B area that is a least concern regional ecosystem

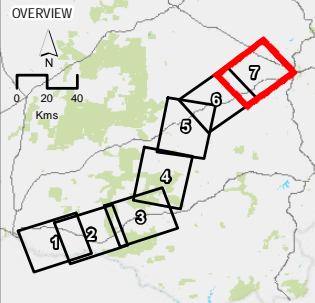
 Category A or B area containing of concern regional ecosystems

Statewide environmental corridors (DEHP)

 State

 Regional

OVERVIEW



0 20 40
Kms

Data sources:
Remnant Vegetation, Essential Habitat
DNRM 2017
Protected Areas - DNPSR 2017
Environmental Corridors - DEHP
Roads and Rail Network - DNRM 2017
Imagery - GLDGov 2017
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Initial Advice Statement
Border to Gowrie Project

Ecology, flora and fauna

PROJECT ID: 60492124

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Figure 5.3

(7 of 7)

A3 size

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5.1.4.6. Threatened Ecological Communities

The Protected Matters Report identified seven EPBC Act listed Threatened Ecological Communities (TECs) as potentially occurring within the Study Area, as listed in Table 5-5. Two of these communities – Brigalow and SEVT were mapped and observed during initial field surveys in the immediate vicinity of the Conceptual Alignment.

Table 5-5 List of TECs identified from desktop assessment and field survey

TEC	EPBC ACT STATUS	LIKELIHOOD OF PRESENCE (POST-SURVEY)
Brigalow (<i>Acacia harpophylla</i> dominant and codominant)	Endangered	Known Mapped and observed from several areas in and adjacent to the Study Area. These include small areas not shown on state RE mapping.
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Known Mapped and observed adjacent to the Conceptual Alignment within the Study Area north of Millmerran and west of Gowrie. Usually occurs on steeper slopes that are likely to be avoided by the rail alignment.
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Unlikely A small (<1 ha) stand, that was not shown on the state RE mapping and did not meet the size threshold in the listing criteria was observed adjacent to the Study Area.
Natural grasslands on basalt and fine-textured alluvial plains of northern NSW and southern QLD	Critically Endangered	Potential Not observed in the Study Area although areas that are small (< 0.1 ha) or dominated by exotic species were observed. Areas of this community are mapped immediately adjacent to the Study Area but two patches that were viewed through binoculars in this survey were incorrectly mapped woodlands.
Weeping Myall Woodlands	Endangered	Potential Not mapped or observed during field survey in or adjacent to the Study Area. Does occur to west of region.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Potential Not mapped or observed in or adjacent to the Study Area. Scattered Yellow Box were observed in the Gowrie area near the current railway. It appears unlikely that areas that meet the definition of the TEC occur although this needs to be verified along the entire length of the alignment.
Lowland Rainforest of Subtropical Australia	Critically Endangered	Unlikely Not mapped or observed in or adjacent to the Study Area. Does occur to the east of the Study Area.

Brigalow TEC within the Study Area is present in the form of two remnant Brigalow REs (11.4.3 and 11.9.5), in addition to stands of vegetation shown as non-remnant 'high value regrowth' (HVR) on state mapping or not shown on state mapping at all. It is likely that these latter areas of vegetation are not shown on state mapping due to being a)

vegetation was often found to meet the definition for the Brigalow TEC in the Commonwealth listing advice (Threatened Species Scientific Committee, 2001), which includes regrowth older than 15 years and patches greater than 0.5 ha in size.

The SEVT TEC identified within the Study Area equated to RE 11.8.3. These areas were verified by initial field surveys, although generally occurred on steeper slopes within the Study Area.

No areas of the Natural Grassland TEC were observed during initial field surveys in proximity to the Conceptual Alignment. Areas of this TEC do occur on the Darling Downs and small areas of grassland dominated by bluegrass (*Dichanthium sericeum*) were identified during the field survey within the Study Area. However, in the case of grasslands on alluvium (equivalent to REs 11.3.21 and 11.3.24), all areas observed in the field were too small (<0.1 ha) or too dominated by exotic weed species to meet the listing criteria for this TEC (Threatened Species Scientific Committee, 2008).

Areas of grassland on basalt (RE 11.8.11) are also representative of the Natural Grassland TEC. There are areas of this RE mapped within the Study Area that were not able to be ground-truthed directly by initial field surveys due to land access constraints. However, in two cases that were observed through binoculars from adjacent public roads the mapped vegetation was found not to be the Natural Grassland TEC as they appeared to be dominated by *Eucalyptus orgadophila* open woodland and therefore equated to RE 11.8.5. Therefore it is concluded that it is unlikely that there are substantial, if any, areas of the Natural Grassland TEC along the Conceptual Alignment.

The coolibah, white box, weeping myall and lowland rainforest TECs that are also listed in Table 5-5, are considered unlikely to occur within the Study Area based on the results of desktop assessment and initial field survey.

One small patch of coolibah (*E. coolabah*) woodland was observed in the Study Area south of Yelarbon. However, this patch was less than 0.25 ha in area and therefore was too small to meet the listing criteria (5 ha) for the coolibah TEC (Threatened Species Scientific Committee, 2011).

Scattered individual yellow box (*E. melliodora*) trees were observed in the vicinity of Gowrie although no area that met the listing criteria for the white box TEC was observed (Threatened Species Scientific Committee, 2006).

Individual weeping myall (*Acacia pendula*) trees are known from the surrounding area although none were observed during the initial field survey. Small stands of the weeping myall TEC do occur near Goondiwindi, west of Dalby (B Wilson pers ob.) and north of Oakey (G. Ford pers. comm) but none are known within the Study Area.

5.1.5. Flora and Fauna

5.1.5.1. Threatened Flora

Desktop assessment

Desktop assessment identified 46 threatened flora species listed under the *Nature Conservation Act 1992* (NC Act) and/or EPBC Act, as potentially occurring within the Study Area. This list includes 42 species listed under the NC Act (12 Endangered, 23 Vulnerable, 6 Near Threatened and 1 Presumed Extinct) and 33 species listed under the EPBC Act (1 Critically Endangered, 8 Endangered and 24 Vulnerable) (Eco Logical Australia, 2016).

Field survey

No EVNT flora species were identified in the initial field surveys, although six species, *Picris evae*, *Picris barbarorum*, *Homopholis belsonii*, *Rhaponticum austral*, *Macrozamia machinii* and *Sophora fraseri* have previously been recorded in the Study Area. A total of 17 species were considered likely to occur because their preferred habitat is found within the Study Area and adjacent regions (Eco Logical Australia, 2016).

A preliminary assessment of the likelihood of occurrences of the listed species within the Study Area, based on their known distribution, Conceptual habitat and the habitats that were identified from the desktop assessment and field survey is summarised in Table 5-6.

Table 5-6 EVNT flora likelihood assessment

SCIENTIFIC NAME	COMMON NAME	NC ACT ¹	EPBC ACT ¹	LIKELIHOOD
<i>Homopholis belsonii</i>		E	V	Known
<i>Picris barbarorum</i>		V		Known
<i>Picris evae</i>	Hawkweed	V	V	Known
<i>Macrozamia machinii</i>		V	V	Known
<i>Rhaponticum australe</i>	Austral Cornflower	V	V	Known
<i>Sophora fraseri</i>	Brush Sophora	V	V	Known
<i>Acacia lauta</i>	Tara Wattle	V	V	Likely
<i>Bertya opposens</i>			V	Likely
<i>Bothriochloa bunyensis</i>	Satin-top Grass	V	V	Likely
<i>Calotis glabrescens</i>		PE		Likely
<i>Cymbonotus maidenii</i>		E		Likely
<i>Dichanthium queenslandicum</i>	King Bluegrass	V	E	Likely
<i>Dichanthium setosum</i>			V	Likely
<i>Digitaria porrecta</i>	Finger Panic Grass	NT	E	Likely
<i>Lepidium monoplacoides</i>			E	Likely
<i>Lepidium peregrinum</i>			E	Likely
<i>Philotheca sporadica</i>		NT	V	Likely
<i>Prostanthera sp. (Dunmore D.M.Gordon 8A)</i>		V	V	Likely
<i>Solanum papaverifolium</i>		E		Likely
<i>Solanum stenopterum</i>		V		Likely
<i>Thesium australe</i>	Toadflax	V	V	Likely
<i>Tylophora linearis</i>		E	E	Likely
<i>Xerothamnella herbacea</i>		E	E	Likely

SCIENTIFIC NAME	COMMON NAME	NC ACT ¹	EPBC ACT ¹	LIKELIHOOD
<i>Aristida forsteri</i>		E		Potential
<i>Arthraxon hispidus</i>	Hairy-joint grass	V	V	Potential
<i>Cadellia pentastylis</i>	Ooline	V	V	Potential
<i>Clematis fawcettii</i>	Stream Clematis	V	V	Potential
<i>Commersonia ingelewoodensis</i>		E		Potential
<i>Eucalyptus curtisii</i>	Plunkett Mallee	NT		Potential
<i>Eucalyptus virens</i>	Shiny-leaved Ironbark	V	V	Potential
<i>Leucopogon sp. (Coolmunda D.Halford Q1635)</i>		E	E	Potential
<i>Macrozamia conferta</i>		V	V	Potential
<i>Pomaderris coomingalensis</i>		E		Potential
<i>Westringia parvifolia</i>		V	V	Potential
<i>Daviesia quoquoversus</i>		V		Unlikely
<i>Haloragis exalata subsp. velutina</i>	Tall Velvet Sea-berry	V	V	Unlikely
<i>Macadamia integrifolia</i>	Macadamia Nut	V	V	Unlikely
<i>Microcarpaea agonis</i>		E	E	Unlikely
<i>Phebalium distans</i>	Mt. Berryman Phebalium	E	CE	Unlikely
<i>Rutidosia glandulosa</i>		NT		Unlikely
<i>Rutidosia lanata</i>		NT		Unlikely
<i>Sarcophilus hartmannii</i>		V	V	Unlikely
<i>Sarcophilus weinthalii</i>	Blotched Sarcophilus	E	V	Unlikely
<i>Bulbophyllum globuliforme</i>	Miniature Moss-orchid	NT	V	Does not occur
<i>Eucalyptus dunnii</i>	Dunn's white gum	V		Does not occur
<i>Eucalyptus infera</i>	Durikai Mallee	V	V	Does not occur

¹ CE – Critically Endangered; E-Endangered; PE – Presumed Extinct; V – Vulnerable; NT – Near Threatened.

A more detailed flora survey of the rail alignment is required to fully assess the occurrence of EVNT flora species. Numerous sections of the Study Area are within a 'High Risk' area shown on the Flora Survey Trigger Map. Under the NC Act, these areas, plus a 100 m buffer, are required to be surveyed using the NC Act Flora Survey Guidelines (DEHP, 2014).

5.1.5.2. Threatened Fauna

Desktop assessment

Desktop assessment identified 55 threatened fauna species as potentially occurring within the Study Area. This includes 33 listed under the NC Act (10 Endangered, 22 Vulnerable and 1 Near Threatened) and 46 species listed under the EPBC Act (4 Critically Endangered, 8 Endangered, 19 Vulnerable and 15 Migratory) (Eco Logical Australia, 2016). A preliminary assessment of the likelihood of occurrences of the listed species based on their known distribution and habitats mapped or observed on the alignment is presented in Table 5-7.

Field survey

No EVNT fauna species were observed in the survey, although existing records show that several species have previously been recorded in close proximity to the Study Area. A total of 28 EVNT fauna species are considered likely/known to occur within the Study Area based on appropriate habitat being observed or mapped and their known distribution.

Essential habitat within the Study Area is shown in Figure 5-3.

Table 5-7 EVNT fauna likelihood assessment

CLASS	SCIENTIFIC NAME	COMMON NAME	NCA ₁	EPBC ₁	LIKELIHOOD
Mammals	<i>Phascolarctos cinereus</i>	Koala (Qld, NSW and the ACT)	V	V	Known
Reptiles	<i>Tympanocryptis condaminensis</i>	Condamine (Darling Downs) earless dragon	E	E	Known
Birds	<i>Anthochaera phrygia</i>	Regent Honeyeater	E	CE	Likely
Birds	<i>Apus pacificus</i>	Fork-tailed Swift		Mig.	Likely
Birds	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper		Mig.	Likely
Birds	<i>Calyptorhynchus lathami</i>	Glossy Black Cockatoo	V		Likely
Birds	<i>Erythrorhynchis radiatus</i>	Red Goshawk	E	V	Likely
Birds	<i>Geophaps scripta scripta</i>	Squatter Pigeon (Southern Subspecies)	V	V	Likely
Birds	<i>Grantiella picta</i>	Painted Honeyeater	V	V	Likely
Birds	<i>Hirundapus caudacutus</i>	White-throated Needletail		Mig.	Likely

CLASS	SCIENTIFIC NAME	COMMON NAME	NCA ₁	EPBC ₁	LIKELIHOOD
Birds	<i>Lathamus discolor</i>	Swift Parrot	E	CE	Likely
Birds	<i>Myiagra cyanoleuca</i>	Satin Flycatcher		Mig.	Likely
Birds	<i>Ninox strenua</i>	Powerful Owl	V		Likely
Butterfly	<i>Hypochrysops piceata</i>	Bullock Jewel	E		Likely
Butterfly	<i>Jalmenus eubulus</i>	Pale Imperial Hairstreak	V		Likely
Mammals	<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll, Tiger Quoll (SE mainland population)	V	E	Likely
Mammals	<i>Nyctophilus corbeni</i>	South-eastern Long-eared Bat	V	V	Likely
Mammals	<i>Petauroides volans</i>	Greater Glider	V	V	Likely
Mammals	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox		V	Likely
Molluscs	<i>Adclarkia cameroni</i>	Brigalow Woodland Snail	V	E	Likely
Ray-finned fishes	<i>Bidyanus bidyanus</i>	Silver Perch		CE	Likely
Ray-finned fishes	<i>Maccullochella peelii</i>	Murray Cod		V	Likely
Reptiles	<i>Acanthophis antarcticus</i>	Common Death Adder	V		Likely
Reptiles	<i>Anomalopus mackayi</i>	Five-clawed Worm-skink, Long-legged worm skink	E	V	Likely
Reptiles	<i>Delma torquata</i>	Collared Delma	V	V	Likely
Reptiles	<i>Egernia rugosa</i>	Yakka Skink	V	V	Likely
Reptiles	<i>Furina dunmalli</i>	Dunmall's Snake	V	V	Likely
Reptiles	<i>Hemiaspis damelii</i>	Grey Snake	E		Likely
Birds	<i>Actitis hypoleucos</i>	Common Sandpiper		Mig.	Potential
Birds	<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE	Potential
Birds	<i>Calidris melanotos</i>	Pectoral Sandpiper		Mig.	Potential
Birds	<i>Cuculus optatus</i>	Oriental Cuckoo		Mig.	Potential

CLASS	SCIENTIFIC NAME	COMMON NAME	NCA ₁	EPBC ₁	LIKELIHOOD
Birds	<i>Falco hypoleucos</i>	Grey Falcon	V		Potential
Birds	<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe		Mig.	Potential
Birds	<i>Monarcha melanopsis</i>	Black-faced Monarch		Mig.	Potential
Birds	<i>Pandion cristatus</i>	Eastern Osprey		Mig.	Potential
Birds	<i>Pandion haliaetus</i>	Osprey		Mig.	Potential
Birds	<i>Rhipidura rufifrons</i>	Rufous Fantail		Mig.	Potential
Birds	<i>Rostratula australis</i>	Australian Painted Snipe	V	E	Potential
Birds	<i>Tringa nebularia</i>	Common Greenshank		Mig.	Potential
Birds	<i>Turnix melanogaster</i>	Black-breasted Button-quail	V	V	Potential
Mammals	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Potential
Mammals	<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	V	V	Potential
Mammals	<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (SE Mainland)	V	V	Potential
Molluscs	<i>Adclarkia dulacca</i>	Dulacca Woodland Snail	E	E	Potential
Birds	<i>Botaurus poiciloptilus</i>	Australasian Bittern		E	Unlikely
Birds	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	V		Unlikely
Birds	<i>Monarcha trivirgatus</i>	Spectacled Monarch		Mig.	Unlikely
Birds	<i>Motacilla flava</i>	Yellow Wagtail		Mig.	Unlikely
Birds	<i>Poephila cincta cincta</i>	Black-throated Finch (southern)	E	E	Unlikely
Mammals	<i>Dasyurus hallucatus</i>	Northern Quoll/Digul		E	Unlikely
Mammals	<i>Pseudomys novaehollandiae</i>	New Holland Mouse		V	Unlikely
Reptiles	<i>Uvidicolus sphyrurus</i>	Border Thick-tailed Gecko		V	Unlikely
Reptiles	<i>Wollumbinia belli</i>	Bell's Turtle	V	V	Unlikely
Birds	<i>Menura alberti</i>	Albert's Lyrebird	NT		Does not

CLASS	SCIENTIFIC NAME	COMMON NAME	NCA ₁	EPBC ₁	LIKELIHOOD
					occur

¹ CE – Critically Endangered; E-Endangered; PE – Presumed Extinct; V – Vulnerable; Mig. – Migratory; NT – Near Threatened.

5.1.5.3. Essential Habitat

The desktop assessment showed that one area of Essential Habitat for the Pale Imperial Hairstreak Butterfly (*Jalmenus eubulus*) is mapped along the Conceptual Alignment near Native Dog Creek in the Bringalily State Forest. The Essential Habitat factor listed for this species is old growth Brigalow (DNR, 2016). This community was observed during surveys, often as a sub-dominant in a Belah open forest.

5.1.5.4. Migratory and marine species

Migratory species with potential to occur within the Study Area are identified in Table 5-7.

Observation of a number migratory and wader species during the initial field surveys was considered unlikely due to the seasonal timing of the survey. It was, however, possible to note potential habitat for such species, based upon previous records and habitat preferences. Habitat for wader species was limited at the time of the survey due to the ephemeral nature of waterbodies surveyed. One farm dam adjacent to the Conceptual Alignment offered potential habitat, in addition to the riverine systems surveyed such as Canning Creek.

5.1.5.5. Pest Species

Seven weeds listed as Weeds of National Significance (WoNS) and/or declared weeds under the *Biosecurity Act 2014* were identified during the initial field survey within the Study Area (Table 5-8). The abundance of these species varied from a few scattered individuals to dense infestations (e.g. *Bryophyllum* spp. in the Yelarbon Desert and tiger pear along the Condamine River).

In addition to these declared weeds listed in Table 5-8, a large number of non-declared exotic species including *Sorghum* spp., red natal grass (*Melinis repens*) and Maynes pest (*Verbena aristigera*) also occur within the Study Area.

Table 5-8 Declared weeds occurring within the Study Area identified during the field survey

SPECIES NAME	COMMON NAME	WONS	LP ACT
<i>Asparagus africanus</i>	Climbing asparagus	✓	Class 3
<i>Asparagus plumosus</i>	Feathered asparagus-fern	✓	Class 3
<i>Bryophyllum</i> spp.	Mother of millions		Class 2
<i>Dolichandra unguis-cati</i>	Cat's claw vine	✓	Class 3
<i>Harrisia martinii</i>	Harissa catus		Class 2
<i>Lantana camara</i>	Lantana	✓	Class3
<i>Lycium ferocissimum</i>	African boxthorn	✓	Class 2

SPECIES NAME	COMMON NAME	WONS	LP ACT
<i>Opuntia aurantiaca</i>	Tiger pears	✓	Class 1
<i>Opuntia stricta/tomentosa</i>	Prickly pears	✓	Class 2
<i>Senecio madagascariensis</i>	Fireweed	✓	Class 2
<i>Sporobolus spp.</i>	Giants rats tail grass		Class 2

Based on desktop assessment results, ten declared pest species under the *Biosecurity Act 2014* were identified as potentially occurring within the Study Area (Table 5-9).

Table 5-9 Declared pests identified as potentially occurring within the Study Area based on desktop results

SPECIES NAME	COMMON NAME
<i>Bos taurus/indicus</i>	Domestic cattle
<i>Felis catus</i>	Cat
<i>Oryctolagus cuniculus</i>	Rabbit
<i>Lepus capensis</i>	Brown hare
<i>Ovis aries</i>	Domestic sheep
<i>Sus scrofa</i>	Pig
<i>Vulpes vulpes</i>	Red fox
<i>Canis lupus familiaris</i>	Wild dog
<i>Columba livia domestica</i>	Feral pigeon
<i>Acridotheres tristis</i>	Common mynah

It is expected, based on the habitat assessment, that other feral species such as the house mouse (*Mus musculus*), would also occur throughout the Study Area.

5.2. Social and Economic Environment

The project will be located in a predominantly rural area and be encompassed within Goondiwindi Regional Council (GRC) and Toowoomba Regional Council (TRC) Local Government Areas (LGAs). These LGAs have a combined total resident population of 171,409 people (Queensland Government Statistician's Office, 2016) and cover a total area of 32,203 km² (Australian Bureau of Statistics, 2016).

Goondiwindi Local Government Area

The Goondiwindi LGA has an estimated population of 10,630 with an average age of 40 years (Queensland Government Statistician's Office, 2016) and covers an area of approximately 19,255 km² (Australian Bureau of

Statistics, 2016). Key industries in the area traditionally include cotton, grains, wool and beef, with recent developments in olive and peanut production, as well as stone fruits, citrus, pecan nuts, vegetable crops, grapes and aqua culture.

The median weekly personal income for people aged 15 years and over in Goondiwindi LGA was \$653 in 2016 (Australian Bureau of Statistics, 2016). The majority of the population within the Goondiwindi LGA are employed full time, with an unemployment rate of 3.6% (Queensland Government Statistician's Office, 2016).

The town of Inglewood is within both the Study Area and the Goondiwindi LGA. Inglewood is the second largest town within the GRC area with 1,069 people (Australian Bureau of Statistics, 2016).

Toowoomba Local Government Area

The Toowoomba LGA has an estimated resident population of 160,779 people with an average age of 38 years and covers an area of approximately 12,978.5 km² (Queensland Government Statistician's Office, 2016). Toowoomba is experiencing considerable growth, driven by its regional location and proximity to natural resource production as well as significant investment in infrastructure.

With highly fertile farming land, the Toowoomba region has a strong agricultural history with agriculture, forestry and fishing contributing \$666 million to the region's economy with key outputs in grain, poultry, cotton, beef, pork and dairy. Toowoomba has diversified its economy with strong education, health, business services, Defence and construction industries. Mining operations in the Surat Basin also support Toowoomba's economy.

The median weekly personal income for people aged 15 years and over in Toowoomba LGA was \$642 in 2016 (Australian Bureau of Statistics, 2016).

The key towns within the local government area and within the Study Area include Millmerran, with a population of around 1,566 and Oakey, with a population of around 1,994 people (Australian Bureau of Statistics, 2016).

5.2.1. Accommodation and Housing

The capacity of the local housing market to absorb a large influx of construction workers is low. Private dwelling occupancy within Goondiwindi and Toowoomba LGAs is considered high with 83% and 88% respectively (Queensland Government Statistician's Office, 2016). Therefore, further detailed analysis will be required to determine the availability of accommodation and housing in both regions and any strategies such as temporary workers accommodation facilities, to mitigate potential adverse impacts on the local housing market.

5.2.2. Cultural Heritage (Indigenous and non-Indigenous)

5.2.2.1. Indigenous Heritage

Aboriginal party and cultural heritage body

There is currently no registered Cultural Heritage Body for the Study Area. A search of the Queensland Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) database identified that there are currently two Aboriginal Parties for the Study Area (Western Wakka Wakka People and Bigambul People) under ss. 34 and 35 of the *Aboriginal Cultural Heritage Act 2003* (Table 5-10). A large proportion of the Study Area (Inglewood to Brookstead) is not currently covered by a registered Aboriginal Party or Cultural Heritage Body.

Table 5-10 Registered Aboriginal Parties

QC REF NUMBER	TEAM	STUDY AREA LOCATION
QCD2016/012QC2009 – Bigambul People		That part of the determination area for the Bigambul People determination that covers the southern portion of the Study Area (approximately 4km south of Inglewood) and continues through to Yelarbon
QC1999/004 - Western Wakka Wakka People	Team McLeod Sandra Bauwens Margaret McLeod	That part of the former claim area for the Western Wakka Wakka People claim that covers the northern portion of the Study Area (just south from Brookstead) and continues through to Gowrie
QC1999/004 PRC - Western Wakka Wakka People	Team Beattie Adrian Beattie	That part of the former claim area for the Western Wakka Wakka People claim that covers the northern portion of the Study Area (just south from Brookstead) and continues through to Gowrie

Registered Aboriginal Heritage Sites

Twelve registered Aboriginal heritage sites are located within the Study Area. The DATSIP Aboriginal Cultural Heritage Sites Database & Register only records the central location of these sites, and as such, the full sites may extend further beyond their recorded position. These registered locations are shown on Figure 5-4.

DATSIP does not provide detailed information on these heritage sites without express permission of the relevant Aboriginal Party. It is also important to note that DATSIP states that it is not possible to conclusively guarantee the accuracy of these recordings (in particular, the longitude and latitude location description for each site) and extra diligence is required when operating in these locations. Therefore, DATSIP records are not likely to reflect a true picture of the Aboriginal cultural heritage values of the area.

Based on the broad regional appreciation of recorded Aboriginal heritage, permanent water appears to be one of the major driving forces in the placement of major archaeological sites (open artefact scatters) along the Conceptual alignment. While archaeological artefacts can be found elsewhere, this tends to be 'background scatter', less than one artefact/m² and probably represent transient usage of the landscape, rather than dedicated occupation.

5.2.2.2. Non-Indigenous

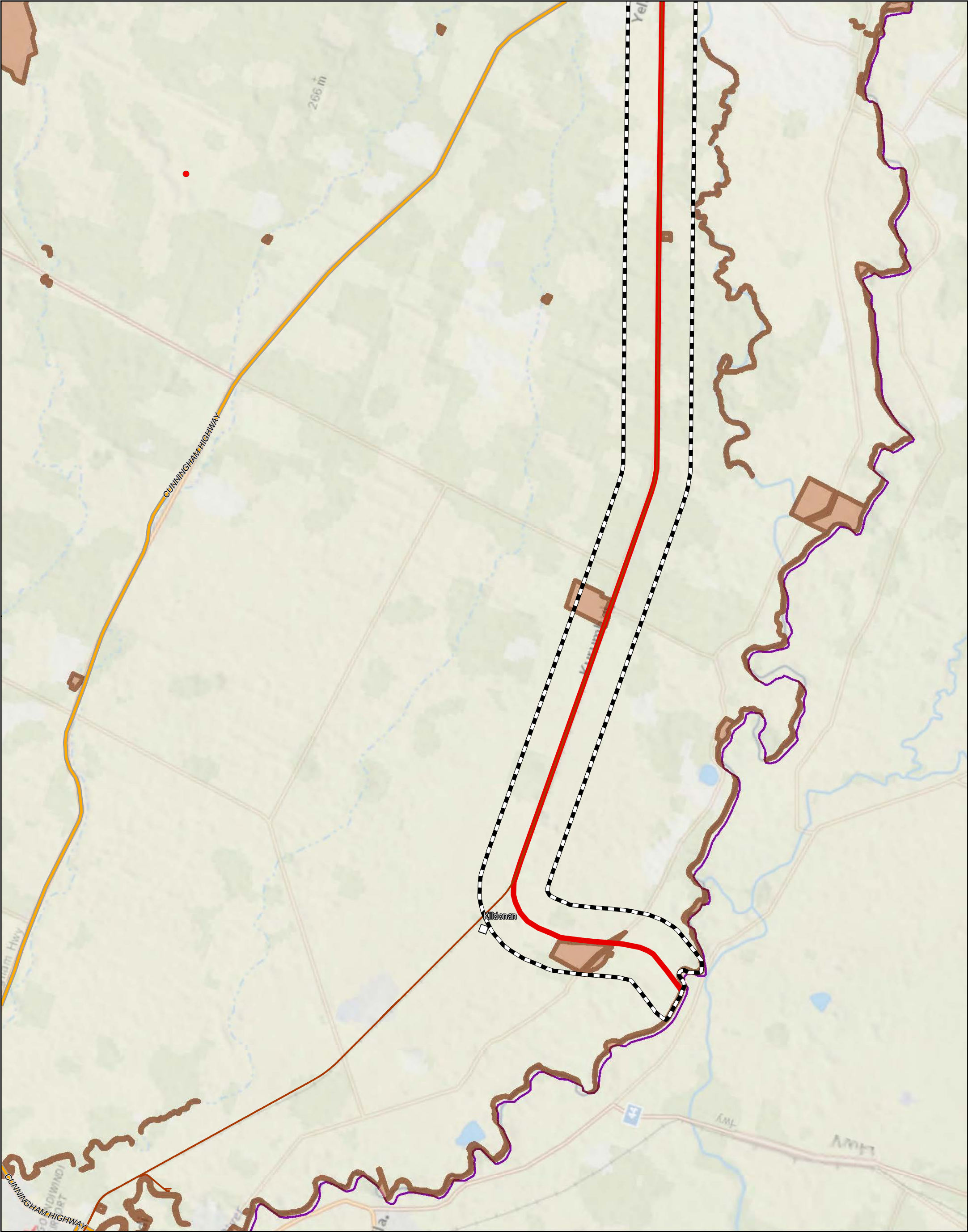
A search of the Australia Heritage Database identified no statutory listed heritage places within or adjacent to the Conceptual Alignment. The closest item (Gowrie Creek Valley View - RNE # 15798) was identified on the now non-statutory Register of the National Estate and is approximately 1 km north of the Conceptual Alignment. This item is not currently recognised by the Commonwealth for its heritage values.


A search of the Queensland State Heritage Register (SHR) identified no statutory listed heritage places within the Study Area.

The Queensland Cultural Heritage Information Management System (CHIMS) is managed by the Department of Environment and Science (DES) and lists historic heritage sites of importance to QLD history, which are not of State Significance. The CHIMS register is non-statutory and instead is a database of sites which are of heritage significance or require additional investigation to determine their significance. A search of CHIMS has identified three items of heritage significance within the Study Area (Table 5-11).


Table 5-11 CHIMS Heritage Items

CHIMS ID	Place Name	Latitude	Longitude	Location to Conceptual Alignment
2425	Macintyre Brook Bridge - Whetstone	-28.4953	150.9353	Located within the Study Area, approximately 800 m south east of the Conceptual Alignment.
2440	Site of former Brookstead Station building	-27.7594	151.4475	Conceptual Alignment located immediately adjacent to this item
22934	Brookstead Station building	-27.761	151.4464	Conceptual Alignment is located 80 m to the north





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
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Legend


 Towns


 Aboriginal Cultural Heritage (DATSIP)


 CHIMS Reported Places


 Existing Rail Network

 Conceptual Alignment


 Major Roads

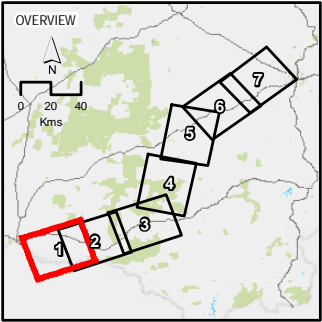
 Study Area

 Adjacent Inland Rail Project

 QLD heritage register boundaries

 Register of Native Title Claims

 State Boundary



Data sources:
Aboriginal Cultural Heritage - DATSIP 2017
Heritage Register Boundaries - DEHP 2017
Roads and Rail Network - DNRM 2017
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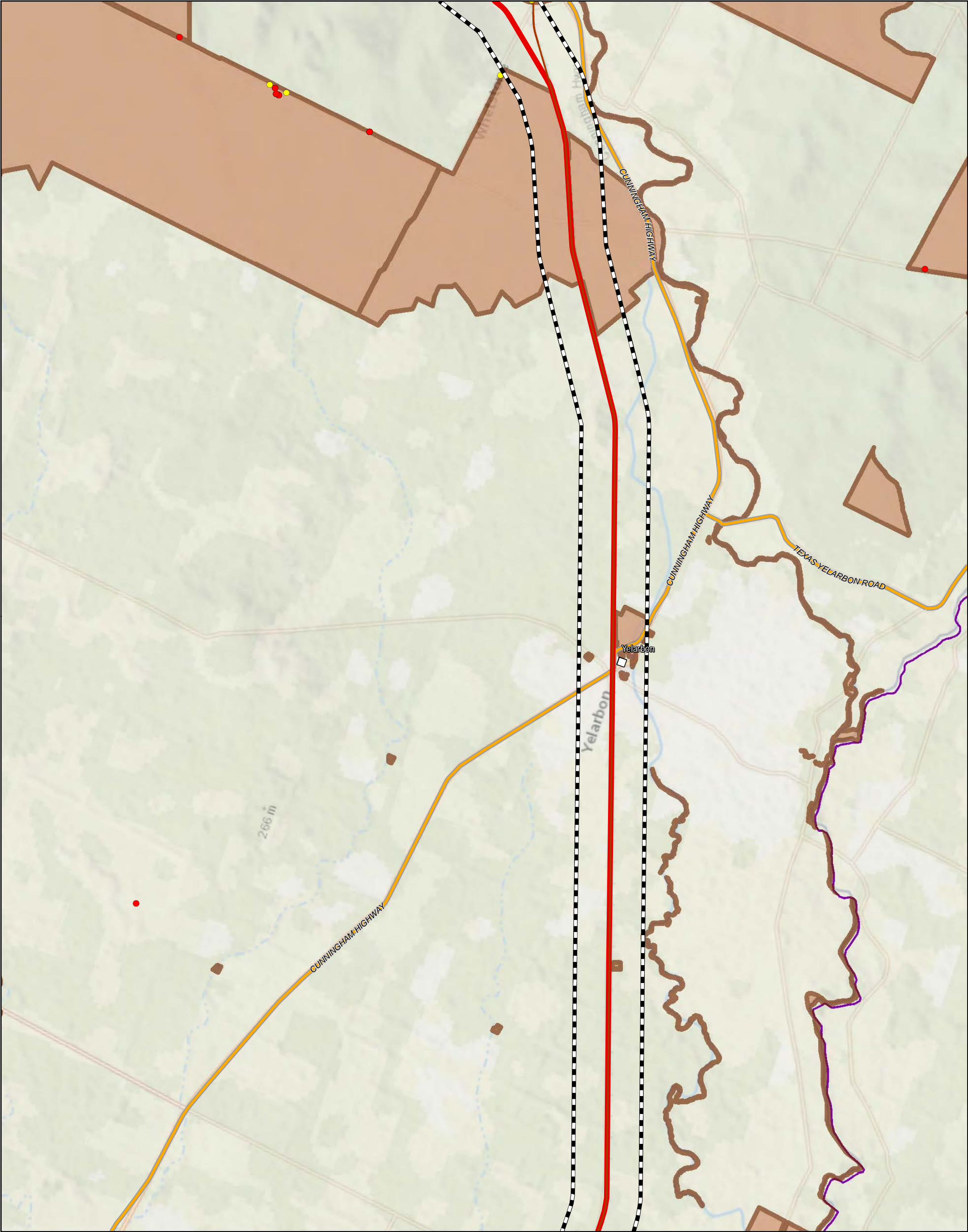
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Border to Gowrie Project


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Indigenous and Historical

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
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
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Legend


 Towns


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 CHIMS Reported Places


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 Conceptual Alignment


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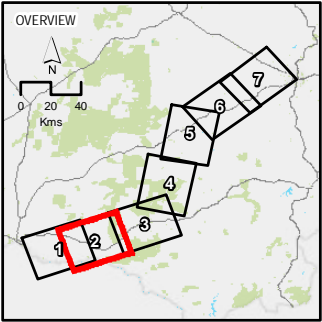
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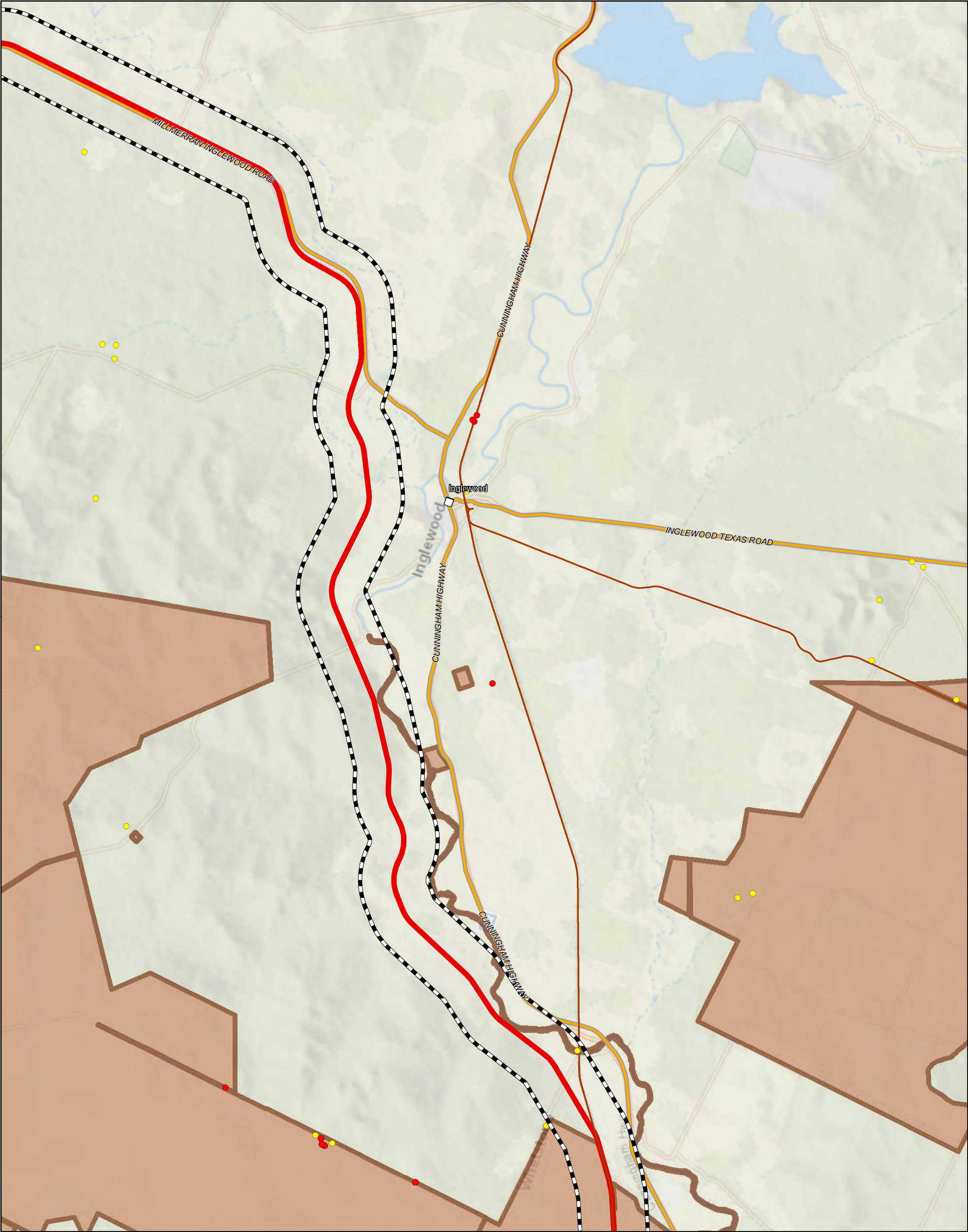
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
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
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 Towns


 Aboriginal Cultural Heritage (DATSIP)


 CHIMS Reported Places


 Existing Rail Network

 Conceptual Alignment


 Major Roads

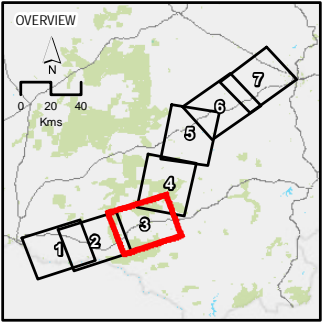
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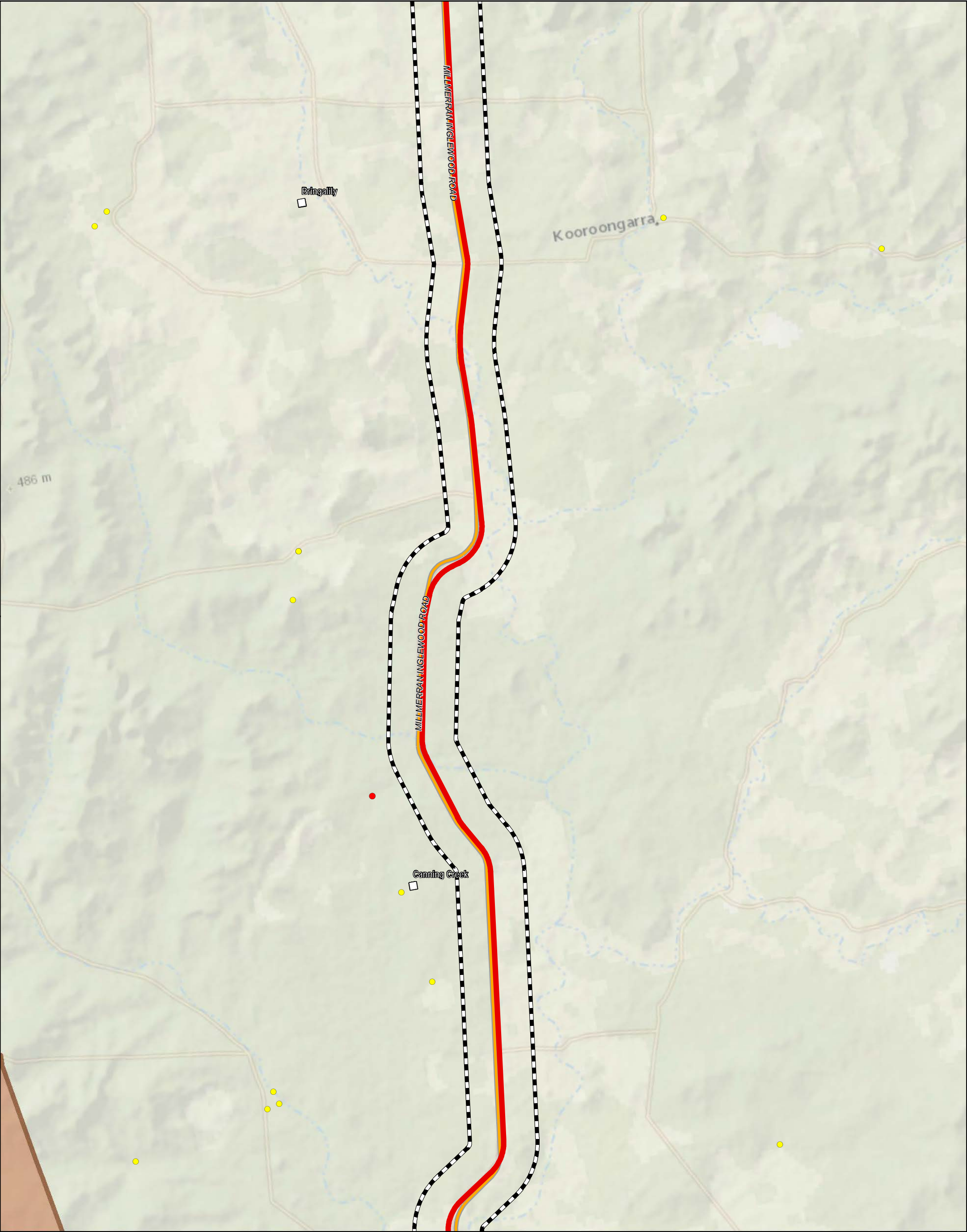
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
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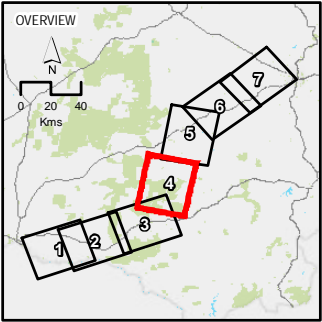
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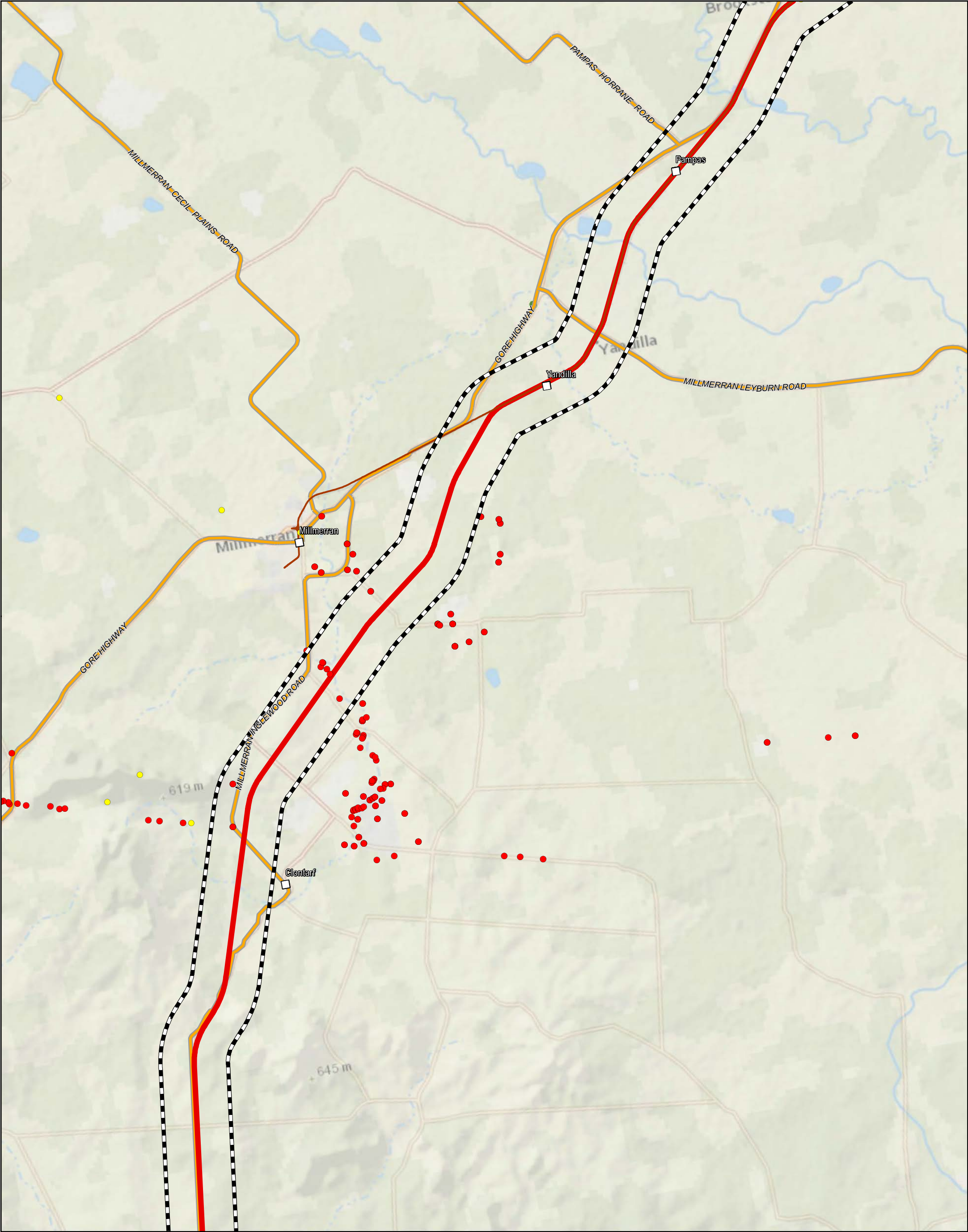
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Figure
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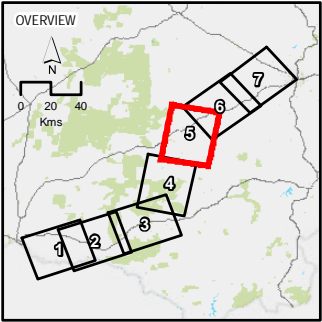
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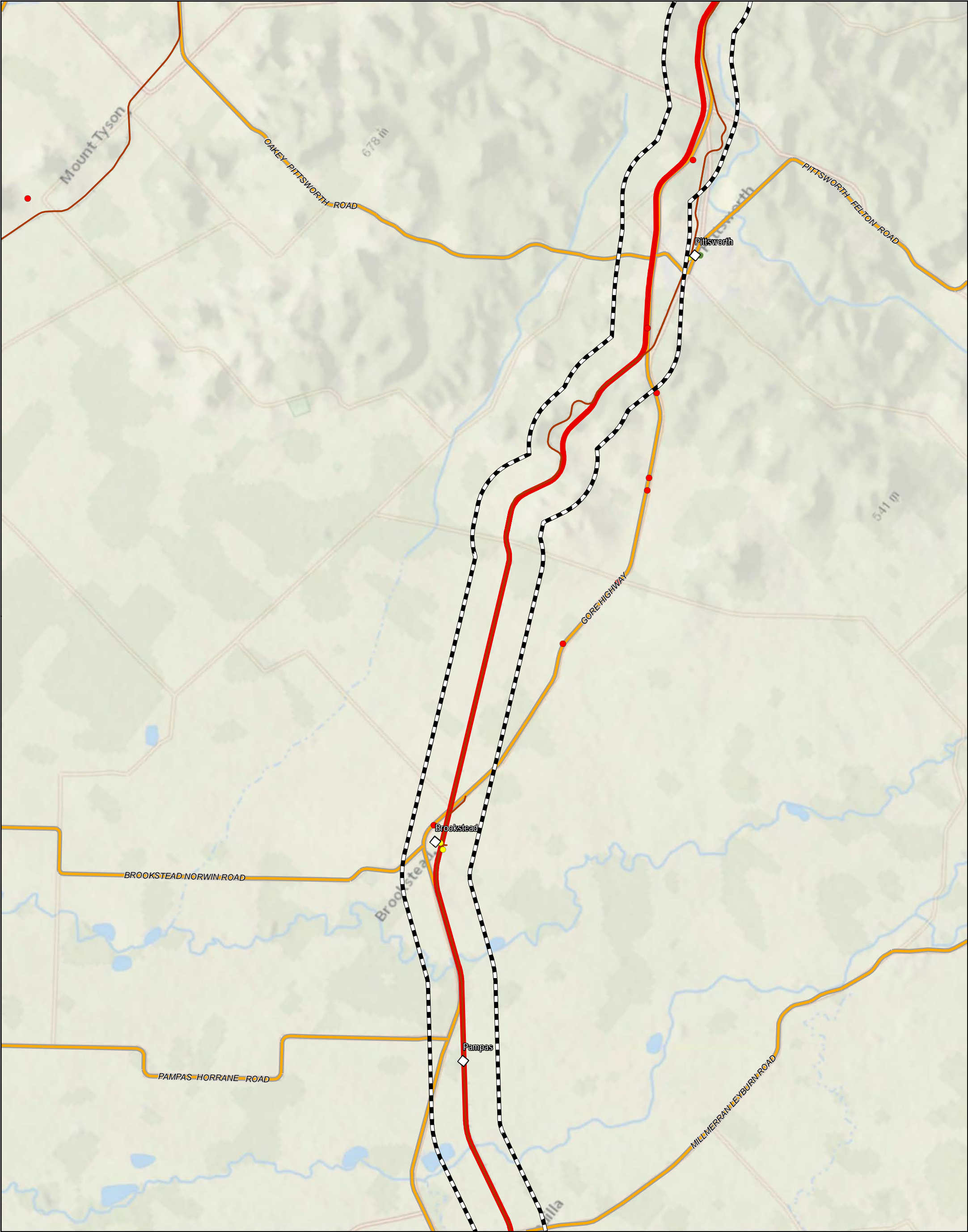
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
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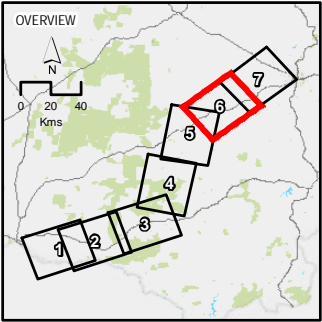
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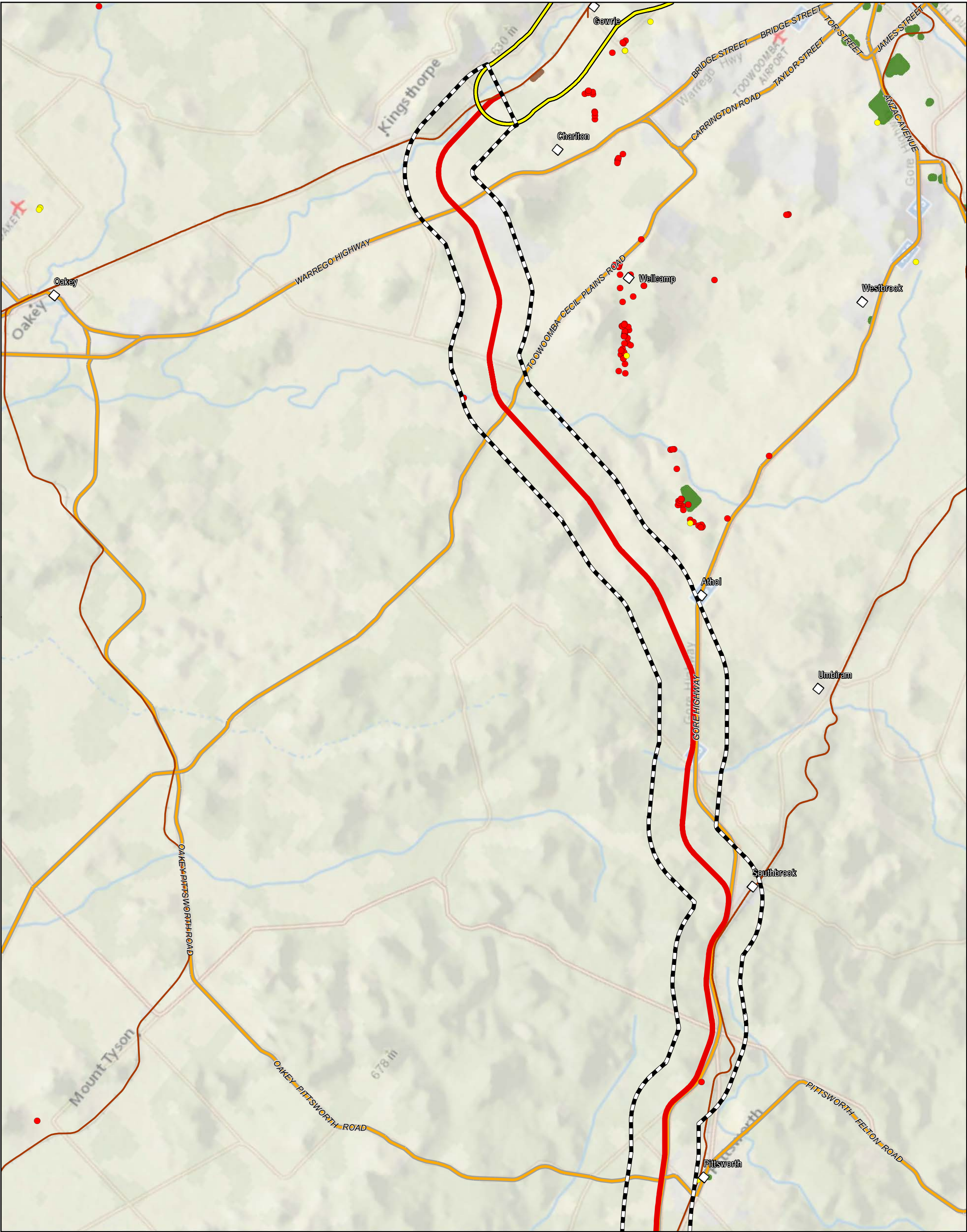
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Figure
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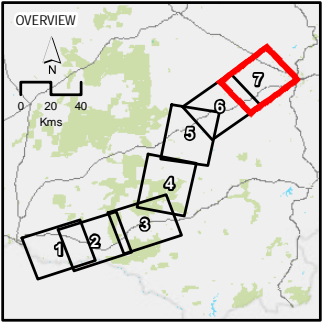


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Legend

- Towns
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5.3. Built Environment

Key existing regional infrastructure in the Study Area includes existing railway lines, state-controlled roads, local roads and Brisbane West Wellcamp Airport. These are described further in Section 5.4.

The Conceptual alignment will unavoidably transect several mining exploration tenements, two Mineral Development Licences – MDL 299 held by Newmont Pacific Energy Pty Ltd and MDL 300, held by Queensland Power Company Limited – and one Mining Lease, ML 50151 held by Queensland Power Company Limited (Figure 5-5). The Mining Lease is associated with the Commodore Mine adjacent to the Millmerran Power Station. The Conceptual alignment traverses this lease area.

The Toowoomba Second Range Crossing (TSRC) motorway is a new 41 km motorway currently under construction connecting the Warrego Highway at Helidon Spa in the east with the Gore Highway at Athol in the west, via Charlton, also shown in Figure 3-1. The TSRC provides a second range crossing to the north of Toowoomba rather than through it. The TSRC terminates just outside of the Study Area at Athol.

There are likely to be opportunities to use or connect to existing third party supporting infrastructure such as borrow pits and quarries, power and communications infrastructure and accommodation facilities. ARTC will work with the relevant regional councils, government departments, land owners, government-owned corporations and community groups to identify potential impacts on existing infrastructure external to the project and to develop measures to minimise potential impacts.

5.4. Traffic and Transport

A well-established transport network extends across the Study Area, consisting of a combination of railway lines, state-controlled roads, local roads and unformed private access tracks.

State controlled roads within the Study Area provide vehicle movements, including regional and interstate freight movements are as follows:

- Cunningham Highway
- Millmerran-Inglewood Road
- Gore Highway, Millmerran-Leyburn Road
- Pampas-Horane Road
- Brookstead-Norwin Road
- Oakey-Pittsworth Road
- Pittsworth-Felton Road
- Toowoomba-Cecil Plains Road
- Warrego Highway.

The existing rail corridors for the South Western Railway, Millmerran Branch Railway and West Moreton Line are all proposed to be utilised by the project.

The Study Area encompasses land that forms part of the Brisbane West Wellcamp Airport precinct. The airport, which became operational in 2014, provides for domestic passenger and international freight transportation. The Border to Gowrie Project will provide the opportunity to supplement air freight movements with access to the national rail freight network.

5.5. Land Use and Tenures

5.5.1. Key Local and Regional Land Uses

5.5.1.1. Land Use

The land uses within the Study Area predominantly consist of agricultural activities, characterised by open grazing land combined with areas of more intensive practices such as animal breeding and crop cultivation. Rural land within the Study Area is largely identified as regionally significant for agricultural production within the Darling Downs Regional Plan and is zoned for rural uses under the Waggamba Shire Planning Scheme, Inglewood Shire Planning Scheme and Toowoomba Regional Planning Scheme.

The Conceptual Alignment passes through, or within close proximity to, a number of townships such as Yelarbon, Inglewood, Millmerran, Brookstead, Pittsworth, Southbrook, Athol and Gowrie. Yelarbon, Inglewood, Millmerran, Pittsworth and Southbrook are identified as Priority Living Areas under the Darling Downs Regional Plan. PLAs are designed to provide opportunities for identified towns to expand through the establishment of a town buffer.

Land use zoning of the Study Area is shown in Figure 5-5. Other existing and historical land uses within the Study Area include:

- Mining and extractive industry
- Forestry (Whetstone and Bringalily State Forests)
- Residential and urban development.

5.5.1.2. Key Resource Areas

One key resource area (KRA), the Kildonan sand and gravel quarry, is situated within the Study Area. The resource is located approximately 18 km east south-east of Goondiwindi, on the Kildonan-Old Warwick Road. The deposit is large and is significant as deposits of sand are scarce in the region. The Kildonan KRA is shown in Figure 5-5.

5.5.1.3. Agricultural Uses

The Study Area extends through the Important Agricultural Areas (IAA) of the Border Region and the Eastern Darling Downs. IAA are defined by the Department of Agriculture and Forestry (DAF) Qld Agricultural Land Audit (2013) as "land that has all of the requirements for agriculture to be successful and sustainable, is part of a critical mass of land with similar characteristics and, is strategically significant to the region or the state".

The DAF was consulted in order to determine the best means of identifying and assessing impacts to current land uses and to assess potential impacts to each. DAF advised that the Queensland Land Use Mapping Program (QLUMP) is currently the best available means of mapping and assessing land use patterns and changes across QLD, in accordance with the Australian Land Use and Management Classification system.

Future land use impacts were assessed with reference to DAF's Qld Agricultural Land Audit (2013) data set, to identify current and future agricultural land use designations traversed by the Conceptual Alignment. Agricultural land uses traversed by the Conceptual Alignment are as follows:

- Current agricultural land use:
 - Cropping (irrigated and non-irrigated)
 - Animal production:
 - Intensive animal production (feedlots, poultry, piggeries etc.)
 - Grazing native vegetation
 - Grazing modified pastures

- Potential agricultural land use:
 - Broadacre cropping
 - Annual horticulture
 - Perennial horticulture
 - Intensive livestock

Strategic cropping land is located within the Study Area and will potentially impacted by the Conceptual Alignment. However, the provisions of the *Regional Planning Interests Act 2014* apply only to defined resource and regulated activities.

Travelling Stock Routes (TSRs) are corridors on roads, reserves, pastoral leases and unallocated state land along which stock are driven on foot and are designated for travelling stock purposes under the relevant State legislation. The proposed base case alignment traverses six TSRs.

Consultation with TRC and GRC will be necessary to ensure that the final alignment does not inhibit traditional stock movements without the provision of suitable alternative routes.

5.5.2. Key Local and Regional Land Tenures

Existing Land Tenure

The majority of property tenure in the Study Area is freehold, with areas of state reserve located adjacent to the Conceptual Alignment between Inglewood and Millmerran.

The Conceptual Alignment will unavoidably transect several mining exploration tenements, two Mineral Development Licences – MDL 299 held by Newmont Pacific Energy Pty Ltd and MDL 300, held by Queensland Power Company Limited – and one Mining Lease, ML 50151 held by Queensland Power Company Limited (Figure 5-5). The Mining Lease is associated with the Commodore Mine adjacent to the Millmerran Power Station.

No granted petroleum leases are traversed by the Conceptual Alignment.

Proposed Land Tenure

Parts of the Conceptual Alignment (brownfield) that follow the alignment of existing rail corridors are already gazetted railway land. It is proposed that land for the new (greenfield) or widened (brownfield) corridors be acquired by the State at the request of ARTC, with the railway corridor proposed to be incorporated into a proposed Sub-Lease of the rail corridor from TMR.

This model will be subject to agreement between the Australian Government and the Queensland State Government.

5.5.3. Native Title

A search of the relevant Native Title Registers identified one native title determination, QCD2016/012, over southern portions of the Study Area. Native title claims and determinations relevant to the Study Area are summarised in Table 5-12.

Table 5-12 Native Title Determinations and Claims for the Study Area

Native Title Status	Name	Summary
Native Title determined	QCD2016/012 – Bigambul People Part	Native title exists in the entire determination area. The extent of this area, in relation to the Study Area, is shown by those areas identified in

Native Title Status	Name	Summary
	A	Figure 5.4 south of Inglewood.
Application struck out	QC99/4 – Western Wakka Wakka People	The Western Wakka Wakka People lodged a native title claim which included the northern part of the Study Area to just south of Brookstead on 27 January 1999 (Tribunal File No.: QC1999/004; Federal Court File No.: QUD6004/99). Their application was struck out in Beattie on behalf of Western Wakka Wakka Peoples v State of Queensland [2007] FCA 596 (27 April 2007) and is not currently listed as active by the National Native Title Tribunal.

5.6. Planning Instruments, Government Policies

5.6.1. Regional Plans

Regional plans are part of a suite of policies and legislative instruments that guide land use planning and development in order to influence economic, social and environmental factors. Both the South East Queensland Regional Plan 2017 and the Darling Downs Regional Plan (2013), which overlap, are relevant to the Study Area.

The entirety of the Study Area is covered by the Darling Downs Regional Plan. Parts of the Study Area, north east of Southbrook, extend into the area covered by the South East Queensland Regional Plan.

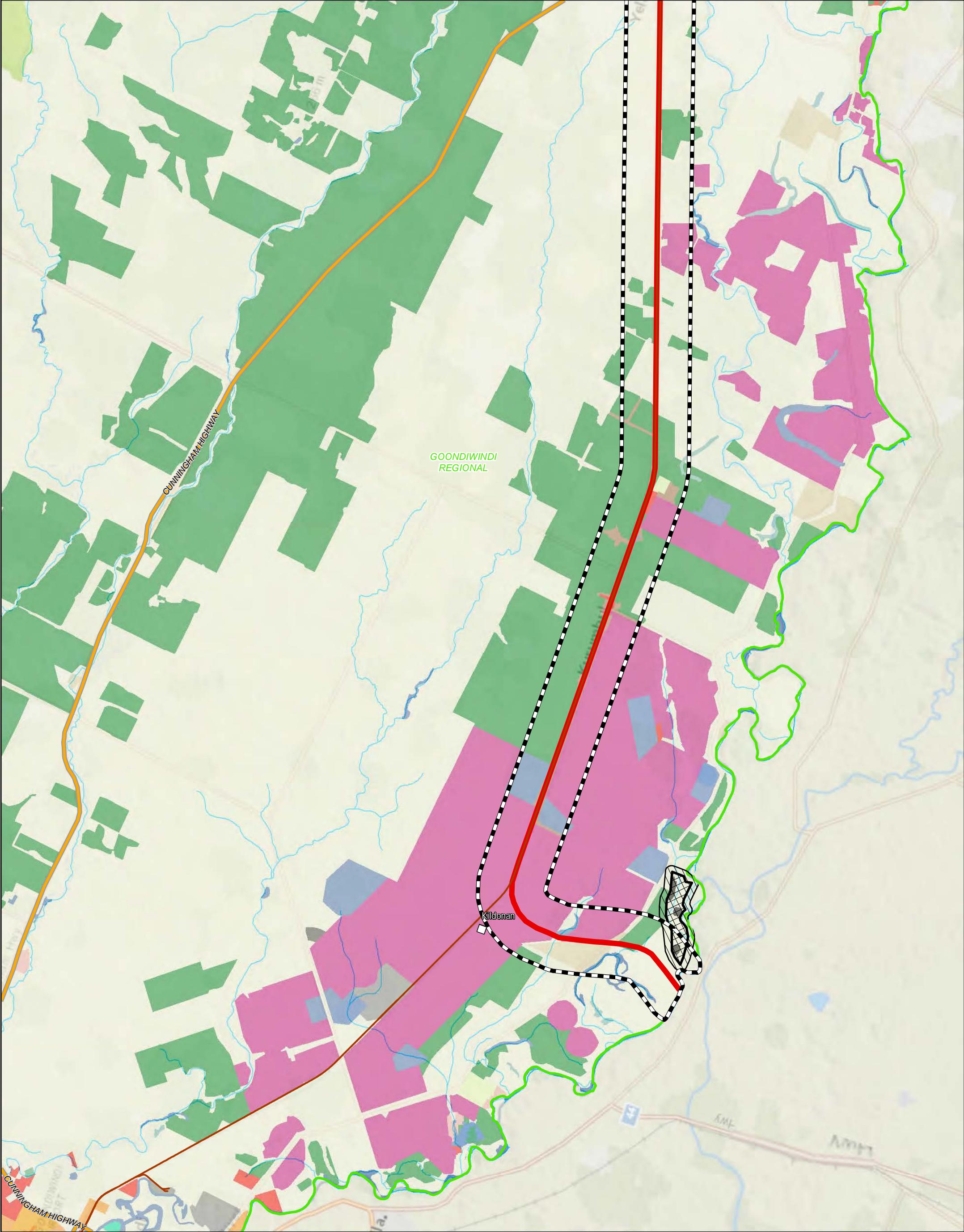
5.6.2. Local Planning Schemes – Land Use Designations


The applicable planning schemes for the Border to Gowrie Project are as follows:

- For Goondiwindi Regional Council:
 - Former Waggamba Shire Council Planning Scheme
 - Former Inglewood Shire Council Planning Scheme
- Toowoomba Planning Scheme


Land use zoning along the Conceptual Alignment is primarily zoned as Rural within GRC, with the localised exception of the rail corridor in the town of Yelarbon, which is zoned as ‘Small Town’.

Similarly, the land traversed by the Conceptual Alignment in TRC is primarily zoned Rural. Exceptions to this are where the Conceptual Alignment utilises existing rail corridor, which is zoned as Community Facility, where the alignment traverses the Commodore Mine (Extractive Industry) or localised occurrences of High and Medium Impact Industry.





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Projection: Transverse Mercator

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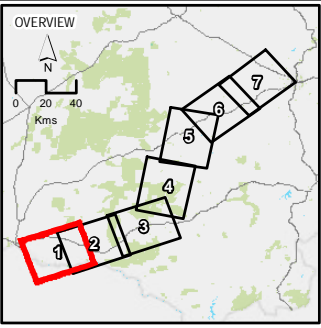
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- Legend**

 - Towns
 - Existing Rail Network
 - Conceptual Alignment
 - Major Roads
 - Waterways
 - Study Area
 - Key Resource Area (resource processing area)
 - Key Resource Area (separation area)
 - LGA Boundary
- OLUMP Land Use**

 - Nature conservation
 - Other minimal use
 - Grazing native vegetation
 - Production native forests
 - Grazing modified pastures
 - Cropping
 - Perennial horticulture
 - Land in transition
 - Irrigated cropping
- Intensive animal production
 - Manufacturing and industrial
 - Residential and farm infrastructure
 - Services
 - Transport and communication
 - Mining
 - Waste treatment and disposal
 - Reservoir/dam
 - River
 - Marsh/wetland



Data sources:
Roads and Rail Network - DNRM 2017
OLUMP Land Use - DSITI 2017
Mining Development License / Lease - DNRM 2017
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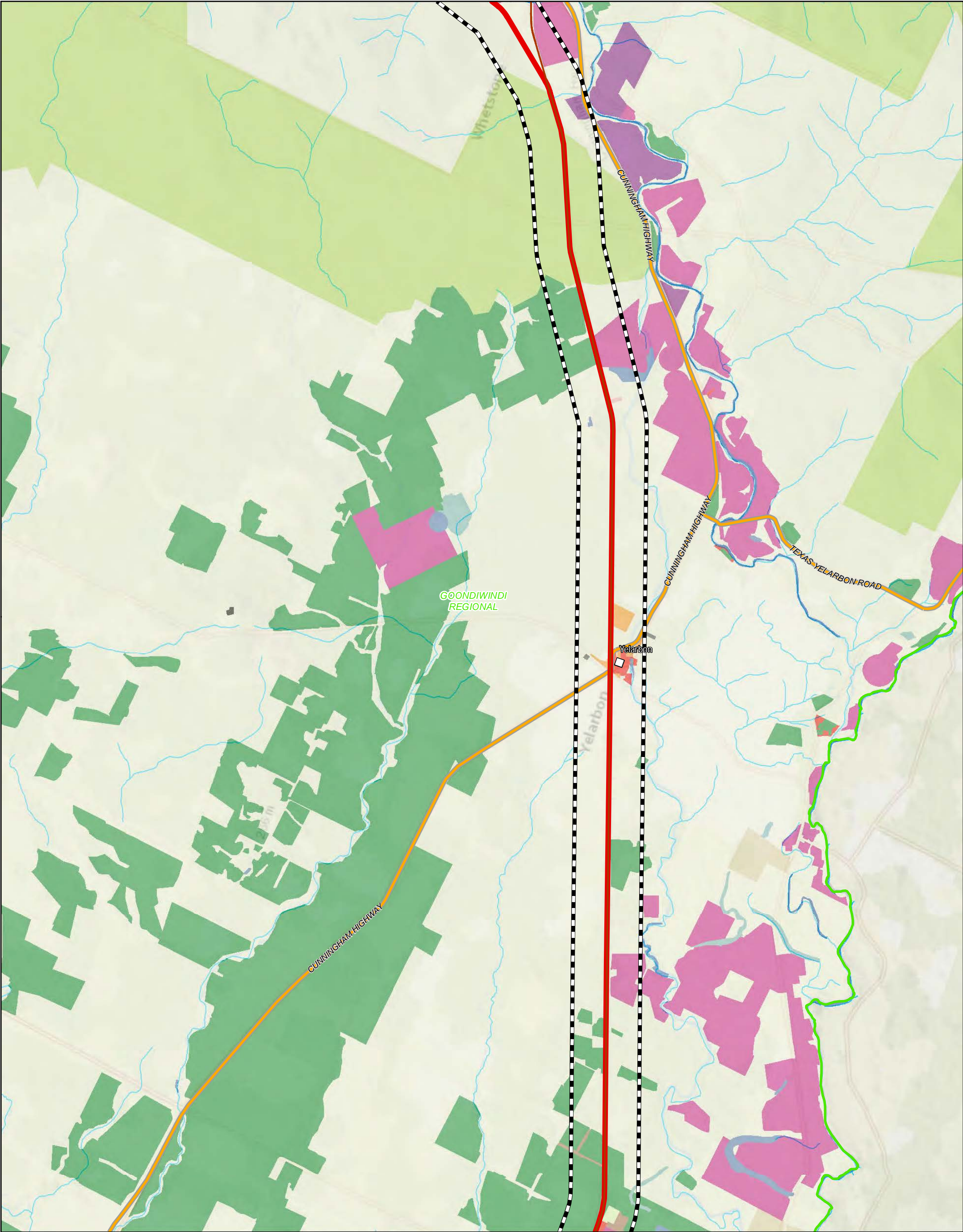
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Land Use


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VERSION: 3

Figure 5.5
(1 of 7)
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Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator

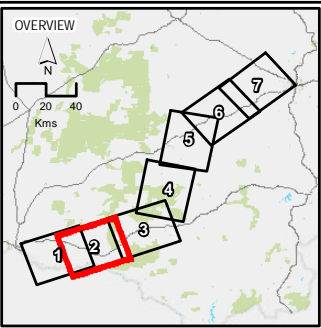


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- Legend**

 - Towns
 - Existing Rail Network
 - Conceptual Alignment
 - Major Roads
 - Waterways
 - Study Area
 - LGA Boundary
- QLUMP Land Use**

 - Nature conservation
 - Other minimal use
 - Grazing native vegetation
 - Production native forests
 - Grazing modified pastures
 - Cropping
 - Perennial horticulture
 - Land in transition
 - Irrigated cropping
 - Irrigated perennial horticulture
- Intensive animal production
 - Manufacturing and industrial
 - Residential and farm infrastructure
 - Services
 - Transport and communication
 - Mining
 - Waste treatment and disposal
 - Lake
 - Reservoir/dam
 - River
 - Marsh/wetland



Data sources:
Roads and Rail Network - DNRM 2017
QLUMP Land Use - DSIT1 2017
Mining Development License / Lease - DNRM 2017
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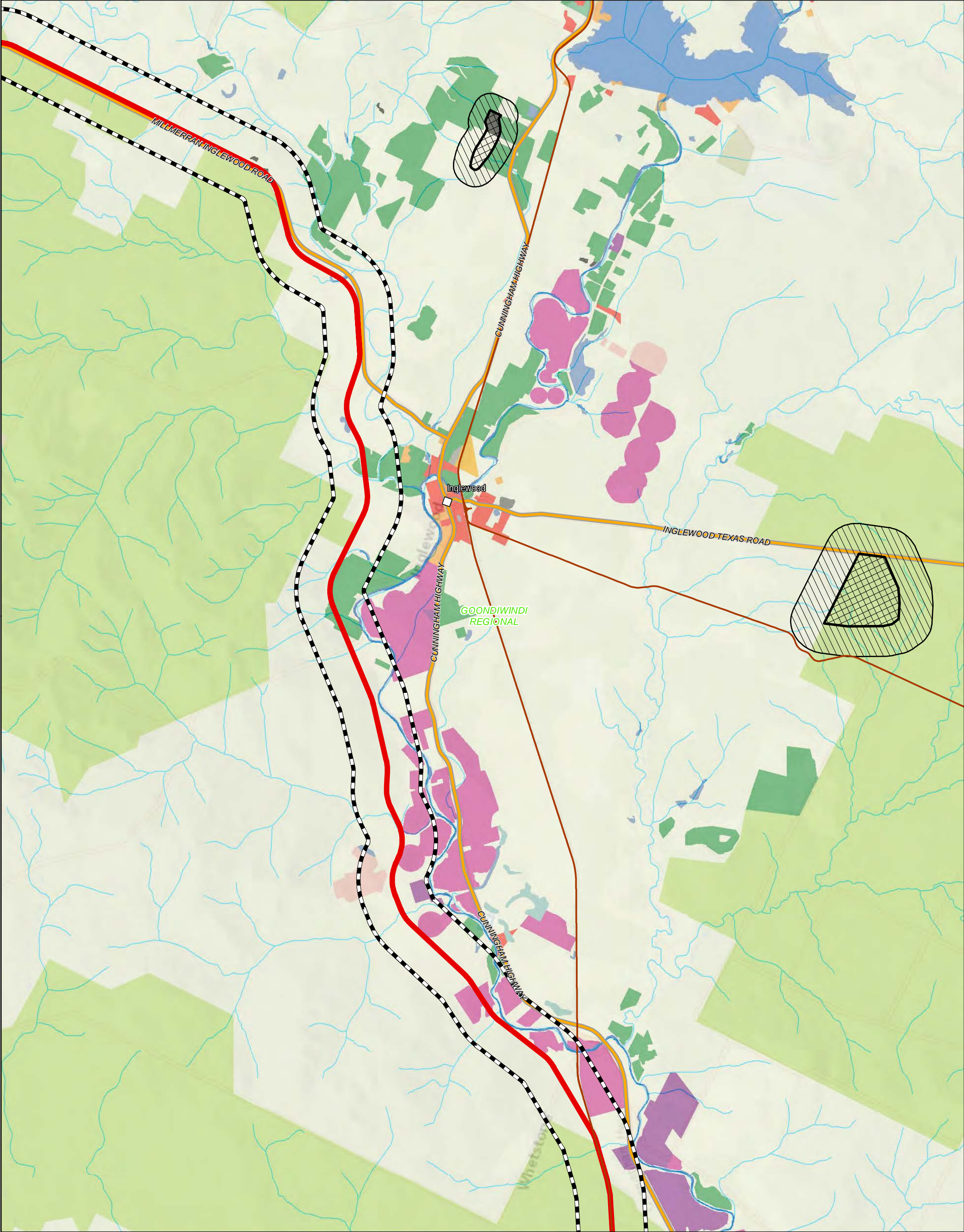
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Initial Advice Statement
Border to Gowrie Project

Land Use


PROJECT ID: 60492124
CREATED BY: JR
LAST MODIFIED: JR - 2/02/2018
VERSION: 3

Figure 5.5
(2 of 7)
A3 size

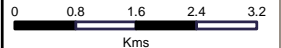




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Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



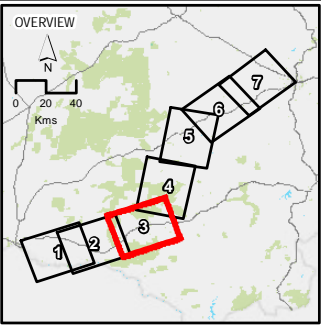
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Kms

1:100,000 (when printed at A3)

- Legend**

 - Towns
 - Existing Rail Network
 - Conceptual Alignment
 - Major Roads
 - Waterways
 - Study Area
 - Key Resource Area (resource processing area)
 - Key Resource Area (separation area)
 - LGA Boundary
- OLUMP Land Use**

 - Nature conservation
 - Other minimal use
 - Grazing native vegetation
 - Production native forests
 - Cropping
 - Perennial horticulture
 - Irrigated cropping
 - Irrigated perennial horticulture
- Intensive animal production
 - Manufacturing and industrial
 - Residential and farm infrastructure
 - Services
 - Transport and communication
 - Mining
 - Waste treatment and disposal
 - Reservoir/dam
 - River
 - Marsh/wetland



Data sources:
Roads and Rail Network - DNRM 2017
OLUMP Land Use - DSIT 2017
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Initial Advice Statement
Border to Gowrie Project

Land Use

PROJECT ID: 60492124

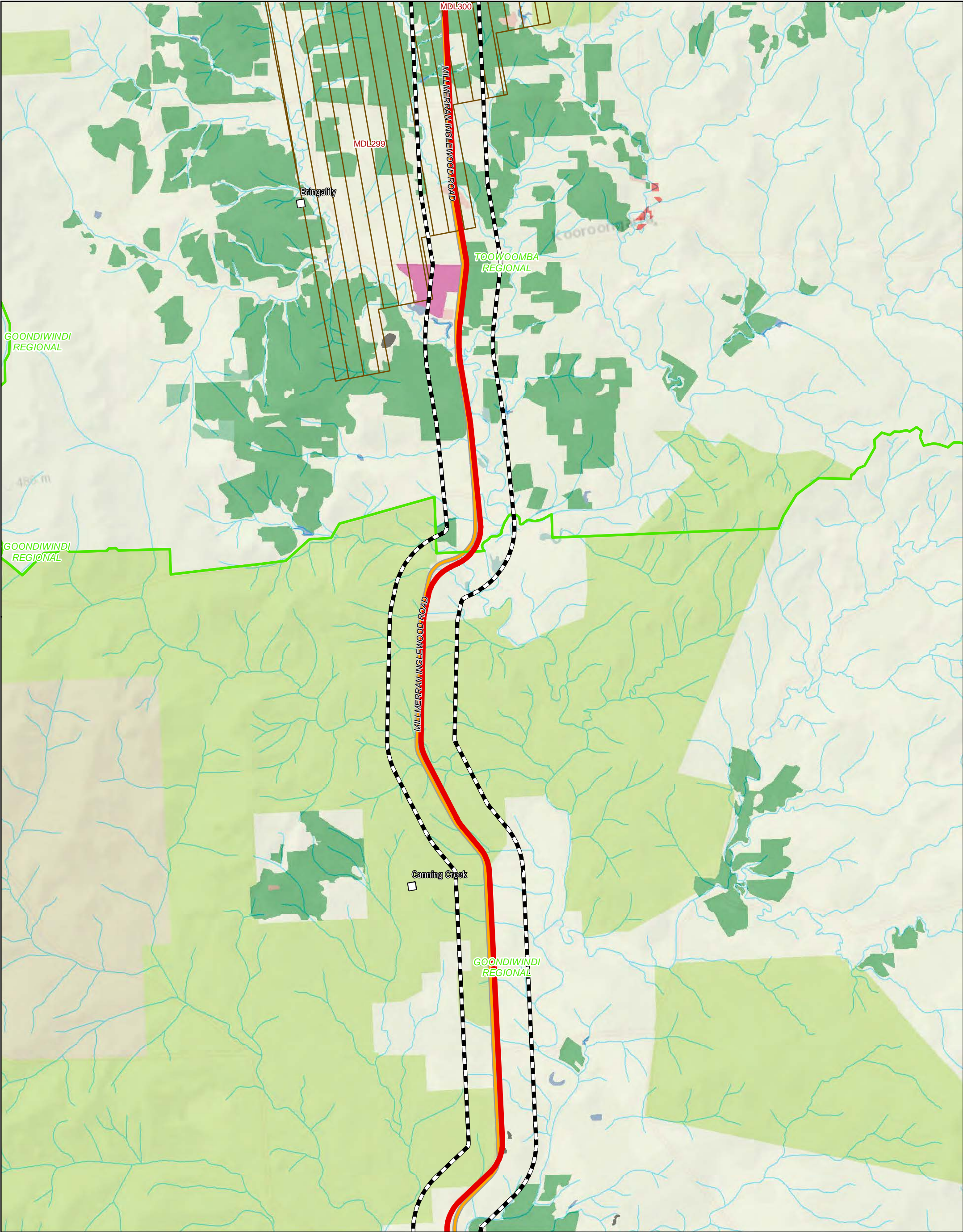
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Figure 5.5
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Coordinate System: GDA 1994 MGA Zone 56
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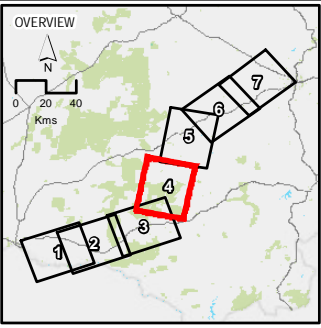


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- Legend**

 - Towns
 - Existing Rail Network
 - Conceptual Alignment
 - Major Roads
 - Waterways
 - Study Area
 - Mineral Development Licence
 - LGA Boundary
- QLUMP Land Use**

 - Nature conservation
 - Other minimal use
 - Grazing native vegetation
 - Production native forests
 - Cropping
- Perennial horticulture
 - Irrigated cropping
 - Intensive animal production
 - Residential and farm infrastructure
 - Mining
 - Reservoir/dam
 - Marsh/wetland



Data sources:
Roads and Rail Network - DNRM 2017
QLUMP Land Use - DSIT1 2017
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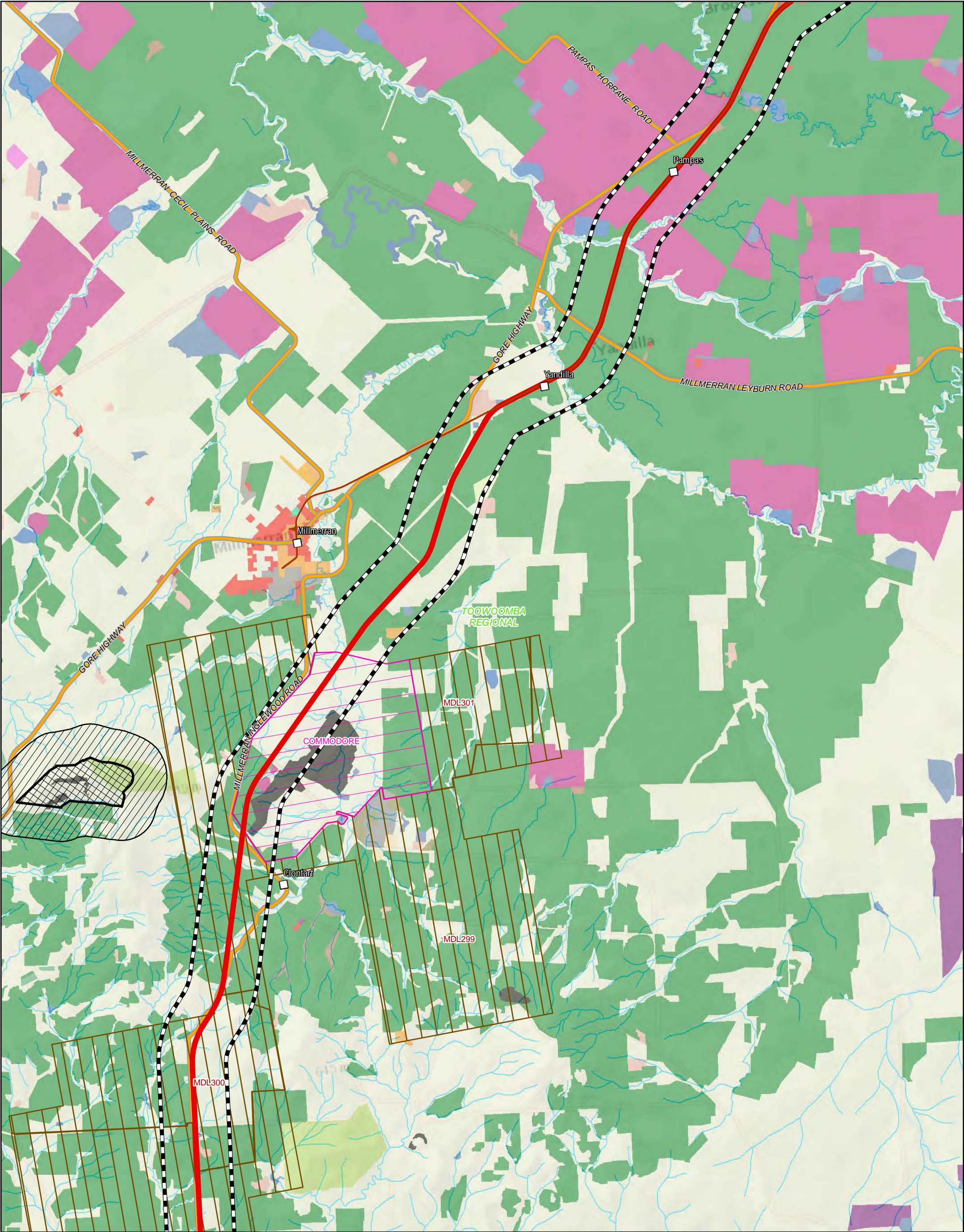
Initial Advice Statement
Border to Gowrie Project


Land Use

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Figure 5.5
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A3 size

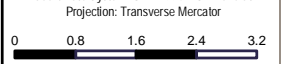




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Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



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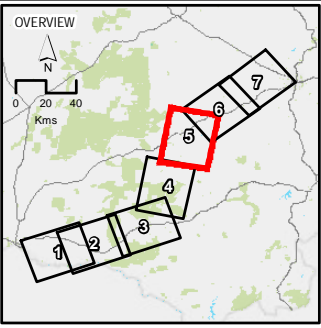
Legend

- Towns
- Existing Rail Network
- Conceptual Alignment
- Major Roads
- Waterways
- Study Area
- Key Resource Area (resource processing area)
- Key Resource Area (separation area)
- Mining Leases
- Mineral Development Licence
- LGA Boundary

OLUMP Land Use

- Nature conservation
- Other minimal use
- Grazing native vegetation
- Production native forests
- Plantation forests
- Grazing modified pastures
- Cropping
- Perennial horticulture
- Land in transition
- Grazing irrigated modified pastures
- Irrigated cropping

- Irrigated perennial horticulture
- Intensive animal production
- Manufacturing and industrial
- Residential and farm infrastructure
- Services
- Utilities
- Transport and communication
- Mining
- Lake
- Reservoir/dam
- River
- Channel/aqueduct



Data sources:
Roads and Rail Network - DNRM 2017
OLUMP Land Use - DSIT 2017
Mining Development Licence / Lease - DNRM 2017
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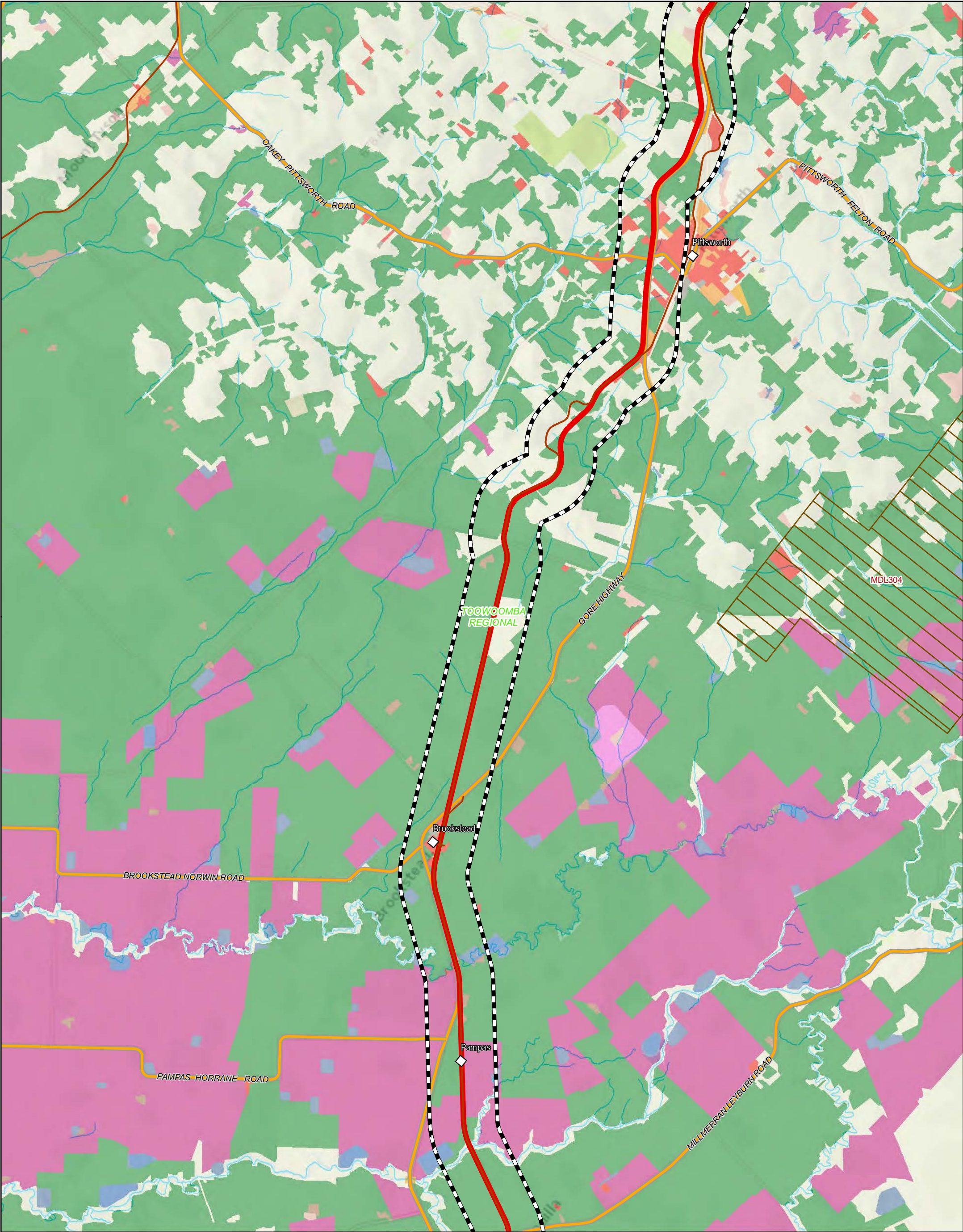
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Border to Gowrie Project

Land Use


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Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



0 0.8 1.6 2.4 3.2
Kms

1:100,000 (when printed at A3)

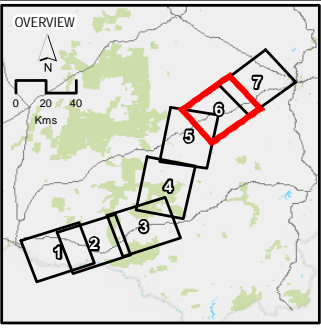
Legend

- Towns
- Existing Rail Network
- Conceptual Alignment
- Major Roads
- Waterways
- Study Area
- Mining Leases
- Mineral Development Licence
- LGA Boundary

QLUMP Land Use

- Nature conservation
- Other minimal use
- Grazing native vegetation
- Production native forests
- Grazing modified pastures
- Cropping
- Perennial horticulture
- Grazing irrigated modified pastures
- Irrigated cropping
- Irrigated perennial horticulture
- Intensive horticulture

- Intensive animal production
- Manufacturing and industrial
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Data sources:
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QLUMP Land Use - DSIT1 2017
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Land Use

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