

CHAPTER 09

Land use and property

NARRABRI TO NORTH STAR—PHASE 2 ENVIRONMENTAL IMPACT STATEMENT

ARTC

INLAND
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Contents

9	LAND USE AND PROPERTY	9-1
9.1	Summary of impacts	9-2
9.2	Assessment approach	9-2
9.2.1	Key tasks	9-2
9.2.2	Legislative and policy context	9-3
9.3	Existing environment	9-3
9.3.1	Land use	9-3
9.3.2	Agricultural land uses	9-21
9.4	Impact assessment	9-31
9.4.1	Risk assessment	9-31
9.4.2	Construction	9-40
9.4.3	Operation	9-41
9.5	Mitigation and management	9-44
9.5.1	Approach to mitigation and management	9-44
9.5.2	Consideration of the interactions between mitigation measures	9-44
9.5.3	Summary of mitigation measures	9-44

Tables

Table 9-1	SEARs for land use and property	9-1
Table 9-2	Land use in Moree Plains LGA	9-3
Table 9-3	Major crops grown in Moree LGA	9-21
Table 9-4	Livestock numbers in Moree LGA	9-21
Table 9-5	Temporary property impacts	9-40
Table 9-6	Permanent property acquisitions	9-42
Table 9-7	Summary of mitigation measures	9-44

Figures

Figure 9-1	Land use zones	9-5
Figure 9-2	Specific land uses	9-13
Figure 9-3	Land and soil capabilities	9-23
Figure 9-4	Property impacts of the proposal—permanent acquisition and temporary occupation	9-32

9 Land use and property

This chapter assesses potential land use and property impacts of the Narrabri to North Star (N2NS) Phase 2 Moree to Camurra North section of Inland Rail (the proposal). It describes the existing environment, assesses the impacts of construction and operation of the proposal, and provides recommended mitigation and management measures.

The Secretary's Environmental Assessment Requirements (SEARs) relevant to land use and property, and where they are addressed, are in Table 9-1. The key socio-economic, land use and property issues also includes socio-economic requirements that are addressed separately in Chapter 18: Economics and associated technical papers. A full copy of the SEARs is in Appendix A.

TABLE 9-1 SEARS FOR LAND USE AND PROPERTY

Key Issue	Requirement	Where addressed
7. Economic, Land Use and Agriculture	1 Economic impacts in accordance with the current guidelines.	Chapter 18
	2 Economic impacts from construction and operation on potentially affected properties, businesses, recreational users and land and water users, including property acquisitions/adjustments, access, amenity and relevant statutory rights.	Chapter 18
	3 Opportunities and processes to prioritise local industry participation practices to source construction goods and services, including training and employment targets within communities along or near the rail alignment.	Chapter 18
	4 Agricultural land use impacts in accordance with the current guidelines including:	Section 9.4.2 Section 9.4.3
	a current and potential Biophysical Strategic Agricultural Land and Class 1, 2 and 3 Agricultural land Classes that will be impacted at Camurra hairpin curve development site, including land capability and agricultural productivity	
	b division or fragmentation of property and changes to property management which could lead to the loss of viability	
	c property access and the efficient and safe crossing of the rail corridor by machinery and livestock	
	d impacts to changes in water regimes	
	e connectivity of property infrastructure severed by the rail corridor; and	
	f livestock exclusion/management to minimise harm and losses.	
	5 Biosecurity risks and management measures relating to the potential for spread of pests, diseases or weeds along the length of the project alignment, in accordance with the 'general biosecurity duty' under the <i>Biosecurity Act 2015</i> .	Chapter 10
	6 Economic impact of temporary accommodation for construction workers on communities near the project site.	Chapter 18
	7 The temporary and permanent interface with road reserves, Crown Land and Travelling Stock Routes and the use and management of these landholdings affected by the proposal.	Section 9.4.2 Section 9.4.3

9.1 Summary of impacts

The proposal intersects regional roads, local roads, private access roads and utilities. The proposal also intersects numerous rivers and creeks, including the Mehi River, Gwydir River, Skinners Creek, and Duffys Creek. The proposal will also require land both temporarily (during construction only) and permanently (for the proposal's operational infrastructure).

Key land use and property impacts include:

- ▶ change in tenure and loss of private property including two residential dwellings
- ▶ temporary impacts to accessibility to both the road network and property access
- ▶ impacts on other infrastructure during construction including utilities and access to facilities and properties
- ▶ biosecurity risks, particularly during earthworks and construction vehicle movement
- ▶ disruption to farming operations, and agricultural vehicle and stock movements on the local road network, access onto the local road network and within properties
- ▶ impacts on TSRs.

Where impacts cannot be avoided, they will be carefully managed through consultation with affected landowners and relevant stakeholders, and the implementation of mitigation measures provided in section 9.5.3 and Chapter 27: Approach to environmental management.

A property and land use impact that is not able to be mitigated is the requirement for the permanent acquisition of approximately 4 hectares (ha) of private property and 9 ha of state-owned property, and the subsequent minor loss of productive agricultural land.

All acquisitions of privately owned land would be undertaken in consultation with landowners and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

9.2 Assessment approach

This section describes the legislative and policy context, and the methodology used to undertake the property and land use assessment in accordance with the relevant requirements of the SEARs. This section details the approach used to:

- ▶ describe the existing environment of the proposal site and immediate surrounds
- ▶ identify potential construction and operation impacts within the permanent and temporary footprints and adjoining properties
- ▶ identify mitigation and management measures to avoid or minimise the identified impacts.

It should be noted that Transport for NSW has commenced a land acquisition process to allow for the upgrade of the Newell Highway, within the vicinity of the proposal. Cadastral boundaries are therefore being updated. Updates have not been finalised, and are therefore excluded from this submission.

9.2.1 Key tasks

The assessment of land use and property included:

- ▶ reviewing existing land use in and surrounding the proposal site through:
- ▶ relevant land use and planning controls (land use zones), involving a review of land use zoning maps for Moree Plains local government area (LGA) (Moree Plains Local Environmental Plan (LEP) 2011)
- ▶ aerial imagery, and observations made during site visits and completion of field surveys as part of other technical assessment to confirm surrounding land uses
- ▶ exploration licenses related to mineral resources and extractive industries
- ▶ travelling stock routes, roads and Crown land
- ▶ identifying properties located within the proposal site, and assessing the potential impacts of construction and operation, including temporary and permanent land requirements
- ▶ identifying measures to avoid, minimise and manage the potential impacts identified.

9.2.2 Legislative and policy context

This assessment is guided by applicable legislation, policies and guidelines including those identified by the SEARs. Overarching legislation and policy, including property acquisition legislation, is addressed in Chapter 3: Statutory context. Land use planning strategies relevant to the proposal are summarised in Chapter 5: Strategic context and need for the proposal.

The main guideline relevant to the assessment is *Infrastructure Proposals on Rural Land* (Department of Primary Industries (DPI), 2013). This guideline provides the potential impacts to be considered by consent authorities in relation to infrastructure proposals, including:

- ▶ impacts on farming operations and livestock
- ▶ resource use and fragmentation
- ▶ increased weed, biosecurity and bushfire risks
- ▶ site rehabilitation.

These matters were considered as part of the assessment of potential impacts on agricultural land. Consideration was also given to conducting a Land Use Conflict Risk Assessment (LUCRA) in accordance with the Land Use Conflict Risk Assessment Guide (DPI, 2011). A LUCRA can be used to identify the effects of a proposed land use on neighbouring land uses, and how these effects can be minimised; however, given that the majority of the proposal would involve work within the existing rail corridor and no associated change in land use, a LUCRA was not considered necessary. Where the proposal would result in a change in the existing land use, i.e. at the Camurra bypass, consideration has been given to the impacts of the change in land use as part of this assessment.

9.3 Existing environment

9.3.1 Land use

9.3.1.1 General land use description

Most of the proposal site is located within the existing rail corridor, which is owned by Transport for NSW (TfNSW) and leased to ARTC for railway use and supporting infrastructure. Existing operations along the corridor are described in further detail in Chapter 2.

Outside the existing rail corridor, the majority of land in the study area consists of agricultural and rural properties between the townships of Moree and Camurra. Properties include open grazing land, land used for cropping, scattered vegetation, residences and other farm buildings.

The majority of land within the study area is held in freehold title. This includes properties held in freehold by private owners and various state government departments. The study area also comprises areas identified as Crown land, including travelling stock routes, public roads and waterways.

Table 9-2 is a summary of the principal land uses within the Moree Plains LGA, with calculations based on mapping data provided by the Office of Environment and Heritage (OEH). Grazing and cropping land uses account for 89 per cent of the total land area in the Moree Plains LGA. Agricultural land uses are discussed in further detail in section 9.3.2.

TABLE 9-2 LAND USE IN MOREE PLAINS LGA

Land use	Land area (ha)	Per cent (%)
Grazing	962,157	54
Cropping	626,775	35
Conservation area	79,820	4
Tree and shrub cover	39,431	2
Transport and other corridors	51,000	2
River and drainage system	13,170	0.7
Urban	7,021	0.4
Special category	4,435	0.2
Mining and quarrying	6,632	0.4
Wetland	472	0.03
Horticulture	1,051	0.06
Intensive animal production	105	0.006
Power generation	11	0.001

9.3.1.2 Land use zoning

The local planning instruments controlling land use zoning, and amalgamation and subdivision of land are LEPs, which are administered by local councils. The study area is located within one LGA, being Moree Plains LGA. The relevant LEP for this LGA is the Moree Plains LEP 2011.

Land use zoning of the study area is shown in Figure 9-1 which demonstrates that the vast majority of the study area is zoned as Primary Production (RU1). The objectives of the Primary Production (RU1) zone seek to prevent the fragmentation and alienation of agricultural land and to protect significant agricultural resources in recognition of their value to the longer term economic suitability of Moree Plains.

The southern section of the existing rail corridor, up to chainage (Ch) 668.700, is zoned as Infrastructure (SP2) (refer to Figure 9-1). Where the rail corridor passes through the north of the Moree township, surrounding land is predominantly zoned as General Residential (R1) or Public Recreation (RE1).

The minimum lot size, as per the minimum lot size map in the Moree LEP, for relevant land use zones shown in Figure 9-1 include:

- ▶ RU1 Primary production—650 ha
- ▶ R1 General residential—650 m²
- ▶ R5 Large Lot residential—2.5 ha
- ▶ RE2 Private recreation—no minimum lot size
- ▶ SP1 Special activities—no minimum lot size
- ▶ SP2 Infrastructure—no minimum lot size
- ▶ B6 Enterprise corridor—no minimum lot size
- ▶ B3 Commercial core—no minimum lot size
- ▶ B2 Local centre—no minimum lot size
- ▶ RE1 Public recreation—no minimum lot size
- ▶ IN2 Light industrial—no minimum lot size.

9.3.1.3 Travelling stock reserves, roads and Crown land

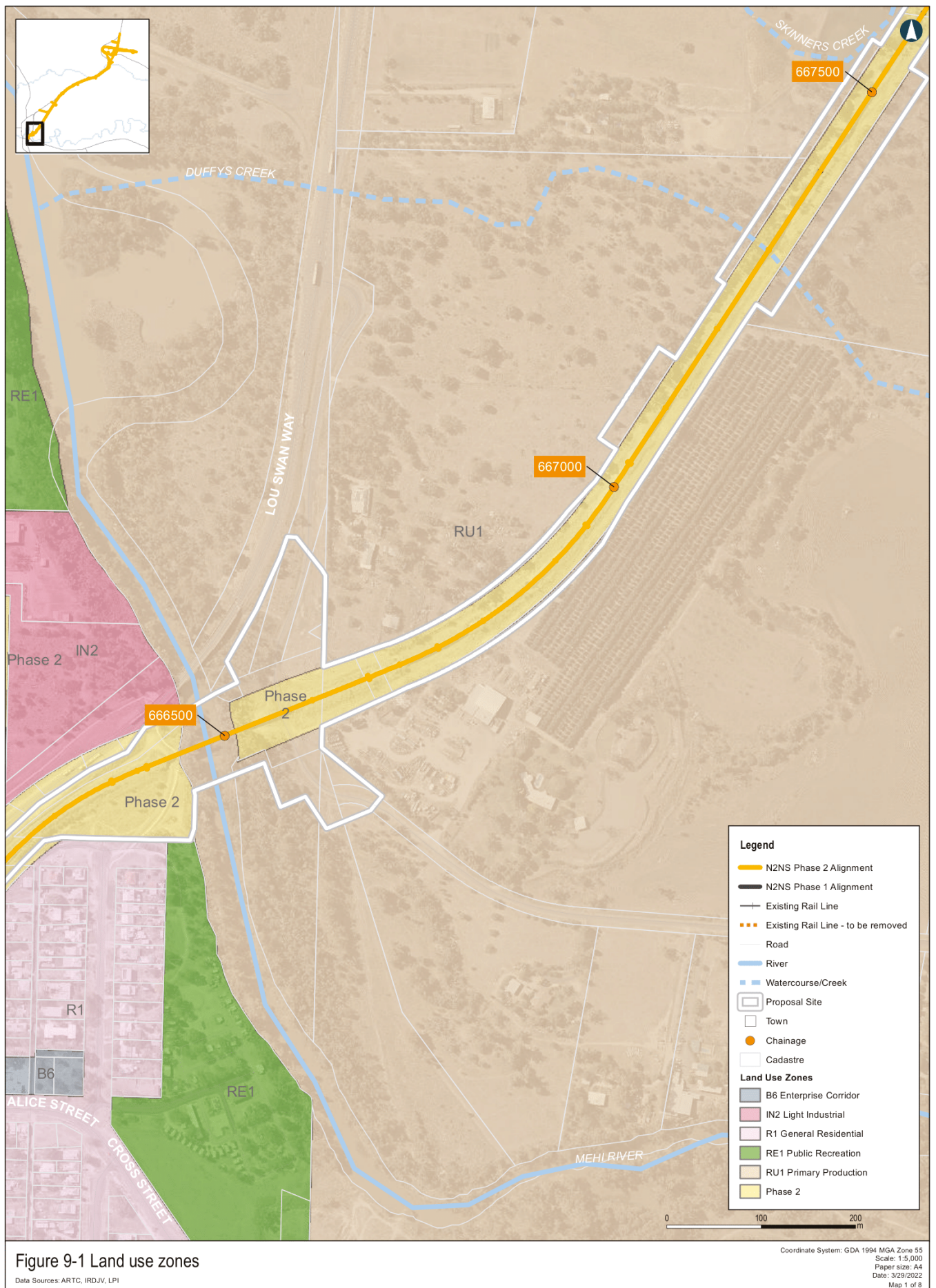
The study area consists of a network of major, local and private rural roads, some of which intersect the proposal site. The local road network provides direct access to properties and to the main road network. The Newell Highway is a major road which runs generally parallel to the rail corridor for majority of its length but does not cross the rail line. Other key public roads that cross the rail line are Gwydirfield Road, Back Pally Road and The Rocks Road. The public road network is described further in Chapter 11: Traffic and transport.

Travelling stock routes are located in the study area. Travelling stock routes are parcels of Crown land reserved under legislation for use by travelling stock. They provide vital pasture reserves for travelling or grazing stock. ARTC would continue liaising with Local Land Services (LLS) during detailed design to ensure safe crossings for livestock within travelling stock routes either side of the railway line are maintained throughout construction and operation. NSW LLS oversees the management of these reserves which can be used for other purposes, including biodiversity conservation, Indigenous culture and recreation. Travelling stock routes are shown on Figure 9-2 and are located in Moree, crossing the proposal at Ch 666.500, and Camurra, between Ch 675.300 and 677.800.

The conservation value of travelling stock routes are formally assessed and recorded based on their conservation status, landscape context and vegetation condition. The Travelling Stock Routes Conservation Value Map (DPIE, 2020) identifies the Moree travelling stock routes as being of high conservation value, while the parcels in Camurra are of medium conservation value. The travelling stock routes are primarily used for travelling and grazing stock, they are also widely recognised for playing a key role in, and are valued in the region for, conserving the ecological connectivity of the landscape that is otherwise heavily fragmented by agricultural land uses.

9.3.1.4 Mineral resources and extractive industries

There are no mining leases, mineral exploration leases or petroleum licences in the study area.



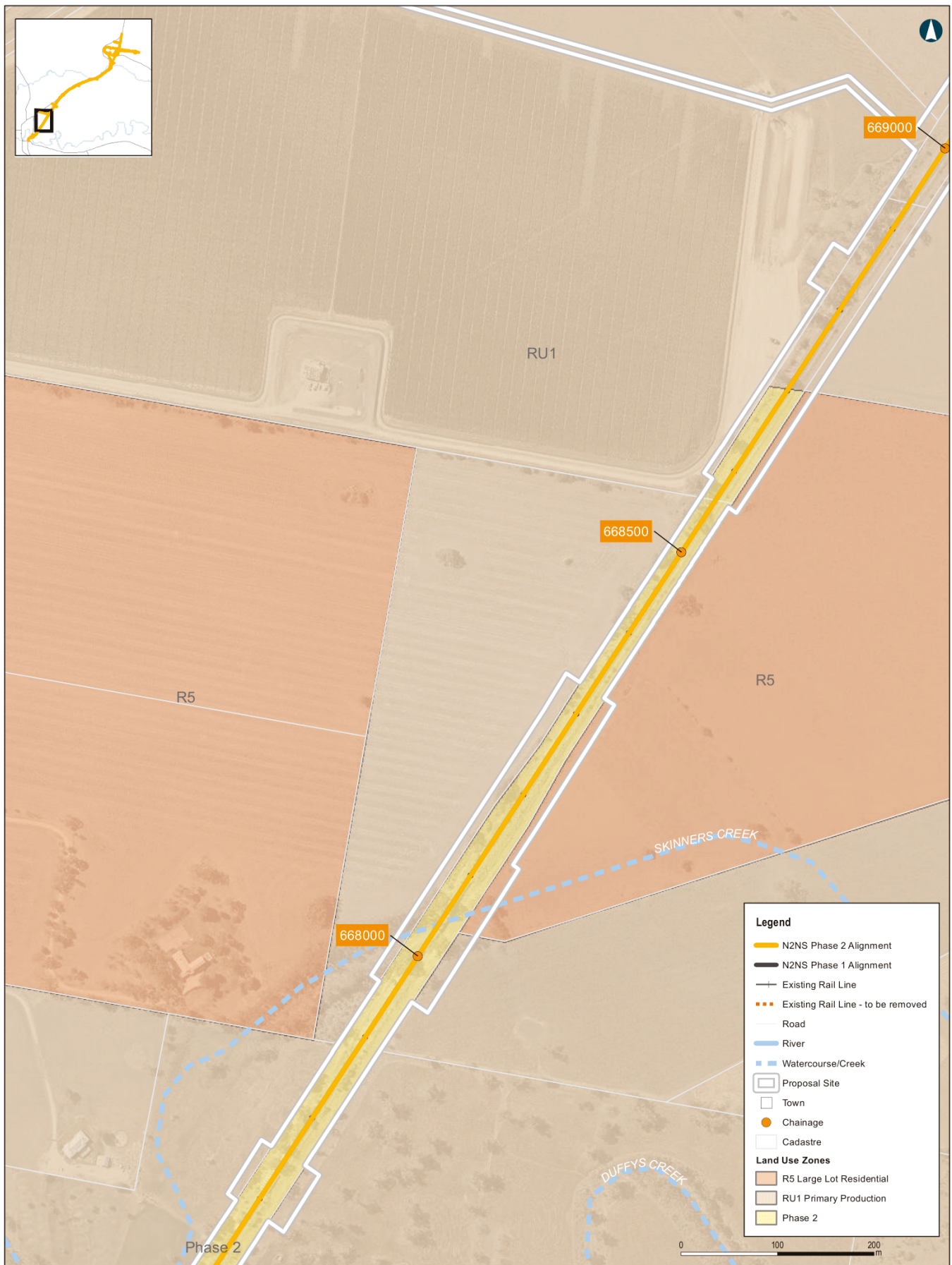


Figure 9-1 Land use zones

Data Sources: ARTC, IRDJV, LPI

N2NS_SIP2_EIS_F09_01_LandUse_Zones.mxd



Figure 9-1 Land use zones

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 3/29/2022
 Map 3 of 8

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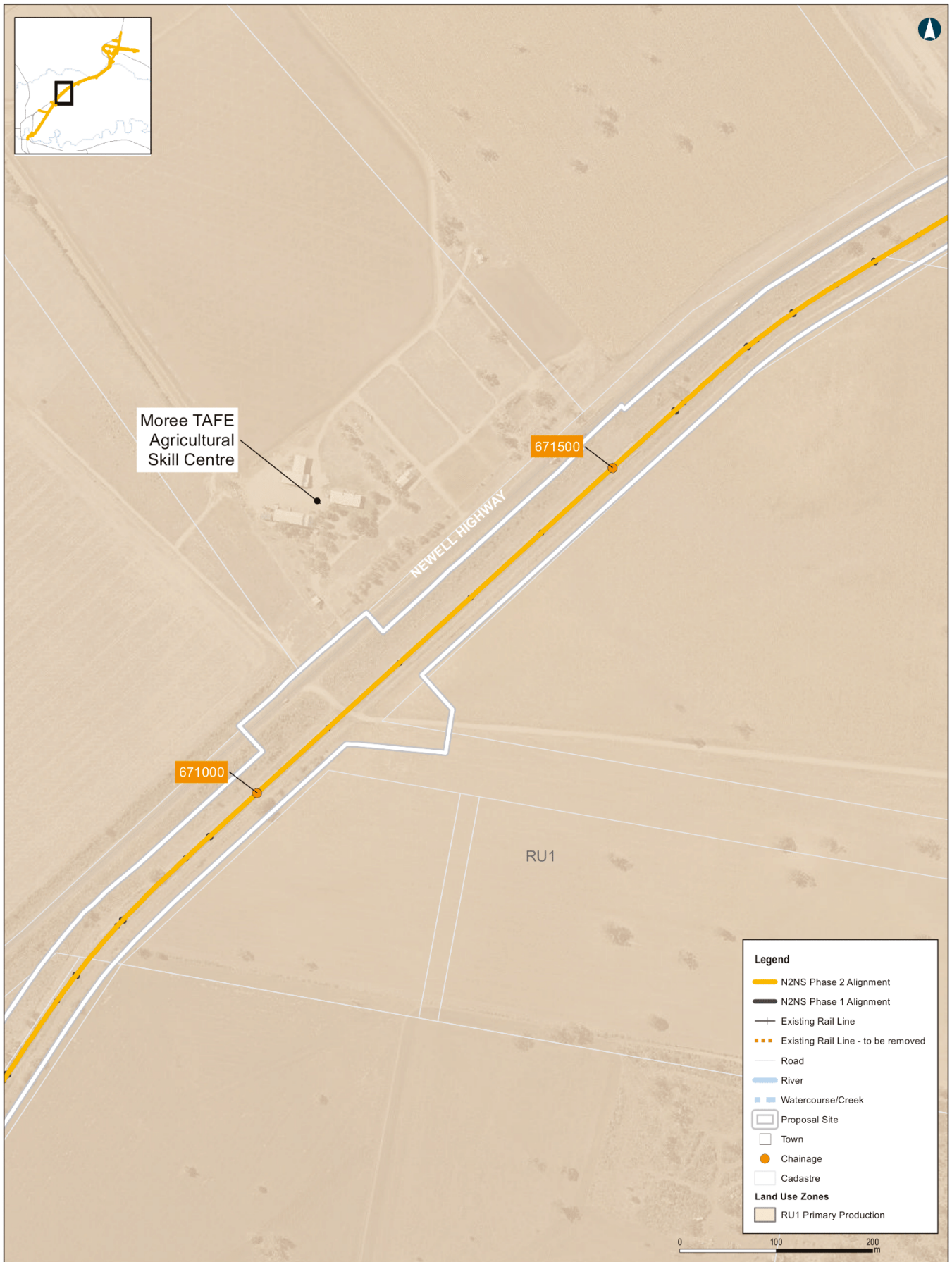


Figure 9-1 Land use zones

Data Sources: ARTC, IRD/JV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 3/29/2022
 Map 4 of 8

N2NS_SP2_E18_F09_01_LandUse_2023.mxd



Figure 9-1 Land use zones

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 3/29/2022
 Map 5 of 8

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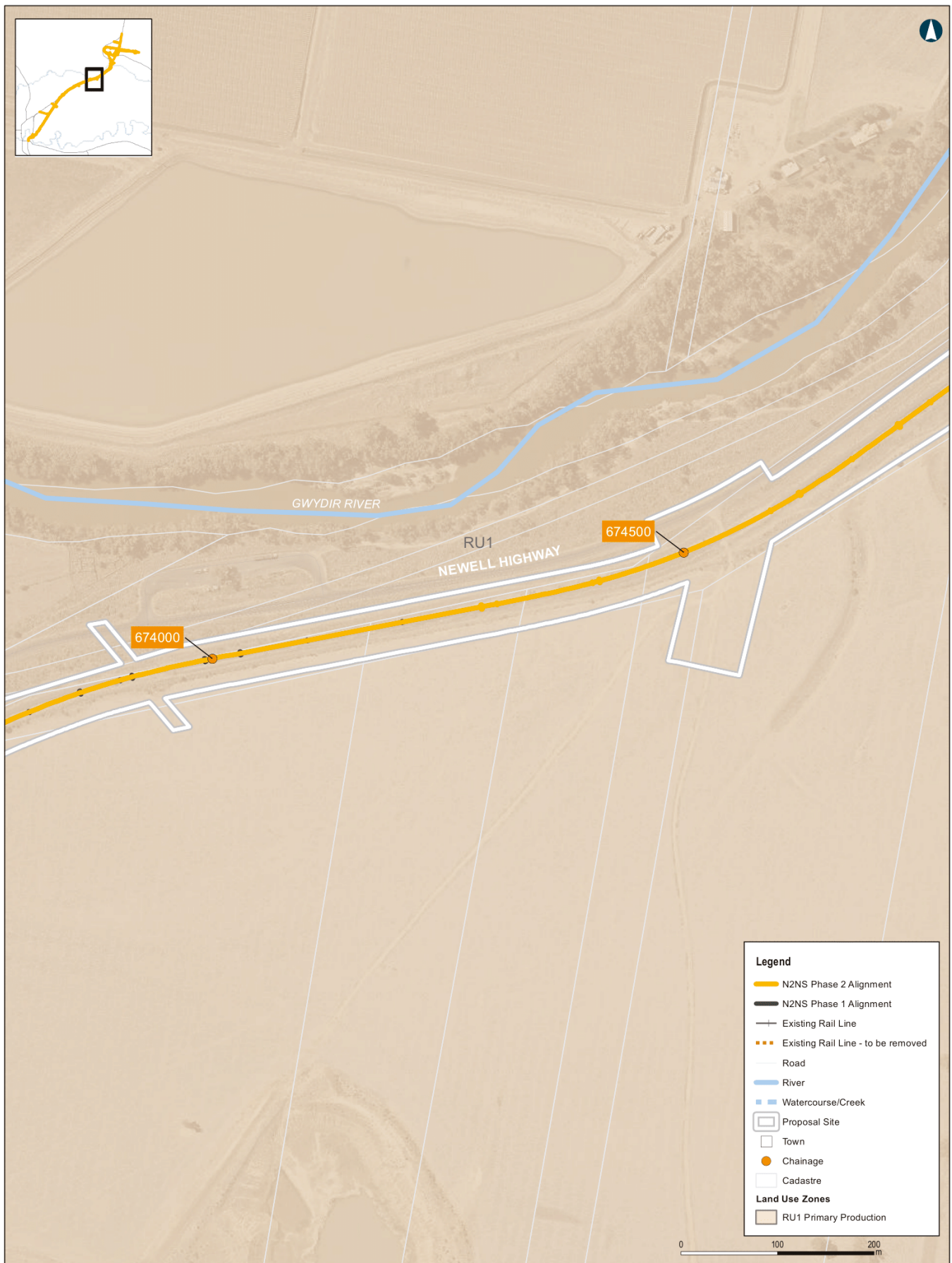


Figure 9-1 Land use zones

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 3/29/2022
 Map 6 of 8

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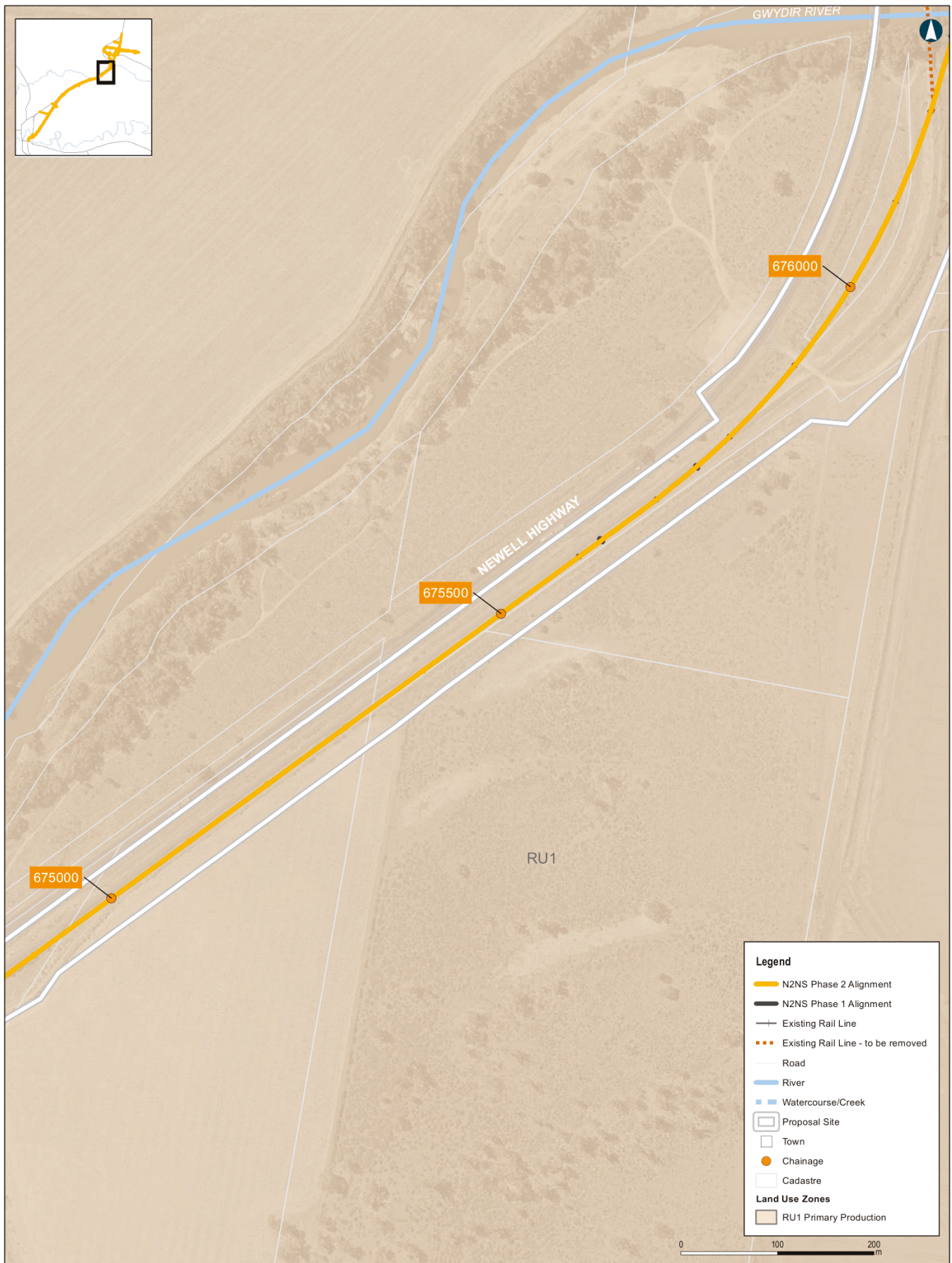


Figure 9-1 Land use zones

Data Sources: ARTC, IRD/JV, LPI

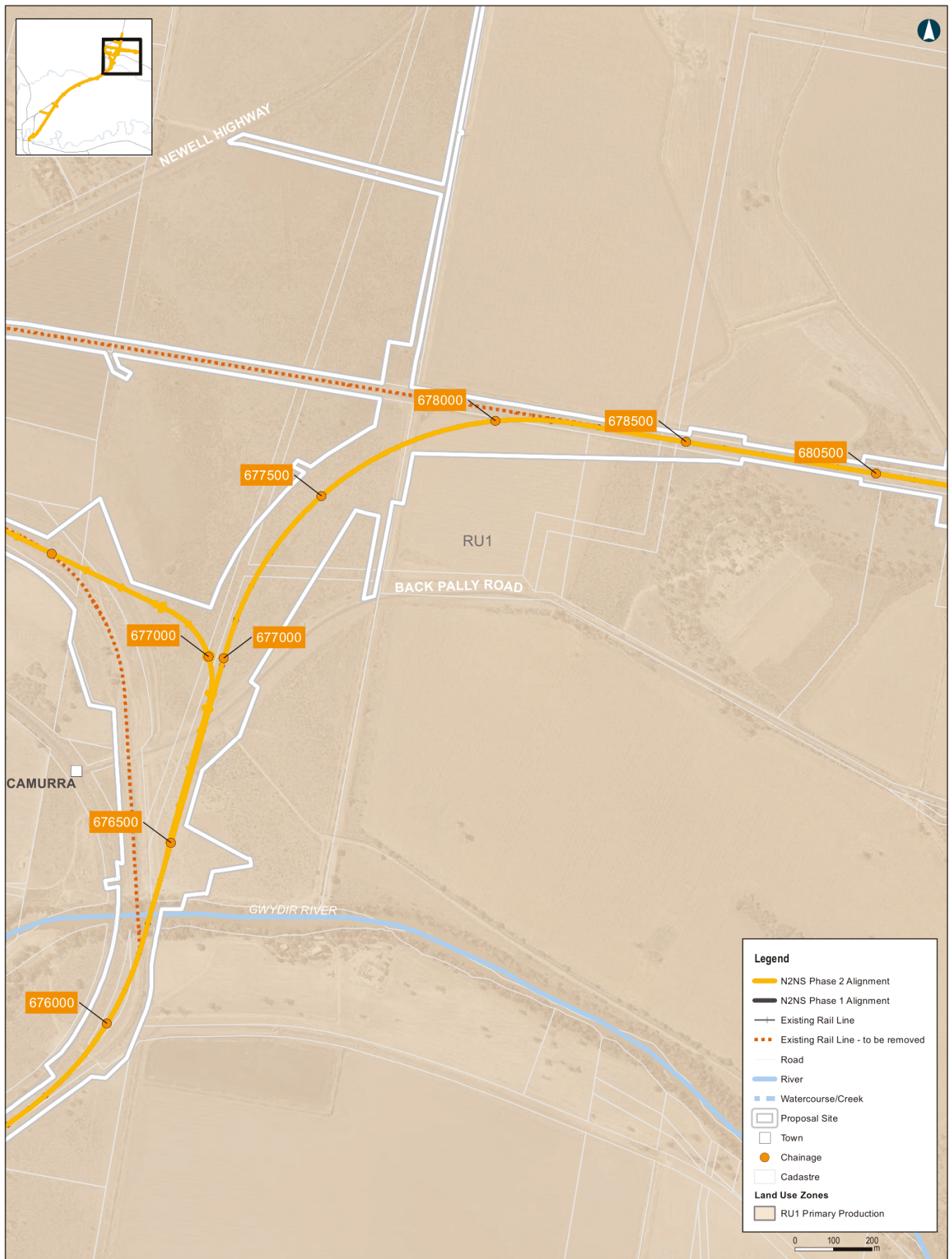


Figure 9-1 Land use zones

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:12,500
 Paper size: A4
 Date: 3/29/2022
 Map 8 of 8

N2NS_SIP2_EIR_FIG_9-1_LandUse_Zones.mxd



Figure 9-2 Specific land uses

Data Sources: ARTC, IRD/V, LPI

N2NS_SF2_EIS_P08_02_SpecificLandUses_V1.mxd





Figure 9-2 Specific land uses

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A3
 Date: 7/26/2021
 Map 4 of 8

N2NS_SF2_EIR_F09_02_SpecificLandUses_v01.mxd



Figure 9-2 Specific land uses

Data Sources: ARTC, IRD/V, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A3
 Date: 7/26/2021
 Map 5 of 8

N2NS_SF2_EIS_P09_02_SpecificLanduses_Gr1.mxd

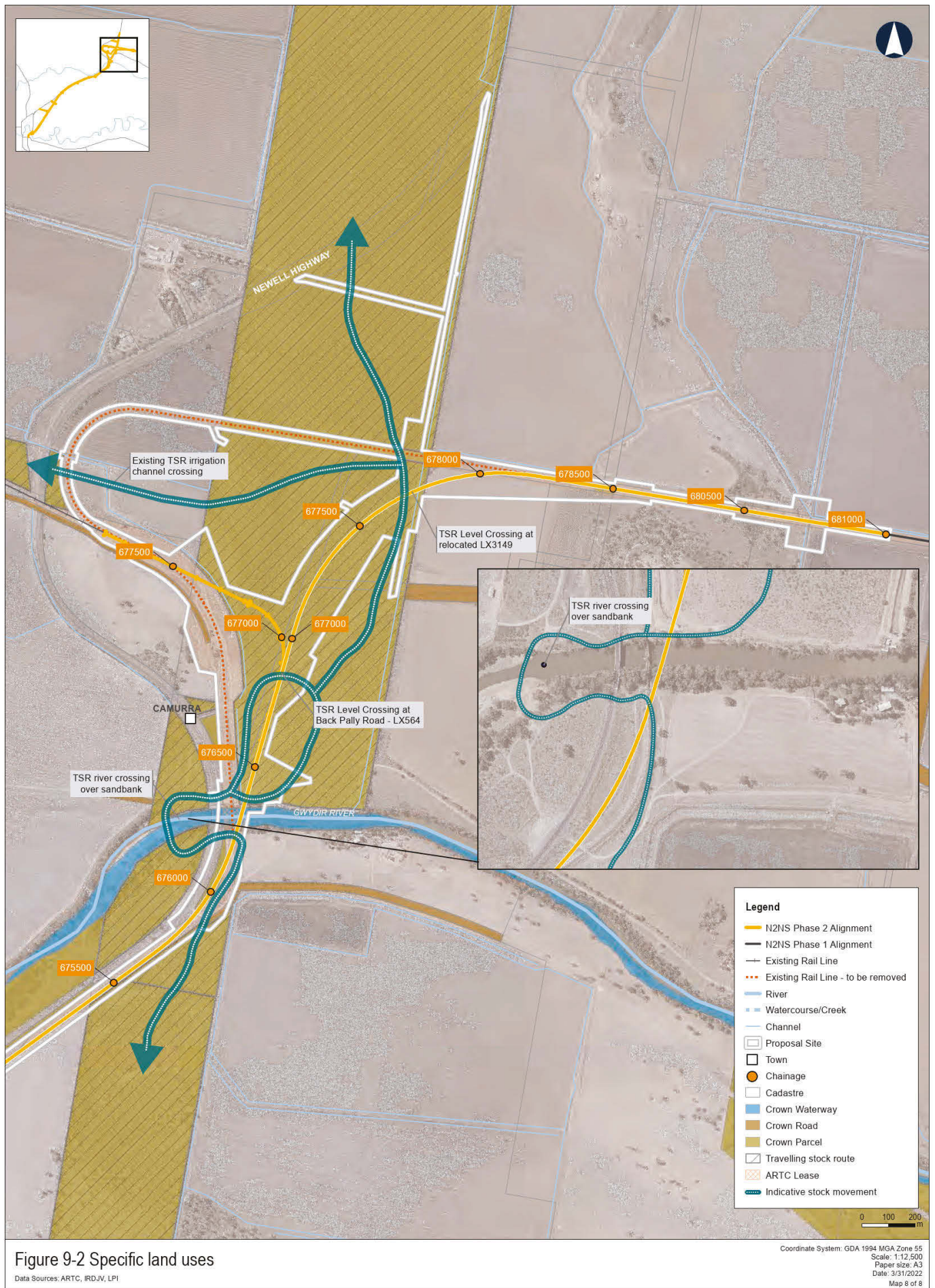


Figure 9-2 Specific land uses

Data Sources: ARTC, IRD/JV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A3
 Date: 7/26/2021
 Map 6 of 8

N2NS_SF2_EIS_P09_P2_SpecificLandUses_071.mxd



9.3.2 Agricultural land uses

9.3.2.1 Agricultural land use

The landscape surrounding the proposal site is generally cleared of native woody vegetation and is in agricultural production. The majority of the properties in the study area are used for livestock and cropping enterprises. Lesser land uses include agricultural infrastructure (including sheds, stock yards, roads and livestock water), farm residential areas, public roads, native vegetation and plantations.

9.3.2.2 Agricultural activities

The Moree Plains LGA is dominated by irrigated cropping and other broad-acre cropping (DPI, 2018). In the Moree Plains LGA, the major crops grown by area are wheat, cotton, chickpeas, barley, and sorghum (refer to Table 9-3). A rapid expansion of irrigated agriculture coincided with the construction of Copeton Dam in 1968. Copeton Dam, one of the largest dams in inland NSW, provides water to support communities, agriculture and the environment in the Gwydir Valley.

TABLE 9-3 MAJOR CROPS GROWN IN MOREE LGA

Crop variety	Cropping land (ha)	Per cent (%)
Wheat	334,403	41
Cotton	148,342	18
Chickpeas	131,510	16
Barley	107,775	13
Sorghum	67,078	8
Faba beans	12,569	2
Mung beans	7,285	0.9
Canola	5,944	0.7
Total	814,906	

Source: ABS (2012a). *Agricultural Commodities Small Area Data, Australia, 2010.11, Cat. No. 7121.0*

In addition to cropping activities, livestock grazing (sheep and cattle), and cattle feedlotting are major enterprises (refer to Table 9-4).

TABLE 9-4 LIVESTOCK NUMBERS IN MOREE LGA

Livestock	Livestock numbers
Cattle (beef)	108,394
Sheep	140,482
Lamb	93,044

Source: ABS (2012b) *Agricultural Commodities Small Area Data, Australia, 2010.11, Cat. No. 7121.0*

9.3.2.3 Land and soil capability

In NSW, rural land is classified under the land capability classification system. This system aims to delineate classes of rural land based on inherent physical capacity to sustain a range of land uses and management practices in the long term without degradation to soil, land, air and water resources. The land capability classes range from 1 (highest capability land) to 8 (lowest capability land).

Land and Soil Capability (LSC) mapping identifies that the majority of the study area consists primarily of class 2 (very high capability) land (refer to Figure 9-3). Class 2 is considered to be very good cropping land with often fertile soils and short, gradual slopes (1 to 3 per cent, less than 500 metres (m) in length) (OEHL, 2012). This land is capable of most agricultural land uses and land management practices, including intensive cropping with cultivation. Class 2 land is described as having only slight limitations and can be subject to sheet, rill and gully erosion as well as wind erosion and soil structure decline; however, these limitations can be controlled through readily available and easily implemented management practices (OEHL, 2012).

9.3.2.4 Irrigation

Irrigation channels are present in the north section of the study area in Camurra. These irrigation systems are licensed to private landholders and used for agricultural purposes.

The irrigation channels commence from two pump stations located near the banks of the Gwydir River, with one pump station currently located over the new rail track alignment at Ch 676.250. This pump station directs water through a channel that travels parallel to the existing Weemelah line before crossing the Camurra hairpin and travelling to properties west of the study area. A second pump station is located 400 m east of Ch 676.250 and supplies water along an irrigation channel, which travels north and crosses the new rail track at Ch 677.750, supplying water to properties north of the study area.

9.3.2.5 Property access and movements

Agricultural properties in the study area are currently serviced by public roads (externally) as well as internal tracks and gates within the property holdings. Public roads, including current level crossings, are shown on Figure 9-1 and described in Chapter 11: Traffic and transport.

Properties generally have multiple points through which movement may occur across a property holding and onto public roads. The internal informal track networks on properties allow for the efficient movement of vehicles, equipment and stock.

Property holdings to the south, closer to Moree are smaller residential house lots (zoned R1). Further to the north, lots are zoned R5 Large Lot Residential and RU1 Primary Production and, as expected, are larger to accommodate primary production. Currently the lots are generally unfragmented by the Newell Highway and the existing rail line, with only a few properties split by the transport corridor, as shown in Figure 9-1. The proposal is not likely to impact on property fragmentation as it will generally be within the existing corridor.



Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 9/16/2021
 Map 1 of 8

N2NS_SIP2_EIR_P09_03_LandAndSoilCapabilities_v3x2.mxd





Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 9/16/2021
 Map 3 of 8

N2NS_SIP2_S18_F09_03_LandAndSoilCapabilities_v202.mxd



Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:5,000
Paper size: A4
Date: 9/16/2021
Map 4 of 8

N2NS_SP2_S16_P09_03_LandAndSoilCapabilities_3x2.mxd



Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 9/16/2021
 Map 5 of 8

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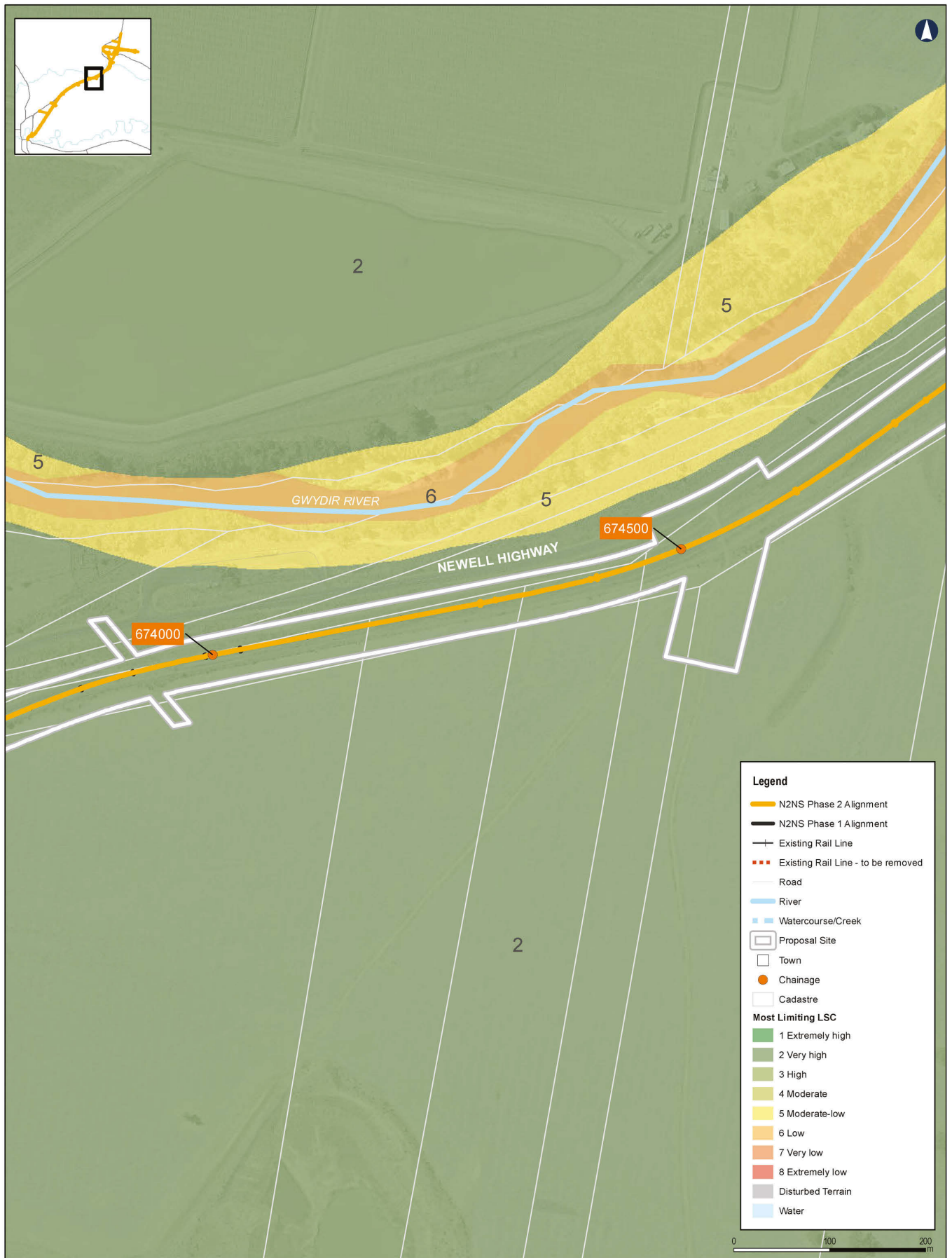


Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:5,000
 Paper size: A4
 Date: 9/16/2021
 Map 6 of 8

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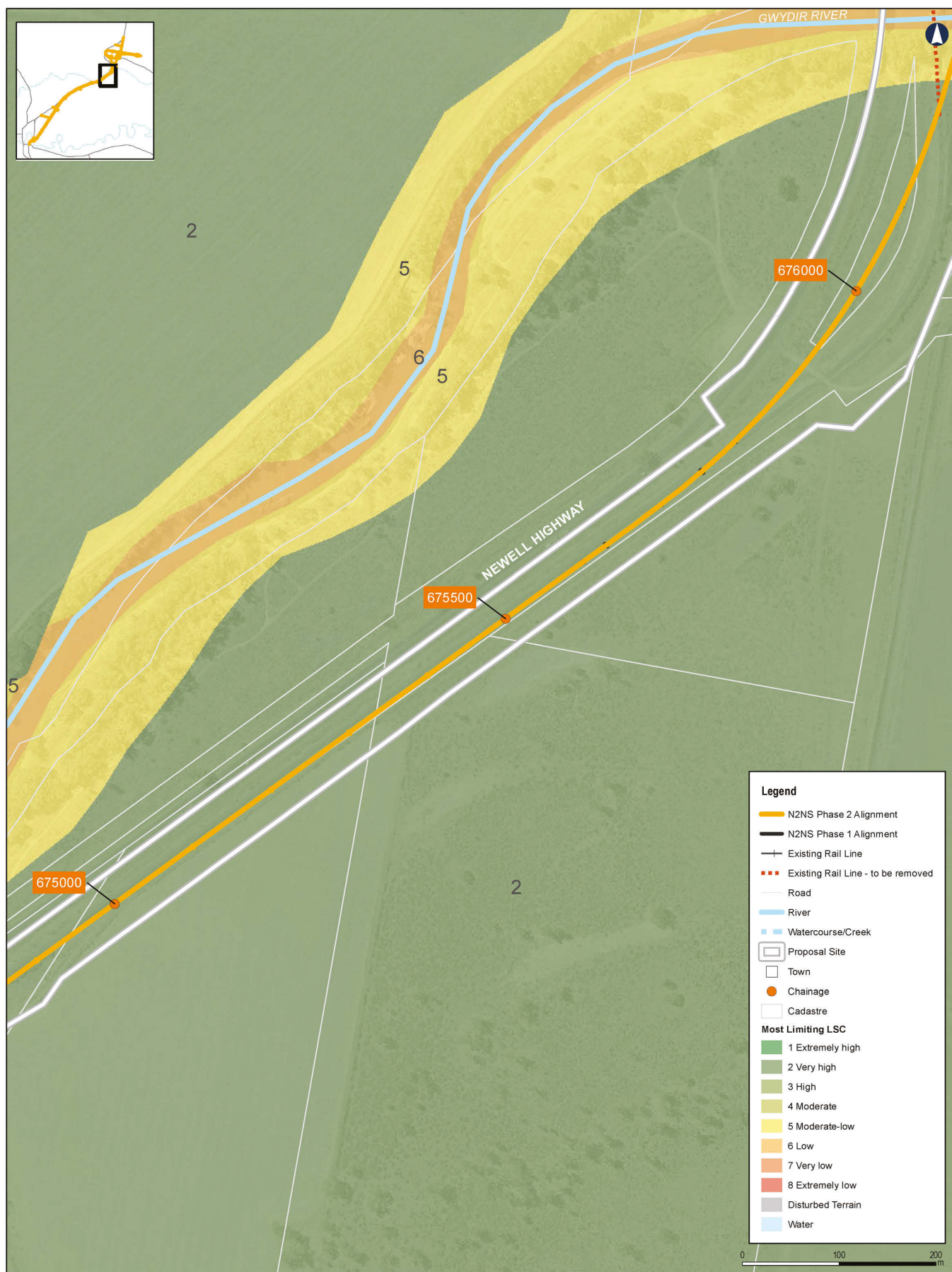


Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

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Figure 9-3 Land and soil capabilities

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:12,500
 Paper size: A4
 Date: 9/16/2021
 Map 8 of 8

N2NS_SIP2_S18_F09_03_LandAndSoilCapabilities_v3x2.mxd

9.4 Impact assessment

9.4.1 Risk assessment

9.4.1.1 Potential impacts

The environmental risk assessment for the proposal (summarised in Appendix C: Environmental risk assessment) included an assessment of the potential risks to land use and property in the study area. Risks assessed as high include:

- ▶ impacts on other infrastructure during construction including utilities and access to facilities and properties
- ▶ biosecurity risks, particularly during earthworks and construction vehicle movement
- ▶ disruption to farming operations, and agricultural vehicle and stock movements on the local road network, access onto the local road network and within properties
- ▶ impacts on travelling stock routes.

The proposal minimises the potential for direct impacts to land use and properties, as the majority of works would be undertaken within the existing rail corridor. For works outside the corridor (particularly the Camurra bypass), land use and property information has been considered in the proposal design process to inform the proposal location and construction methodology, to minimise potential impacts.

Implementing the land use and property mitigation measures in section 9.5 would minimise the potential for some land use and property impacts. Temporary property occupation and property acquisition would be required to construct and operate this proposal and affected landowners will be compensated, as described in section 9.5. Figure 9-4 shows the property impacts of the proposal in relation to areas requiring permanent acquisition compared to areas that require temporary occupation for purposes of construction, which would be secured by agreement with the relevant landowners.

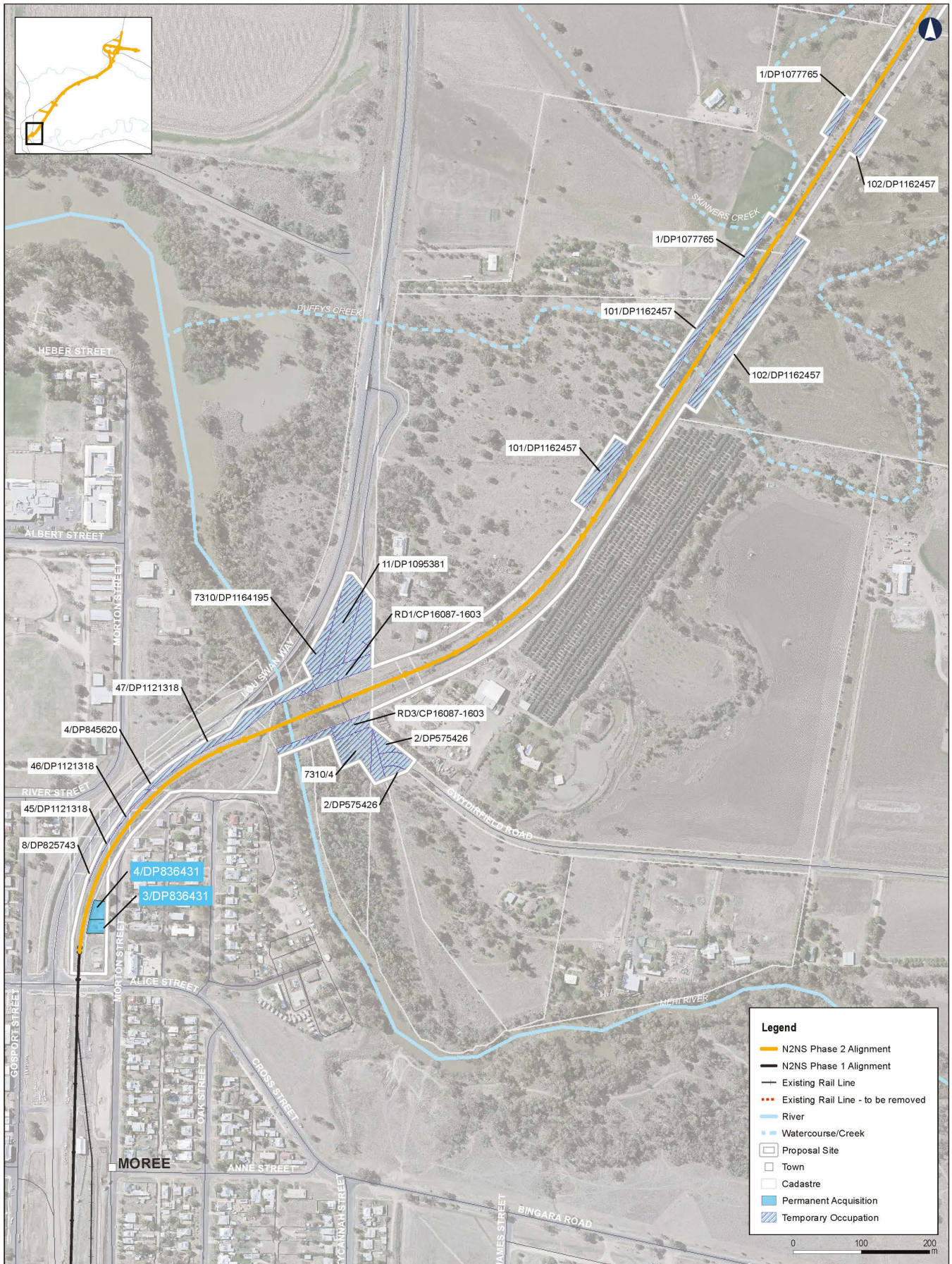


Figure 9-4 Property impacts of the proposal - permanent acquisition and temporary occupation

Data Sources: ARTC, IRD/V, LPI

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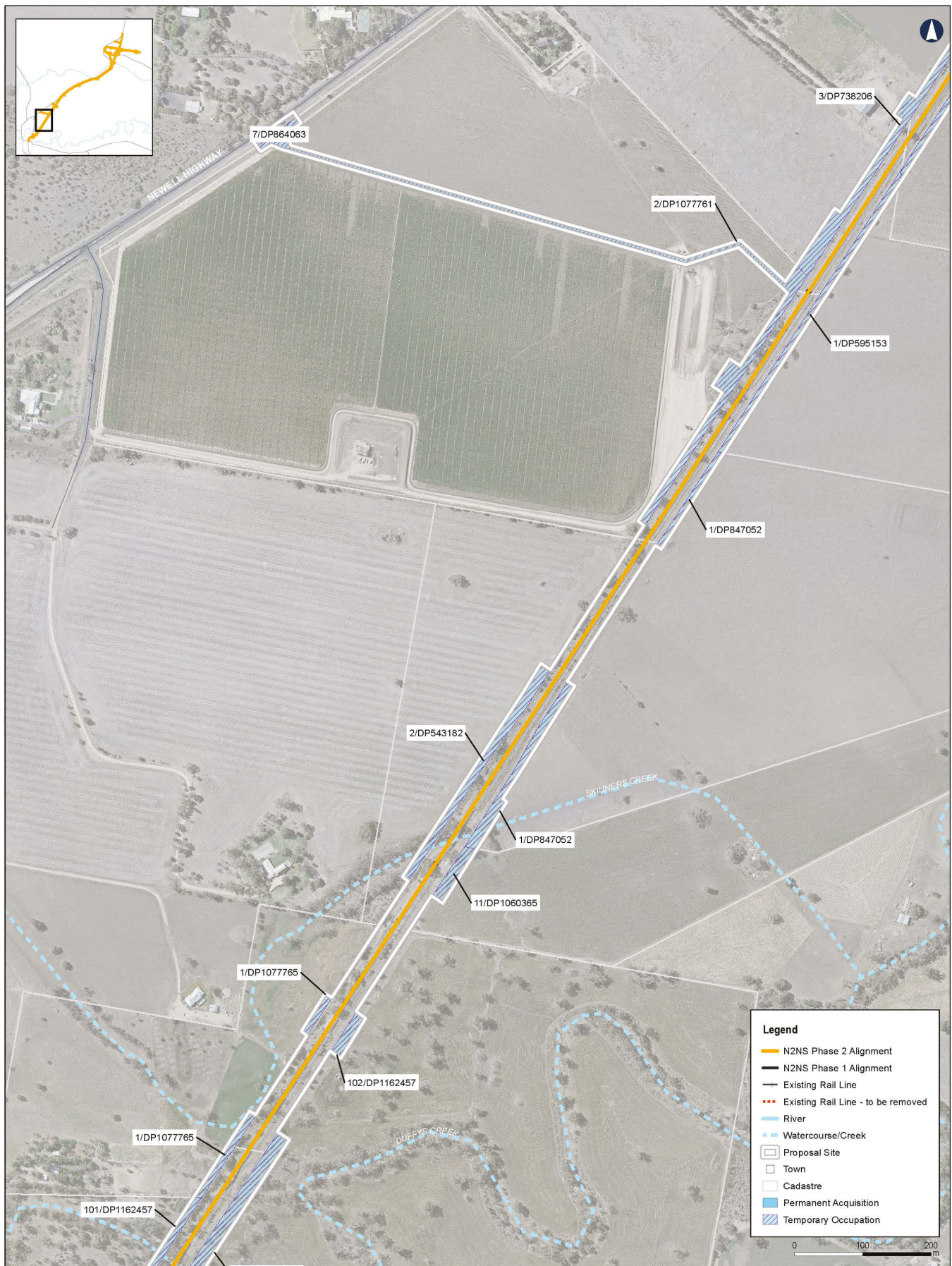


Figure 9-4 Property impacts of the proposal - permanent acquisition and temporary occupation

Data Sources: ARTC, IRDJV, LPI

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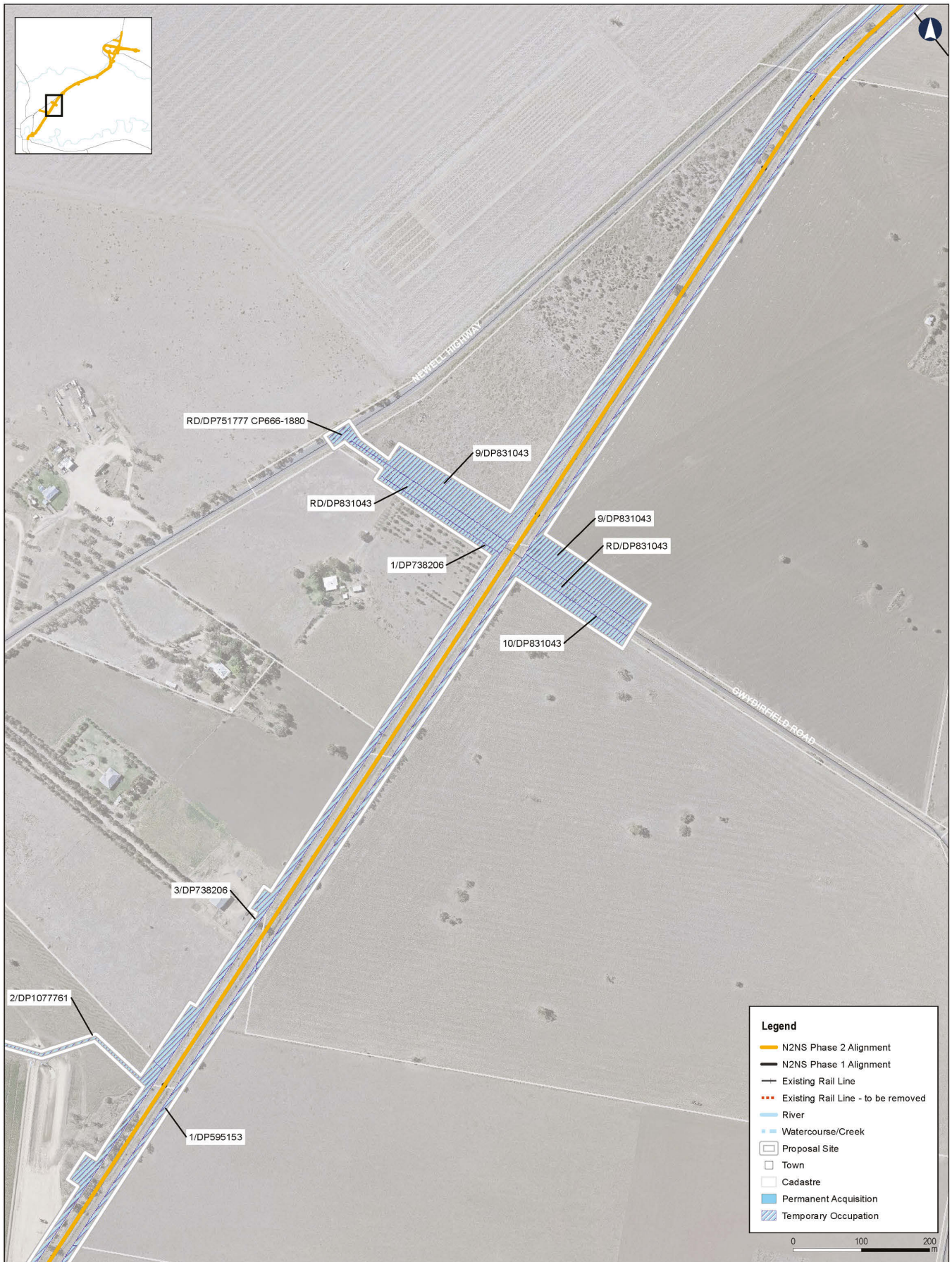
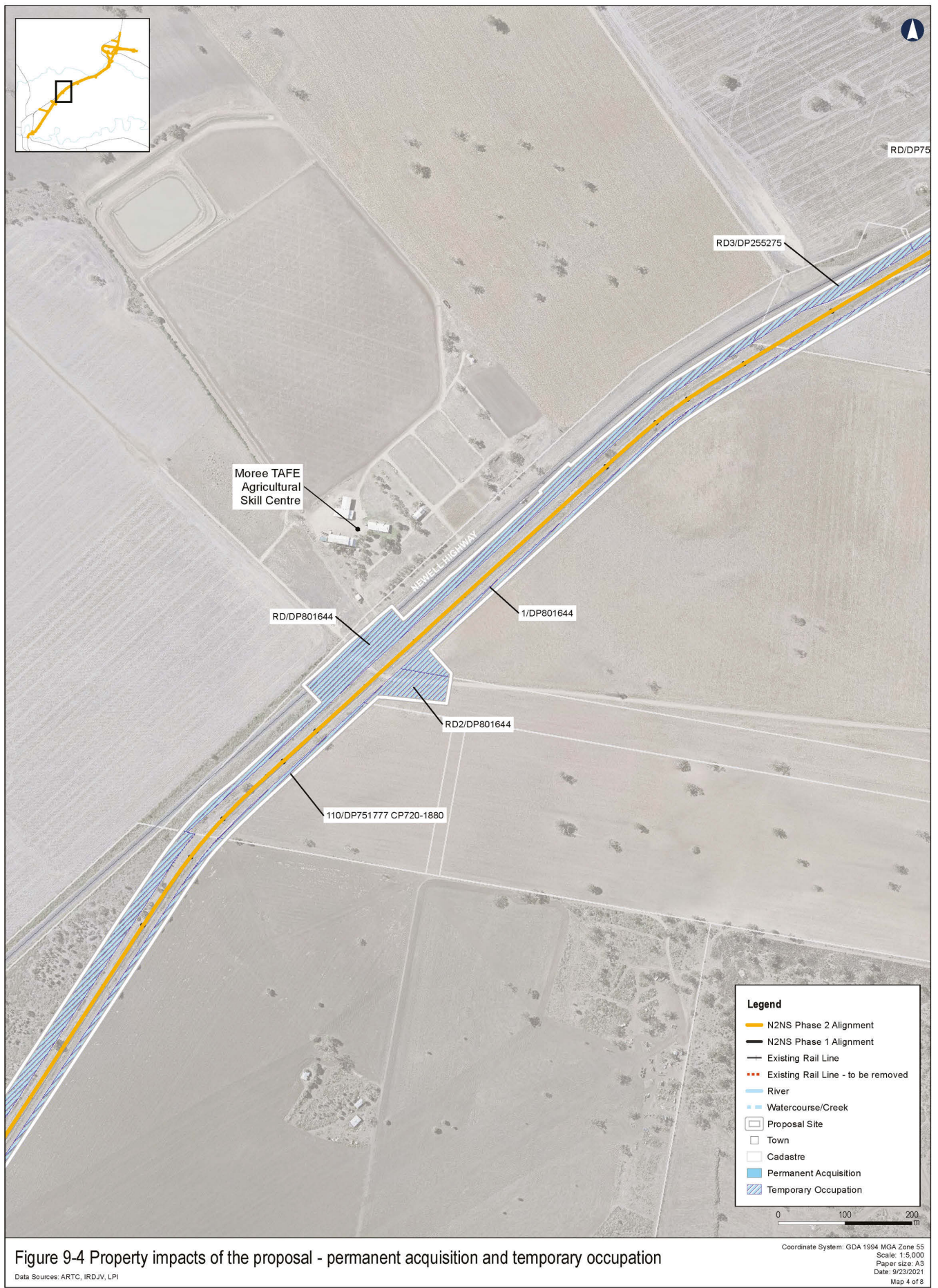
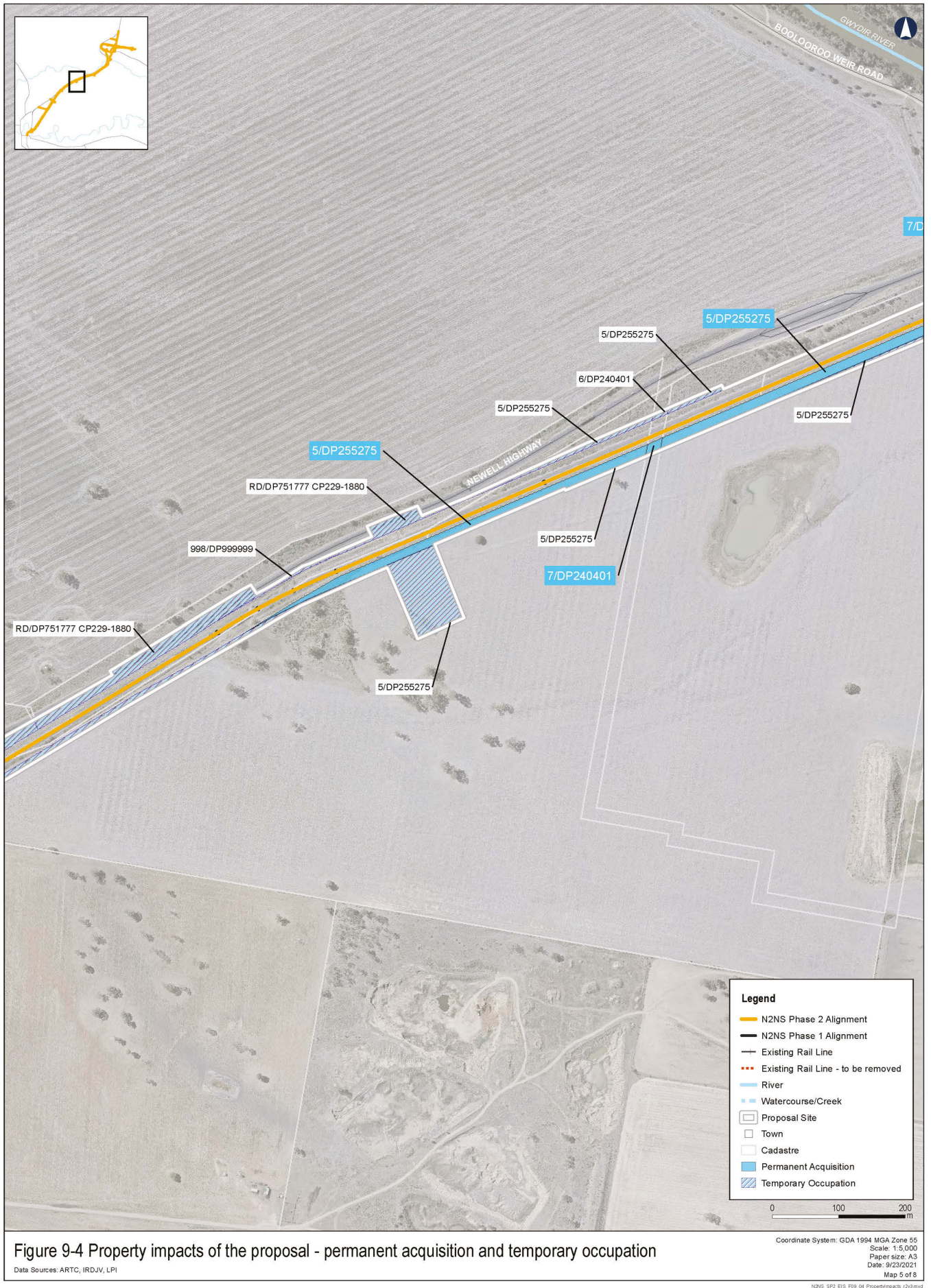


Figure 9-4 Property impacts of the proposal - permanent acquisition and temporary occupation

Data Sources: ARTC, IRDJV, LPI

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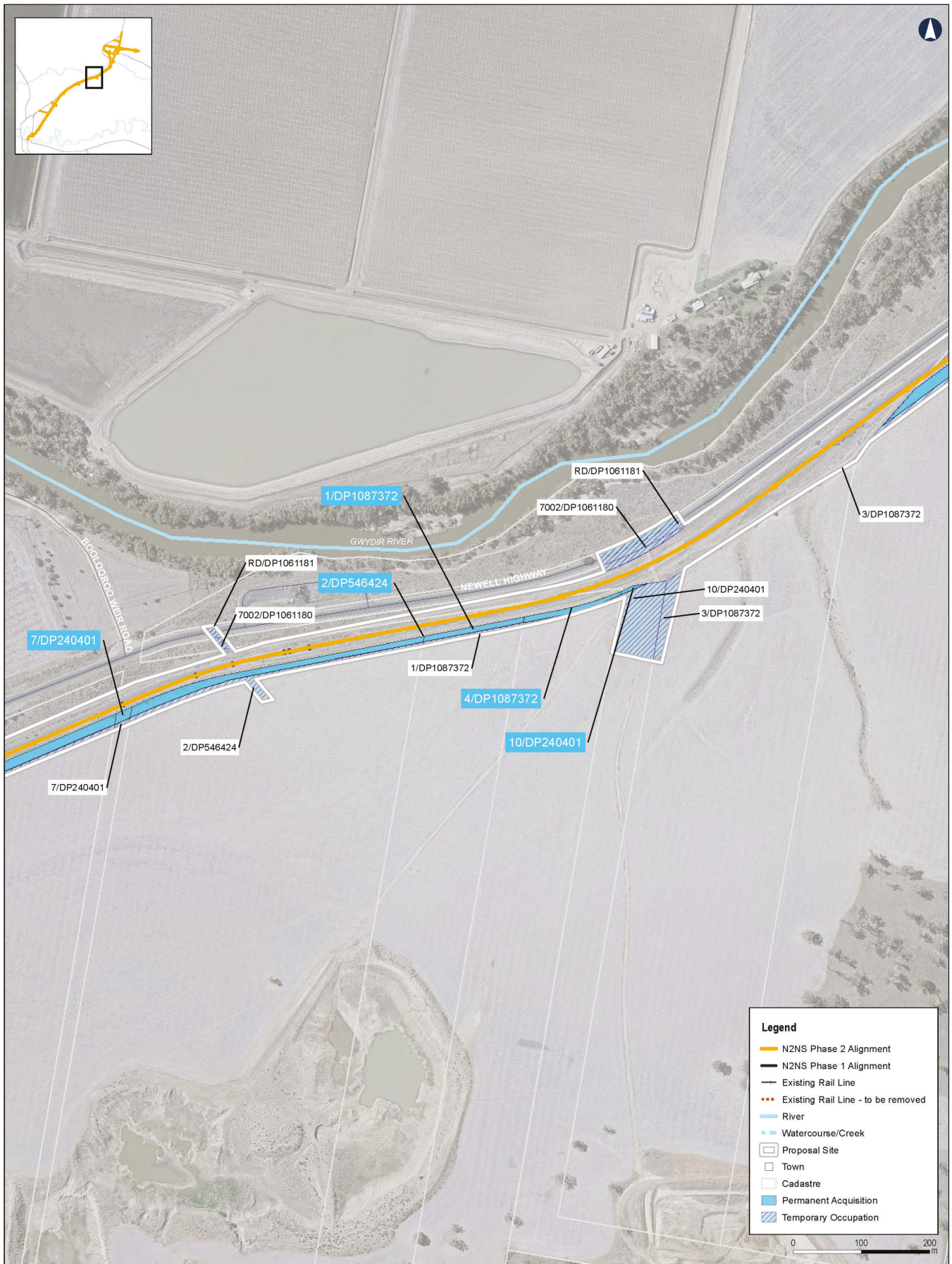


Figure 9-4 Property impacts of the proposal - permanent acquisition and temporary occupation

Data Sources: ARTC, IRDJV, LPI

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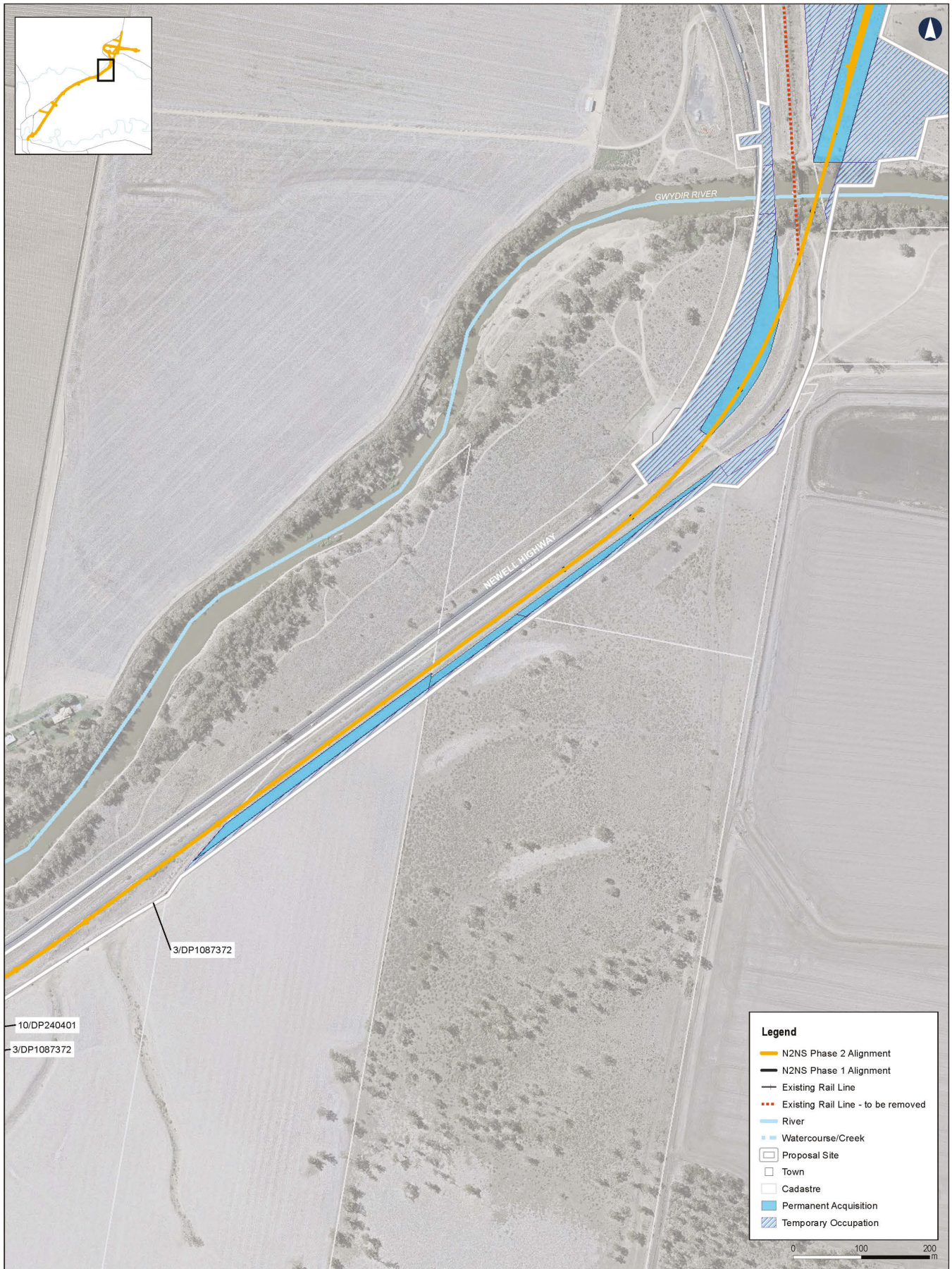


Figure 9-4 Property impacts of the proposal - permanent acquisition and temporary occupation

Data Sources: ARTC, IRDJV, LPI

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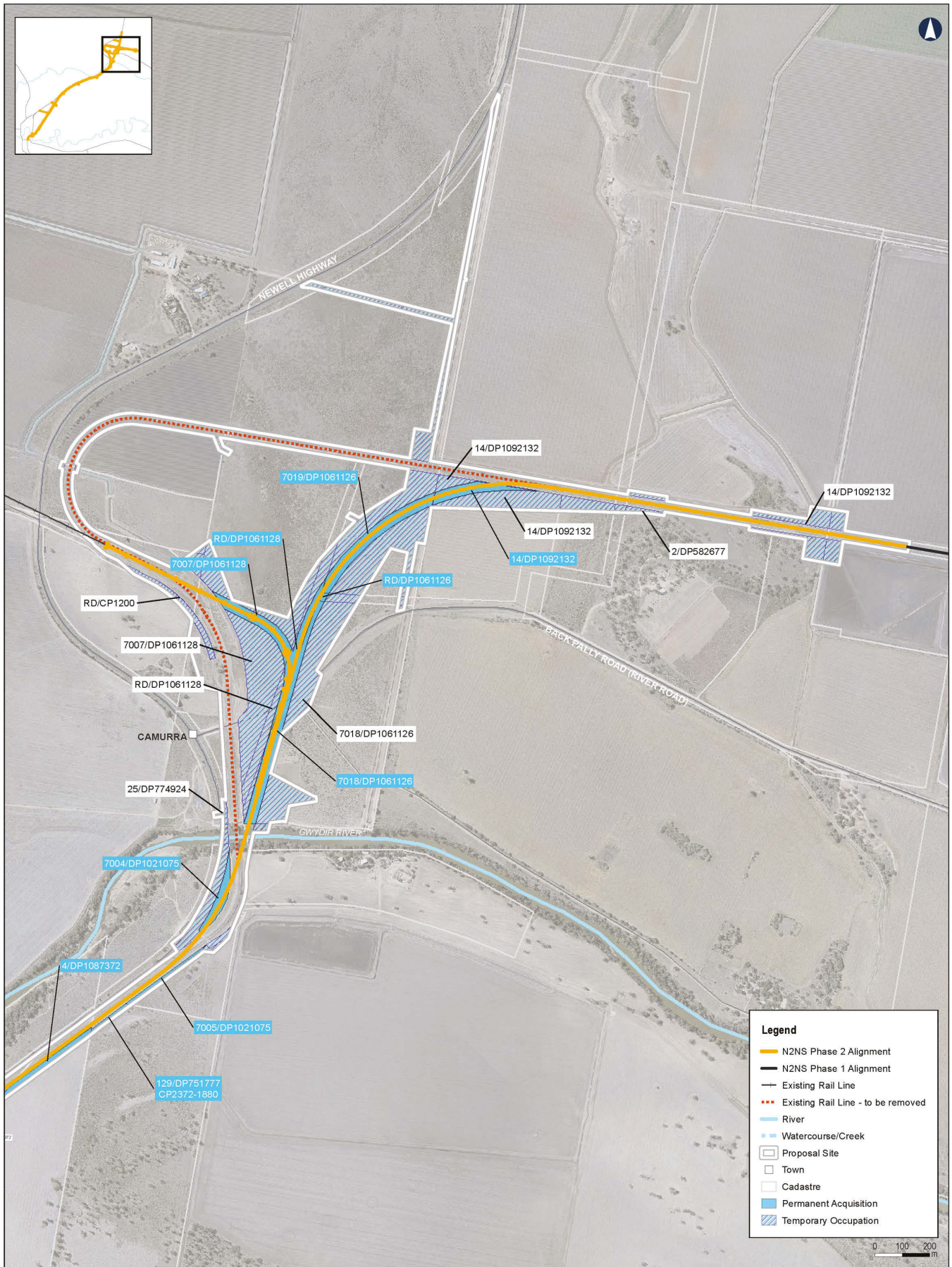


Figure 9-4 Property impacts of the proposal - permanent acquisition and temporary occupation

Data Sources: ARTC, IRDJV, LPI

Coordinate System: GDA 1994 MGA Zone 55
 Scale: 1:12,500
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 Map 8 of 8

N2NS_SP2_EIS_FRL_04_PropertyImpacts_2021.mxd

9.4.2 Construction

This section describes the potential impacts of the proposal during the construction phase. Construction impacts are usually temporary, i.e. occur only during the construction phase. Potential permanent impacts relating to the viability and management of affected properties are addressed in section 9.4.3.

9.4.2.1 Property impacts

Temporary impacts would occur to properties located within the construction footprint of the proposal, which includes land required for access tracks and construction compounds. Land outside the existing ARTC lease area that is temporarily required for construction would be leased under agreements with landowners, where possible. Table 9-5 outlines the approximate amount (in hectares (ha)) of private land and Crown land (including public roads) that would be temporarily impacted by the proposal, based on the calculated construction footprint. It is noted that the construction footprint is based on buffers applied to the design. Further refinement will be undertaken subject to detailed design and in consultation with affected landowners.

A breakdown of the landownership is given in Appendix E: Preliminary land requirements of the EIS.

TABLE 9-5 TEMPORARY PROPERTY IMPACTS

Landowner	Land type	Temporary impact area (ha)
State of NSW	Crown land	26
State of NSW	Road reserve	11
Transport for NSW	Road parcel	0.02
Moree Plains Council	Road parcel	0.1
Private—various	Private land	70

In addition to the temporary occupation of adjoining properties, other potential property and land use impacts that could occur during construction include:

- ▶ damage or injury to property, stock and/or crops if the movement of vehicles occurs on private property, or if stock were to cross the proposal site
- ▶ potential for weeds and disease to be transferred between properties via construction vehicles or machinery, or construction crew clothing and footwear
- ▶ temporary disruption as a result of services relocation/upgrade (such as power outages) or accidental damage
- ▶ temporary access disruptions to properties or land, including commercial vehicle movements for property-based businesses
- ▶ disruptions to livestock not being able to cross the rail corridor or paddocks being temporarily severed with the effect that grazing by livestock is temporarily constrained
- ▶ delay for landowners completing various crop and livestock husbandry operations (such as weed spraying, harvesting, animal health treatments, etc.)
- ▶ generation of dust that could settle on crops and pastures, or noise that could affect grazing patterns of livestock.

9.4.2.2 General land use impacts

During construction, temporary changes to the use of some land would occur. Impacts on the use of the land would be mainly related to the temporary change to the existing land use to an active construction site. For the majority of the rail corridor, the impacts would be temporary and short term, as construction activities would move along the corridor progressively. This would minimise the impacts on the existing land uses at any one point to a relatively short period of time.

9.4.2.3 Impacts to agricultural properties

Construction activities would lead to a temporary change in use of land that is located outside the rail corridor but within the construction footprint. As the land surrounding the majority of the proposal site is subject to agricultural land uses, the main potential impact would be to land used for grazing or cropping purposes. If the temporary footprint is leased, it would generally be rehabilitated and returned to its former land use after construction has been completed. Agricultural production would only be lost on this area during construction and for a limited time afterwards. Any reduction in agricultural productivity would have a negligible effect on the overall value of agriculture within the region.

The irrigation channels in Camurra that service surrounding agricultural properties would not be impacted during construction. Mitigation measures would be implemented to ensure the ongoing operations of the irrigation systems. The existing pump station located at Ch 676.250 traverses the new rail track and would need to be permanently relocated. This would occur prior to the decommissioning of the existing station, to ensure there are no disruptions to water supply along this irrigation channel. The location of the new pump station is to be confirmed during detailed design.

9.4.2.4 Impacts on roads, travelling stock reserves and Crown land

The construction of infrastructure could affect access and use of several roads located within the construction footprint. The impacts of construction on the road network where it intersects with the proposal are addressed in Chapter 11: Traffic and transport.

Impacts may also occur to use of, or access to, the travelling stock routes. ARTC would continue to liaise with LLS during detailed design to understand how and when the travelling stock routes are used, and how impacts can be avoided. Alternative access arrangements would be made as required.

9.4.2.5 Services and utilities

Construction has the potential to impact on existing utilities and services, including underground services such as electricity, gas, telecommunications and overhead power lines. Impacts may include temporary disruption as a result of services relocation/upgrade (e.g. power outages) or accidental damage. These impacts are considered to be minimal as the disruptions would be short term, and affected property owners would be notified in advance of any disruptions. Utility and service providers would continue to be consulted during detailed design, to identify possible interactions and develop procedures to be implemented to minimise the potential for service interruptions, which have the potential to impact on existing land uses.

9.4.2.6 Biosecurity risks

The proposal would result in the increased movement of vehicles, machinery, and people to, around and within the proposal site during construction. The main biosecurity risk relates to the spread of weeds. Weed seeds could potentially be transported between properties, or between the existing rail corridor and affected properties, via machinery, equipment, vehicles, and/or the site workforce. Existing weed species, and mitigation measures to manage the potential spread of weeds, are described in Chapter 10: Biodiversity.

If a new pest or disease becomes established, it can affect agricultural properties through increased costs (for monitoring, production practices, additional chemical use and labour), reduced productivity (in yield and/or quality) or loss of markets. It would be necessary to ensure that during the construction phase a tailored, risk-based framework approach to biosecurity is considered for each affected property.

The construction compounds would include rubbish bins, which could attract pest animals. This risk would be minimised by fencing compounds and appropriate management of waste as outlined in Chapter 21: Waste.

9.4.3 Operation

This section describes the potential permanent impacts of the proposal during its operation.

9.4.3.1 Property impacts

Land would be required permanently for the proposal in order to accommodate the construction of the Camurra bypass at the north end of the proposal site, as well as to expand the width of the existing rail corridor in some areas. Permanent land requirements for each affected property are outlined in Table 9-6, including the percentage of the total lot area of each property. Further details of land ownership are in Appendix E: Preliminary land requirements. The areas of land acquisition are approximate calculations based on buffers applied to the design and will be further refined during detailed design and in consultation with landowners.

Of the affected properties, it is estimated that a total of about 9 ha from eight parcels of Crown land would be required to construct the proposal. This includes travelling stock routes held by the State of NSW, as well as road reserve, as outlined in Table 9-6. All acquisition of Crown land would be undertaken in accordance with the

requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

TABLE 9-6 PERMANENT PROPERTY ACQUISITIONS

Lot / Plan	Landowner	Land type	Total lot area (ha)	Permanent acquisition area (ha)	Percentage of lot
129 DP751777	The State of NSW	Crown land	77.46	0.17	0.2%
7004 DP1021075	The State of NSW	Crown land	0.82	0.82	100%
7005 DP1021075	The State of NSW	Crown land	6.26	0.29	5%
7007 DP1061128	The State of NSW	Crown land	33.65	1.36	4%
7018 DP1061126	The State of NSW	Crown land	34.56	2.58	7%
7019 DP1061126	The State of NSW	Crown land	14.60	2.19	15%
26 DP774924	The State of NSW	Road parcel	4.1	0.11	2%
RD DP1061128	The State of NSW	Road reserve	4.28	1.18	28%
RD DP1061126	The State of NSW	Road reserve	1.04	0.08	8%
3/4 DP836431	Private	Private land	0.059	0.059	100%
5 DP255275	Private	Private land	80.84	1.50	2%
7 DP240401	Private	Private land	4.23	0.07	2%
2 DP546424	Private	Private land	42.38	0.43	1%
1 DP1087372	Private	Private land	16.30	0.12	0.7%
2 DP1087372	Private	Private land	15.06	0.11	0.7%
10 DP240401	Private	Private land	9.69	0.02	0.2%
4 DP1087372	Private	Private land	45.37	0.62	1%
14 DP1092132	Private	Private land	816.83	1.07	0.1%

The area of privately owned land that is likely to be acquired is about 4 ha in total. All acquisitions of privately owned land would be undertaken in consultation with landowners and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

Present areas for acquisition are approximate and the extent of property impacts would be refined and confirmed during detailed design, in consultation with property owners. Private property would generally be partially acquired except for one property on two lots in Morton Street, Moree, which would be fully acquired. Property adjustment plans would be developed in consultation with the property owners for partially acquired properties.

Partial acquisitions would, where practicable, be managed in accordance with the following process:

- ▶ identification of the land to be acquired and how that affects a landowner
- ▶ creation of specific property acquisition plans that identify land take requirements
- ▶ the identification and establishment of property management plans (that include identification of the effect on any adjustments required, e.g. to continue access, severance, dam relocation and fencing relocation)
- ▶ direct consultation on a one-on-one basis with the landowner (and any other party that may have a claim to compensation)
- ▶ costing of those property adjustments, including the cost to re-establish those land improvements undertaken by an independent valuer during the compensation assessment, which would include property inspection and discussion with landowners
- ▶ the payment of compensation for the land taken in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW), in addition to the cost of any adjustments.

The identification of these works, the cost estimates and the compensation would be agreed with the landowner, where possible, and otherwise, where compulsory acquisition occurs, would be determined in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

9.4.3.2 General land use impacts

For land within the existing rail corridor, the general land use would remain the same; however, use of the rail line would intensify once Inland Rail is operational, as described in Chapter 7: Proposal features and operation. Potential impacts associated with the increase in train movements, including access, amenity and safety impacts, are considered in Chapter 11: Traffic and transport, Chapter 17: Social impact assessment and Chapter 25: Health and safety (including hazardous materials), respectively.

Land acquisition required for expansion of the existing rail corridor would result in the reconfiguration of some partially impacted properties. Outside the existing rail corridor, acquisition of land required for the Camurra bypass would change the land use from the existing rural uses to an active transport (rail use).

Construction of the Camurra bypass would mean that the existing hairpin loop would no longer be required. The hairpin would be decommissioned and demolished, with the existing rail corridor in this area being managed as disused rail corridor, pending any review of surplus rail landholdings by the relevant entities and relinquishment into the public estate or divested to private land.

All land to be acquired or relinquished is zoned for agricultural purposes (i.e. RU1—Primary Production), some of which is used for travelling stock routes. The potential impacts to these current land uses are described further below.

9.4.3.3 Impacts to agricultural properties

All land that would be acquired for infrastructure outside the existing rail corridor is zoned RU1—Primary Production and is primarily used for either grazing or cropping. This is consistent with the agricultural land class of land in this area, which is Class 2—very high land capability (refer to section 9.3.2). The land to be acquired for the Camurra bypass is also zoned RU1—primary production, and has an agricultural land class of Class 2—very high land capability. In most cases, the agricultural land that would be permanently acquired would be less than 0.1% of the total land area of each impacted property; therefore, any removal of agricultural production would have a negligible effect on the overall productivity or value of agriculture at both a local and regional scale.

The new Camurra bypass traverses an irrigation pump station at Ch 676.250, which supplies water to agricultural properties further north. This pump station will be relocated prior to construction of the proposal, the location of which will be confirmed during detailed design. New culverts will be constructed over the existing irrigation channels at Ch 677.300 along the Weemelah line and Ch 677.750 along the Camurra bypass. There will be no residual impacts to the pump infrastructure or associated irrigation channels during operation of the proposal.

No operational impacts to surrounding agricultural land uses are predicted. Potential impacts associated with the increase in train movements, including access, amenity and safety impacts, are considered in Chapter 11: Traffic and transport, Chapter 17: Social impact assessment, and Chapter 25: Health and safety, respectively.

9.4.3.4 Impacts on roads, travelling stock reserves and Crown land

The Camurra north area will require permanent acquisition of several parcels of road reserve, as well as Crown land classified as travelling stock routes. The existing rail corridor traverses these parcels of land to the north-west and, once decommissioned, this land will be rehabilitated to accommodate both travelling stock movements and local flood management outcomes. The residual impacts to use of and access to this land will be negligible, as the severance of land will be shifted from the existing hairpin to the new rail track alignment.

ARTC has commenced liaison with LLS to understand how and when the reserves with the potential to be permanently impacted are used. This consultation will continue in the detailed design phase and will focus on ensuring ongoing access from east to west of the rail line as well ensuring access north to south.

Early discussions with LLS have indicated the preferred option is to be able to cross under the northern side of the Mehi River bridge and both north and south sides of the Gwydir River bridge. These underbridge crossings are the current arrangement, as represented in Figure 9-2. Stock crossing of the Gwydir River currently takes place to the west of the Newell Highway across an existing sand bank. No change to this location is envisaged. Detailed design would need to allow for ongoing access under the replaced Mehi River bridge, new Gwydir River bridge and through the travelling stock route extending to the north. Other rail crossings have been allowed for at level crossings LX564 and LX3149. It is not anticipated that the proposal will result in any residual impacts to the functionality of the travelling stock route.

9.5 Mitigation and management

9.5.1 Approach to mitigation and management

Land use and property management would be included in the construction environmental management plan (CEMP) as necessary, and construction of the proposal would be undertaken in accordance with these requirements. Additionally, where acquisition of property is undertaken or where private properties are impacted, property management plans would be prepared. All operational activities would be undertaken in accordance with ARTC's standard operating procedures and approvals relevant to the proposal.

9.5.2 Consideration of the interactions between mitigation measures

Mitigation measures for land use and property may overlap, with mitigation measures identified in:

- ▶ Chapter 10: Biodiversity, which identifies mitigation and measures for biosecurity risks from pest weeds
- ▶ Chapter 11: Traffic and transport, which identifies mitigation and management measures for vehicular level crossings and changes to public roads
- ▶ Chapter 17: Social impact assessment which identifies mitigation and management measures for related social impacts
- ▶ Chapter 18: Economics, which identifies mitigation and management measures for related economic impacts to affected properties.

All mitigation measures for the proposal would be consolidated and described in the CEMP. The CEMP would identify measures that are common between different aspects. Common impacts and common mitigation measures would be consolidated to ensure consistency and implementation.

9.5.3 Summary of mitigation measures

The measures outlined in Table 9-7 would be implemented to mitigate the potential land use and property impacts for the proposal.

TABLE 9-7 SUMMARY OF MITIGATION MEASURES

Ref	Impact	Mitigation measures	Timing
LU-1	Property acquisition	All property acquisitions and adjustments would be undertaken in consultation with landowners and, where relevant, in accordance with the requirements of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> . In line with the Land Acquisition Act, ARTC would undertake acquisition by agreement where practicable.	Design and pre-construction
LU-2	Property agreements	Where required, individual property agreements would be developed in consultation with landowners/occupants, with respect to the management of construction on, or immediately adjacent to private properties. These agreements would detail any required adjustments to fencing, access, farm infrastructure, irrigation assets and relocation of any impacted structures, as required. The agreements would also detail the expected level of rehabilitation of the impacted portion of property when handed back to private landowners where temporary occupation is required. The consultation may also include: - measures to minimise property impacts, including impacts on agricultural operations - specific requirements to ensure that operations, including the movement of livestock and farm machinery are able to be maintained as efficiently as possible - measures to manage severance impacts where practicable, including appropriate access solutions and amalgamation opportunities - required adjustments to affected structures.	Design and pre-construction

Ref	Impact	Mitigation measures	Timing
LU-3	Communication	A communication plan would be prepared to facilitate communication between ARTC, the community, and relevant government authorities (including local councils). The communication plan would identify specific people, organisations and government authorities to be consulted before and during works and set out procedures and mechanisms for the regular distribution of accessible information relevant to the proposal, such as upcoming construction activities, schedules and milestones. Landowners and occupants in particular would be consulted in accordance with the communication plan to ensure they are informed about the timing and scope of activities in their area, and any potential property impacts or changes, particularly in relation to potential impacts to access, services, or farm operational arrangements. The communication plan would also set out procedures and mechanisms through which the community can discuss or provide feedback to ARTC and outline how ARTC would respond to enquiries or feedback from the community to attempt to resolve issues and mediate disputes, where possible and practicable.	Design and pre-construction
LU-4	Consultation	Property owners and occupants in particular would be consulted in accordance with the N2NS Phase 2 communication plan, to ensure that owners/occupants are informed about the timing and scope of activities in their area; and any potential property impacts/changes, particularly in relation to potential impacts to access, services, or farm operational arrangements.	Design and pre-construction
LU-5	Consultation	LLS would be consulted during detailed design to understand how impacts on travelling stock reserves would be avoided during construction and operation. Alternative access arrangements would be made as required, subject to maintaining rail safety.	Design and pre-construction
LU-6	Property access	Access to individual residences, services and businesses, and access for livestock across the rail corridor, would be maintained during construction. Where alternative access arrangements need to be made, these would be developed in consultation with affected landowners/occupants subject to maintaining rail safety.	Pre-construction and construction
LU-7	Property access	Where any legal access to a property is permanently affected and a property has no other legal means of access, alternative access to and from a public road would be provided to an equivalent standard, where feasible and practicable. Where an alternative access is not feasible or practicable, and a property is left with no access to a public road, negotiations would be undertaken with the relevant landowner for acquisition of the property in accordance with the provisions of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> . In accordance with the Land Acquisition Act, ARTC's preference is for acquisition by agreement where practicable.	Design and pre-construction
LU-8	Agricultural impacts	ARTC would consult with adjoining landowners regarding temporary construction impacts on viability and productivity. This may include consideration of: - temporary farm infrastructure to maintain farm management practices - modification of construction activities and footprint - compensation in accordance with NSW legislation.	Design and pre-construction
LU-9	Property impacts	Temporarily affected land for construction purposes would be restored to an agreed condition and returned to affected landowners as soon as practically possible.	Construction

Ref	Impact	Mitigation measures	Timing
LU-10	Agricultural impacts	Stock fencing would be in accordance with the Inland Rail fencing standards and would be constructed prior to the removal of existing fencing or any works being carried out on the subject land, unless otherwise agreed with the landowner. Where fencing is required, the relevant landowner would be able to select the type of fencing on a like-for-like basis from ARTC's standard fence and gate types, to suit the farm operations. Internal fencing matters would be considered, as appropriate, during the land acquisition process.	Design and pre-construction
LU-11	Agricultural impacts	Access to the construction area for stock, as well as non-construction related vehicles and people would be restricted via fencing and other measures.	Design and pre-construction
LU-12	Agricultural impacts	Guidance would be provided to agricultural landholders at the commencement of operation regarding the frequency of train movements to assist with safe scheduling of routine agricultural activities.	Design and pre-construction
LU-13	Agricultural impacts	Farm water pipelines, dams and drainage channels would be replaced or reinstated to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.	Construction
LU-14	Property impacts	The design and construction planning would continue to be refined to minimise potential impacts on land uses and properties so far as reasonably practicable.	Design and pre-construction
LU-15	Road–rail interface	Appropriate road–rail interface would continue to be assessed on a case-by-case basis for design purposes, with consideration given to current and future usage of the existing asset, its location relative to other crossings in the rail corridor, and the road and rail geometry at the crossing location.	Design and pre-construction
LU-16	Utilities	The location of utilities and other infrastructure would be identified prior to construction, to determine requirements for access to, diversion, protection and/or support. Utility and service providers would continue to be consulted during detailed design to identify possible interactions and develop procedures to minimise the potential for service interruptions and impacts on existing land uses.	Design and pre-construction
LU-17	Biosecurity	Consultation would be undertaken with adjoining landowners regarding how biosecurity risks are to be managed. Management outcomes of consultation would be included in the property access agreement.	Pre-construction and construction
LU-18	Biosecurity	The biosecurity (or weed and pest) management sub-plan included in the CEMP would detail measures to minimise the potential for biosecurity risks during construction.	Design and pre-construction
LU-19	Travelling stock route	Bridge design would allow for sufficient space between the riverbank and the bridge abutment to allow stock movement under the bridges.	Detailed design
LU-20	Travelling stock route	Resolution of stock movements on the travelling stock route network including arrangements for crossing the railway, roads and rivers.	Detailed design