CHAPTER

08

Land use and tenure

Helidon to Calvert Environmental Impact Statement

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

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8. Land use and tenure

8.1 Summary

This chapter outlines the land use and tenure aspects of the Helidon to Calvert (H2C) Project (the Project), assessing the Project's existing environment, potential impacts, and potential mitigation measures.

The Project predominantly follows the West Moreton System rail corridor and the protected Gowrie to Grandchester future State transport corridor. Land use in proximity to the Project is predominantly grazing land, combined with other agricultural land uses, including irrigated seasonal horticulture and cropping. Other land uses include residential, services, and other minimal use (areas of land that are largely unused, for example, residual native cover). The Project also traverses infrastructure, including highways, main roads, local roads, gas pipelines and other utilities.

The Project traverses through, or near to, several townships including Helidon, Grantham, Placid Hills, Gatton, Forest Hill, Laidley, Grandchester and Calvert. Notable land uses include areas where there are recreational and commercial uses, as well as land uses of State significance, including the Helidon Magazine Explosives Reserve, sandstone mines, The University of Queensland (UQ) Gatton Campus, poultry farming and the Bowman Park Koala Nature Refuge.

The tenure of land within the permanent operational disturbance footprint is predominantly freehold where greenfield rail corridor is required, and lands lease where using the existing West Moreton System rail corridor. The Project is located within the Yuggera Ugarapul People's native title claim area. This claim has been registered by the National Native Title Tribunal (NNTT) but is yet to be determined by the Federal Court.

Following the identification of existing land use and tenure within the land use and tenure study area (land use study area, as defined in Section 8.5.1), an assessment was undertaken to determine the compatibility of the Project with various land use planning instruments and to identify measures to mitigate or manage the potential impacts on land use and tenure.

Potential impacts to land use and tenure include:

- Change in tenure and loss of property as discussed in Section 8.7.1
- Disruption to land over which native title claims have been made as discussed in Section 8.7.1.3
- Change in land use, including the sterilisation of agricultural land and disruption to agricultural practices as discussed in Section 8.7.2.1Impacts to accessibility within the land use study area, including impacts to the existing road network and to property access as discussed in Section 8.7.3
- Disruption to services and utilities as discussed in Section 8.7.4
- Potential for beneficial impacts, including supporting future industries, improving access to and from regional markets and acting as a catalyst for development in the region as discussed in Section 8.7.5.

Where impacts cannot be avoided, the extent of impacts will be carefully managed through the implementation of mitigation measures.

Given that the alignment predominantly follows the West Moreton System rail corridor and the protected Gowrie to Grandchester future State transport corridor, the Project is generally compatible with the intent of State and regional land use and infrastructure planning, as discussed in Section 8.9. These policies include the *State Planning Policy* (SPP) and *ShapingSEQ*, which identifies the Inland Rail Program (Inland Rail) as key region-shaping infrastructure that supports the Queensland State Government's vision for South East Queensland (SEQ). The Project is also generally consistent with the Grantham Reconstruction Area Development Scheme 2011, as the Project aligns with the Gowrie to Grandchester future State transport corridor, which is included within the development scheme.

8.2 Scope of chapter

The purpose of this chapter is to provide information on the potential impacts of the Project on land use and tenure within the land use study area and to identify appropriate mitigation measures to address such impacts. The land use study area (the area subject to this assessment) is defined in Section 8.5.1.

This chapter identifies the land use and tenure aspects relevant to the Project and in doing so, addresses the following:

- Methodology used to identify existing and future land use environment and tenure arrangements, and assess and appropriately manage the potential impacts on land use and tenure (refer Section 8.5)
- Relevant legislative context for land use and tenure for the Project (refer Section 8.4)
- Existing land tenure for properties within the land use study area, including those required for construction (refer Section 8.6.1)
- Existing land use values for all areas associated with the preferred alignment (refer Section 8.6.2).
- Likely and planned future land use environment within the land use study area (refer Section 8.6.2.4)
- Potential impacts of the Project on tenure within the land use study area (refer Section 8.7.1)
- Compatibility of the Project with land that includes the proposed alignment and surrounding land that will be impacted by the Project (refer Section 8.7.2)
- Mitigation measures relevant to land use and tenure issues (refer Section 8.8)
- An assessment against the provisions of the relevant land use planning instruments (refer Section 8.9)
- Potential cumulative impacts of the Project on land use and tenure (refer Section 8.10)
- A summary of land tenure and land use impacts (refer Section 8.11).

8.3 Terms of Reference requirements

This chapter addresses the relevant land use and tenure Terms of Reference (ToR) for the Project, as summarised in Table 8.1. Compliance of the EIS against the full ToR is documented in Appendix B: Terms of Reference compliance table.

TABLE 8.1: TERMS OF REFERENCE—LAND USE AND TENURE

Terms of Reference requirements		Where addressed
Site description		
10.2.	Provide real property descriptions of the preferred alignment	Appendix G: Directly Impacted Properties
10.3.	Describe and map at suitable scales key transport infrastructure including state-controlled roads, local roads, rail (including tunnels), air, and other infrastructure or services (including gas and water pipelines, and electricity transmission and distribution powerlines) existing, under construction or proposed which may be impacted within the land use study area	Section 8.6, Figure 8.1, Figure 8.4 and Figure 8.5 Chapter 6: Project description Chapter 19: Traffic, transport and access Volume 3: Drawings
10.5.	Describe and illustrate specific information about the proposed Project including the precise location of the preferred alignment in relation to designated areas, such as transport corridors, protected areas and areas of regional interest and agricultural land uses identified in the *Queensland Agricultural Land Audit* (the audit, refer to Appendix 1). Consideration should also be given to Key Resource Areas (KRAs) petroleum and gas pipelines, explosive magazines (storage and manufacturing facilities) abandoned mines and mining (exploration and production) tenures.	Section 8.6, Figure 8.5 and Figure 8.6 Chapter 9: Land resources

Terms of Reference requirements		Where addressed
10.6.	Where relevant, describe and map in plan and cross-sections the geology and landforms, including catchments, of the Project area. Show geological structures, such as aquifers, faults and economic resources (such as coal, mineral and petroleum resources, agricultural products and Key Resource Areas (KRAs)) that could have an influence on, or be influenced by, the Project's activities	Sections 8.6.1, 8.6.2, 8.6.3.1, 8.7.2 and Figure 8.5 Chapter 9: Land resources Chapter 13: Surface water and hydrology Chapter 14: Groundwater Appendix N: Groundwater Technical Report Appendix W: Geotechnical Factual Report
Proposed construction and operations		
10.10.	Describe the planning schemes, regional plans, state policies and government priorities for the preferred alignment, including those that have been publicly notified. This description should include those instruments currently under development that may be implemented within the project's planning and construction timeframes.	Sections 8.4, 8.6.3.1 and 8.9 Chapter 3: Project approvals
	Infrastructure requirement	
10.11.	Describe the following information about the proposed project: (b) existing infrastructure and easements on the preferred alignment (l) the range of land uses and site layout	(b) Sections 8.6.2.1, 8.6.2.3 and Figure 8.5 Appendix G: Directly Impacted Properties (l) Sections 8.6.2 and Figure 8.4 and Figure 8.5
	Existing environment	
11.72.	Detail the existing land use values for all areas associated with the preferred alignment	Section 8.6.2
11.73.	Discuss the compatibility of the Project with land that includes the proposed alignment and surrounding land which will be impacted by the Project. The discussion should include: (a) existing and proposed land uses in and around the preferred alignment, referring to regional plans and the local government planning schemes (b) State interests identified in the SPP (e.g. KRAs) (c) any land characteristics that influenced the choice of the preferred alignment (d) a description and illustration of any tenures overlying and adjacent to the preferred alignment, and any to be applied for as part of this Project and the legal implications and requirements of this tenure (e) an analysis of the agricultural land uses based on the *Queensland Agricultural Land Audi*t in the Project area (f) any petroleum and gas pipeline licence tenures and resource tenure holders within the vicinity of the proposed corridor.	Sections 8.6.1, 8.6.2, 8.6.3.1 and 8.7.2
Impact assessment		
11.74.	Describe the potential for impact on agricultural land uses during construction and operation of the Project. The assessment should include consideration of temporary and permanent impacts on agricultural production	Section 8.7.2.1
11.75.	Describe the potential for impact on existing holders of resource tenures, including consideration to safety and resource sterilisation where appropriate	Section 8.7.2.3
11.76.	Identify tenure required for the Project to proceed, including proposed easements, leases or licences including the timing of such acquisitions or tenure changes	Sections 8.6.1, 8.7.1 and 8.8.1 Appendix Q: Social Impact Assessment Technical Report

Terms of Reference requirements		Where addressed
11.77.	Provide evidence of consultation with the relevant owners/ licensees of gas/petroleum pipelines in the vicinity of the rail corridors. Provide detail of agreed risk management strategies for Project construction and operation with regard to the gas/ petroleum pipelines. Demonstrate that the construction and operation of the Project will not inhibit the safe and efficient operation of the pipelines	Section 8.7.4 Chapter 5: Stakeholder engagement Appendix C: Consultation Report
11.78.	Describe impacts on existing uses of State land and uses either allowed by current tenures or publicly proposed by government at the time of preparation of the EIS	Sections 8.7.1 and 8.7.2 Appendix G: Directly Impacted Properties
11.79.	Discuss the proposal in the context of the applicable Regional Plan and local planning schemes	Sections 8.6.3.1 and 8.9
11.80.	Describe the potential impact of the construction and operation of the Project on existing land uses and land uses permitted under the relevant planning scheme along the preferred alignment and adjacent areas including impacts on Council assets and Key Resource Areas (KRA). Discussion in relation to KRAs should describe the: ▸ Geological properties that may influence ground stability (including seismic activity), and how this might compromise rail infrastructure and operation over short and long-term time horizons ▸ Location, volume, tonnage and quality of natural resources present which will be potentially impacted by the Project	Sections 8.6.3.1 and 8.7.2 Chapter 9: Land resources There are no KRAs located within the land use study area
11.91.	Discuss the Project's impacts on Important Agricultural Areas as per the SPP – state interest guideline – Agriculture with reference to Agricultural Land Use & Property Categories under the Queensland Agricultural Land Audit methodology	Section 8.7.2.1 Chapter 9: Land resources
Mitigation measures		
11.81.	Identify the measures that would be used to avoid or mitigate any impact on land values, including the management of existing infrastructure remaining on reconfigured land parcels	Section 8.8 Chapter 23: Draft Outline Environmental Management Plan
11.82.	Where coexistence with agriculture is not possible, provide mitigation and management measures to address associated impacts	Section 8.8.2.1 Chapter 23: Draft Outline Environmental Management Plan
11.83.	Provide an outline of the land acquisition and compensation processes for properties directly impacted by the Project	Section 8.7.1 Chapter 16: Social Appendix Q: Social Impact Assessment Technical Report
11.84.	Provide details of measures to be undertaken to avoid, minimise and mitigate identified impacts on KRAs	There are no KRAs located within the EIS investigation corridor
Native title		
11.85.	Identify existing and potential native title rights and interests possibly impacted by the proposed Project and describe how those impacts will be managed	Sections 8.6.1 and 8.7.1

8.4 Legislation, policies, standards and guidelines

The Commonwealth, State and local approvals required for the Project are outlined in Chapter 3: Project approvals. The Commonwealth, State and local legislation, land use planning frameworks, policies, plans and guidelines that regulate and guide land use planning and tenure within the land use study area are outlined in Table 8.2.

TABLE 8.2: LAND USE AND TENURE REGULATORY CONTEXT

Legislation, policy or guideline	Relevance to the Project
Commonwealth legislation	
Native Title Act 1993 (Cth) (NT Act) Native Title (Prescribed Bodies Corporate) Regulations 1999 (NT (Prescribed Bodies Corporate) Reg)	The NT Act provides the legal principles for the recognition of native title and the integration of this form of property right into the existing land title system. The NT Act also establishes the processes involved in having native title recognised, and the role and responsibilities of the different bodies involved in this process. The NT Act also establishes the ways in which future development affecting native title may proceed. The Act establishes the National Native Title Tribunal (NNTT), a statutory body with responsibilities that include assessing native title claims for registration, registering Indigenous land use agreements and providing mediation and other assistance to stakeholders. Native title interests and rights may exist within the study area over land that is unallocated State or Crown land, some state forests, national parks and public reserves, waters that are not privately owned, and/or some leases such as non-exclusive pastoral and agricultural leases, or on certain land held by or for Aboriginal people or Torres Strait Islanders. The NT Act prescribes statutory processes to enable State and Territory governments to grant freehold and other interests in land that is subject to native title to private entities, subject to native title being first addressed either by agreement with the applicable native title parties, or by compulsory process. The Project is subject to active and potential native title claims.
State legislation	
Native Title (Queensland) Act 1993	Consistent with the NT Act, the *Native Title (Queensland) Act 1993* is the law of Queensland that provides for the validation of certain historic acts done in Queensland that may have been invalidated because of the existence of native title and confirms that particular acts previously done in Queensland have resulted in the extinguishment of native title. The *Native Title (Queensland) Act 1993* was also developed to ensure that Queensland law is consistent with standards set by the NT Act for future dealings affecting native title. The Project is subject to active and potential native title claims.
Acquisition of Land Act 1967 (AL Act)	The AL Act provides the process for the acquisition and resumption of land by a constructing authority. The AL Act provides for the taking of an interest in land for a purpose under Schedule 1 of the AL Act. Schedule 1 Part 1 includes purposes relating to transportation including for railways and related purposes. The acquisition of land and interests will be required for the construction and operation of the Project.
Environmental Protection Act 1994 (EP Act)	The EP Act is Queensland's overarching environmental legislative framework for the protection and management of environmental values. The EP Act regulates activities that will or may have the potential to cause environmental harm and prescribes several mechanisms to ensure the objectives of the Act are met. The EP Act and its subordinate legislation provides a range of tools to ensure that the objectives of the EP Act are met, including the provision for a licensing system for environmentally relevant activities (ERAs). The Project traverses, or is in proximity to, ERAs prescribed under the EP Act.

Legislation, policy or guideline	Relevance to the Project
Land Act 1994 (Land Act)	The Land Act provides for the administration and management of non-freehold land. The Land Act is administered by the Department of Resources (former Department of Natural Resources, Mines and Energy (DNRME)) and regulates the management of land in Queensland by having regard to sustainability, evaluation development, community purpose, protection, consultation and administration. State land administered by the Land Act will be required for the construction and operation of the Project.
Planning Act 2016 (Planning Act) *Planning Regulation 2017*	The purpose of the Planning Act is to provide an efficient, effective, transparent, integrated, coordinated and accountable system of land use planning, development assessment and dispute resolution to facilitate the achievement of ecological sustainability. The Planning Act establishes a hierarchy of State and local planning instruments being: ▸ State planning policies (including temporary policies) ▸ Regional plans ▸ Planning schemes ▸ Temporary local planning instruments ▸ Planning scheme policies.
Queensland Reconstruction Authority Act 2011	The *Queensland Reconstruction Authority Act 2011* provides for appropriate measures to ensure Queensland and its communities effectively and efficiently recover from the impacts of disaster events. The purpose of the Act is achieved primarily though the establishment of the Queensland Reconstruction Authority to coordinate and manage the rebuilding of affected communities. Under the Act, the Queensland Reconstruction Authority may make a development scheme for a declared Project, reconstruction area or part of a reconstruction area. The development scheme must include: *a) a land use plan for the Project or in the area; and* *a) a plan for infrastructure for the Project or in the area; and* *b) an implementation strategy to achieve the reconstruction function for the Project or in the area, to the extent it is not achieved by the land use plan or the plan for infrastructure.* The Project is located within the Grantham Reconstruction Area where the Grantham Reconstruction Area Development Scheme contains the land use plan for the area.
Stock Route Management Act 2002 (SRM Act)	The SRM Act provides for the stock route network management. Under the SRM Act, a stock route means a road or route ordinarily used for travelling stock or declared under regulation to be a stock route. A stock route has no separate title or tenure from the underlying road reserve, and the same roads are used for walking and agisting stock and vehicular transport. The *Land Act 1994* and the *Transport Infrastructure Act 1994* also include relevant provisions for stock routes and associated grazing access. The Project does not traverse any known or mapped stock routes.
Transport Infrastructure Act 1994 (TI Act)	The overall objective of the TI Act is to provide a regime that allows for and supports effective integrated planning and the efficient management of a system of transport infrastructure. In particular, the objectives of the TI Act are to allow the State to have a strategic overview of the provision and management of all transport infrastructure, including roads, rail (heavy and light), busways, ports, air and public marine transport. The Project will be considered government supported transport infrastructure under the TI Act and the *Planning Regulation 2017*. Chapter 7 of the TI Act prescribes the Minister's powers with respect to rail transport infrastructure, with Section 242 giving the Minister the power, by gazette notice, to declare land as future railway land. Following approval of the Project, the Project will be declared as future railway land under the TI Act.

Legislation, policy or guideline	Relevance to the Project
Transport Planning and Coordination Act 1994 (TPC Act)	The TPC Act aims to achieve overall transport effectiveness and efficiency through strategic planning and management of transport services. Under the TPC Act, the chief executive is afforded powers to support this objective including: ▸ Authority to *acquire, hold, dispose of or otherwise deal with land* for the purposes of transport, an incidental purpose and transport associated development ▸ Acquire land through resumption processes for the purpose of transport infrastructure, transport associated development or for an incidental purpose. Acquisition of a number of properties will be required to facilitate the Project. A constructing authority is afforded powers to acquire land for the Project under the TPC Act. The Project also predominantly aligns with the Gowrie to future State transport corridor, a 'Future State Transport Corridor' as per the *Public Passenger Transport Guideline* pursuant to section 8E of the TPC Act.
Mineral Resources Act 1989	The *Mineral Resources Act 1989* provides the framework for exploration, development and mining tenures. Under the Mineral Resources Act, the following mineral or coal authorities can be granted: ▸ Prospecting permits—a prospecting permit can be sought for any mineral other than coal and entitles the holder to prospect, hand-mine and peg a mining lease or claim ▸ Exploration permits—exploration permits allow for more advanced methods to determine the quantity and quality of materials present. Permitted activities under exploration permit includes prospecting, conduction of geophysical surveys, drilling and sampling and testing of materials ▸ Mineral development licences—mineral development licences are issued to allow the holder to evaluate the development potential of the defined resource. Mineral development licences can be granted if an exploration permit is held where there is a significant mineral occurrence of possible economic potential ▸ Mining claims—a mining claim can be issued for any mineral other than coal. A mining claim allows the holder to conduct small-scale mining operations such as prospecting and hand-mining ▸ Mining leases—a mining lease allows the holder to conduct larger-scale mining operations. Mining leases can be issued for any specified material, with permitted activities within the lease area including machine mining or other activities associated with mining or promoting the activity of mining. The Project traverses near land subject to mineral authorities prescribed under the *Mineral Resources Act 1989*.
Petroleum and Gas (Production and Safety) Act 2004	Several different authorities for petroleum and gas exploration and production activities in Queensland are granted under the *Petroleum and Gas (Production and Safety) Act 2004*. Petroleum and gas authorities are granted for: ▸ Exploration—authority to prospect, potential commercial area and petroleum lease ▸ Production—petroleum lease ▸ Infrastructure development—petroleum facility licence and petroleum pipeline licence ▸ Information gathering—petroleum survey licence, water monitoring authority and data acquisition authority. The Project traverses infrastructure regulated under the *Petroleum and Gas (Production and Safety) Act 2004*, being land subject to a petroleum pipeline licence.

Legislation, policy or guideline	Relevance to the Project
Land use planning frameworks, strategies and statutory guidelines	
Gatton Shire Planning Scheme 2007 (Gatton Shire Council, 2007)	The Project is partially located within part the Lockyer Valley Regional Council (LVRC) local government area (LGA), formerly the Gatton Shire. The Gatton Shire Planning Scheme is the primary planning document for land located within the former Gatton Shire Council area (with the exception of land that is subject to the Grantham Reconstruction Area). This area now forms part of the LVRC. LVRC administers all development and land use planning for this area. The Gatton Shire Planning Scheme outlines the level of assessment and requirements for undertaking development in the former Gatton Shire Council area. In accordance with Schedule 6, Part 5, Section 26(2) of the Planning Regulation 2017, development for the construction of transport infrastructure, where the infrastructure is government-supported transport infrastructure, is exempt from assessment under the relevant local categorising instruments. Accordingly, the provisions of the Gatton Shire Planning Scheme do not apply to the Project. Notwithstanding this, the zoning intent for the area as determined by the planning scheme has been taken into consideration when determining impacts of the Project on future land uses in the area.
Grantham Reconstruction Area Development Scheme 2011 (Queensland Reconstruction Authority (QRA), 2011)	The Grantham Reconstruction Area Development Scheme outlines the blueprint for the reconstruction of Grantham after the flooding events in 2011. The QRA and LVRC prepared the development scheme in consultation with the local community. The Grantham Reconstruction Area was declared by regulation under the *Queensland Reconstruction Authority Act 2011* on 8 April 2011. The Development Scheme regulates development within the Grantham Reconstruction Area, the extent of which is set out in the development scheme. Proposed development within the Grantham Reconstruction Area is assessed by Lockyer Valley Regional Council. The Development Scheme continues to apply until the new Lockyer Valley Planning Scheme has been adopted. The Development Scheme refers or relies on various provisions of the Gatton Shire Planning Scheme. Where there are inconsistencies between the Development Scheme and those provisions, the Development Scheme prevails. The Project is located within the Grantham Reconstruction Area, where the provisions of the Grantham Reconstruction Area Development Scheme applies. The land use intent for the area as determined by the Development Scheme has been taken into consideration when determining impacts of the Project on future land uses in the area.
Ipswich Planning Scheme 2006 (Ipswich City Council (ICC), 2006)	The Ipswich Planning Scheme 2006 is the primary planning instrument for land within the Ipswich LGA. The Project is partially located within the Ipswich LGA. In accordance with Schedule 6, Part 5, Section 26(2) of the Planning Regulation 2017, development for the construction of transport infrastructure, where the infrastructure is government supported transport infrastructure, is exempt from assessment under the relevant local categorising instruments. Accordingly, the provisions of the Ipswich Planning Scheme do not apply to the Project. Notwithstanding this, the zoning intent for the area as determined by the planning scheme has been taken into consideration when determining impacts of the Project on future land uses in the area.
Laidley Shire Planning Scheme 2003 (LVRC, 2003)	The Project is located within the former Laidley Shire, now the LVRC LGA. In accordance with Schedule 6, Part 5, Section 26(2) of the Planning Regulation 2017, development for the construction of transport infrastructure, where the infrastructure is government-supported transport infrastructure, is exempt from assessment under the relevant local categorising instruments. Accordingly, the provisions of the provisions of the Laidley Shire Planning Scheme do not apply to the Project. Notwithstanding this, the zoning intent for the area as determined by the planning scheme has been taken into consideration when determining impacts of the Project on future land uses in the area.

Legislation, policy or guideline	Relevance to the Project
South East Queensland Regional Plan (*ShapingSEQ*) (Department of Infrastructure, Local Government and Planning (DILGP, 2017a)	In Queensland, regional planning seeks to provide long term strategic direction to support the local growth and development of the State's regions as well as the protection of natural resources, having regard to the issues, challenges and opportunities that are important and specific within regional areas. Regional planning is regulated by the Planning Act, the *Regional Planning Interest Act 2014* (Qld) and associated regulations. The *South East Queensland Regional Plan* (*ShapingSEQ*) is the regional plan for the SEQ region and was given effect on 11 August 2017. *ShapingSEQ* provides the regional framework for growth and sets a planning direction for sustainable growth, global economic competitiveness and high-quality living. The Project is located within the SEQ region, of which *ShapingSEQ* applies as the relevant statutory regional plan. The Project is also identified as a major enabling infrastructure for SEQ.
State Planning Policy (SPP) (DILGP, 2017b)	The SPP is a key component of the Queensland land use planning system that articulates the Queensland Government's 17 State interests in land use planning and development across the following five key themes: ▸ Liveable communities and housing ▸ Economic growth ▸ Environment and heritage ▸ Safety and resilience to hazards ▸ Infrastructure. The SPP is a statutory instrument and requires that the State interests be integrated into local government planning schemes. Some State interests in the SPP include assessment benchmarks that apply to certain types of development where a local government planning scheme does not appropriately integrate the relevant state interest. A number of the State interests set out in the SPP are relevant to the Project.

8.5 Methodology

The following tasks were undertaken to describe the existing and future land use environment and tenure arrangements, within, adjacent to, and in the immediate vicinity of the land use study area:

- Review the Project components (refer Chapter 6: Project description) to obtain an understanding of the location, scale, timing and process of the construction and operation of the Project
- Determine the land use study area, as defined in Section 8.5.1, to clearly define the area of assessment relating to land use and tenure
- Identify, review and map the existing tenure of the land use study area through a review of the Department of Resources (former Department of Natural Resources, Mines and Energy (DNRME)) Digital Cadastre Database mapping
- Undertake a land use assessment (desktop and site verification) to review, identify and map existing land uses, and the approximate distance of the Project activities to these uses, including:
  - Land uses based on the Queensland Land Use Mapping Program (QLUMP) (Queensland Government, 2019a). Verification of these land uses was also undertaken by means of project drive through undertaken 15 August 2018 to 16 August 2018, combined with consultation feedback
  - Agricultural uses, including land identified by the *Queensland Agricultural Land Audit*, to identify current and future agricultural production in Queensland, any areas of regionally significant farmland; areas used for cropping, grazing and/or horticulture; stock routes; and agricultural infrastructure
  - Protected and sensitive land uses, including conservation and forests reserve; national parks; State forests; and native title
  - Key Resource Areas (KRAs); exploration and mining leases and licences; petroleum and gas resource interests
  - Infrastructure, including railways; road reserves; utilities and pipelines.
- Review of key strategic planning and land use planning provisions of the relevant regional and local planning instruments to identify the future land use planning intent

- Identify current planned development activity and approved development plans dating back to 2014
- Review of landowner and community consultation to understand their feedback on the potential impacts and issues associated with the Project
- Consult with relevant State and local government agencies including:
  - Lockyer Valley Regional Council (LVRC) (in relation to planning provisions, proposed new developments and the status of the draft Lockyer Valley Planning Scheme (currently working with the Gatton Shire Planning Scheme 2007 and Laidley Shire Planning Scheme 2003)
  - Ipswich City Council (ICC) in relation to planning provisions and proposed new developments
  - Department of Transport and Main Roads (DTMR) regarding the realignment and acquisition of the Gowrie to Grandchester future State transport corridor
- Consult with the relevant owners/licensees of gas and petroleum pipelines within the vicinity of the rail corridor
- Assess the potential impacts to land use and tenure, including an assessment of the Project's consistency with the relevant future land use planning intent for the Project
- Report the findings of this report into the concept design to ensure relevant matters are addressed in the design of the Project where possible. Alignment options investigated within optioneering are provided in Chapter 2: Project rationale
- Identify mitigation measures to minimise impacts to land use and tenure.

The assessment of potential impacts to land use and tenure has been undertaken using the compliance assessment methodology detailed in Section 8.5.2 and illustrated in Figure 8.2.

8.5.1 Land use study area

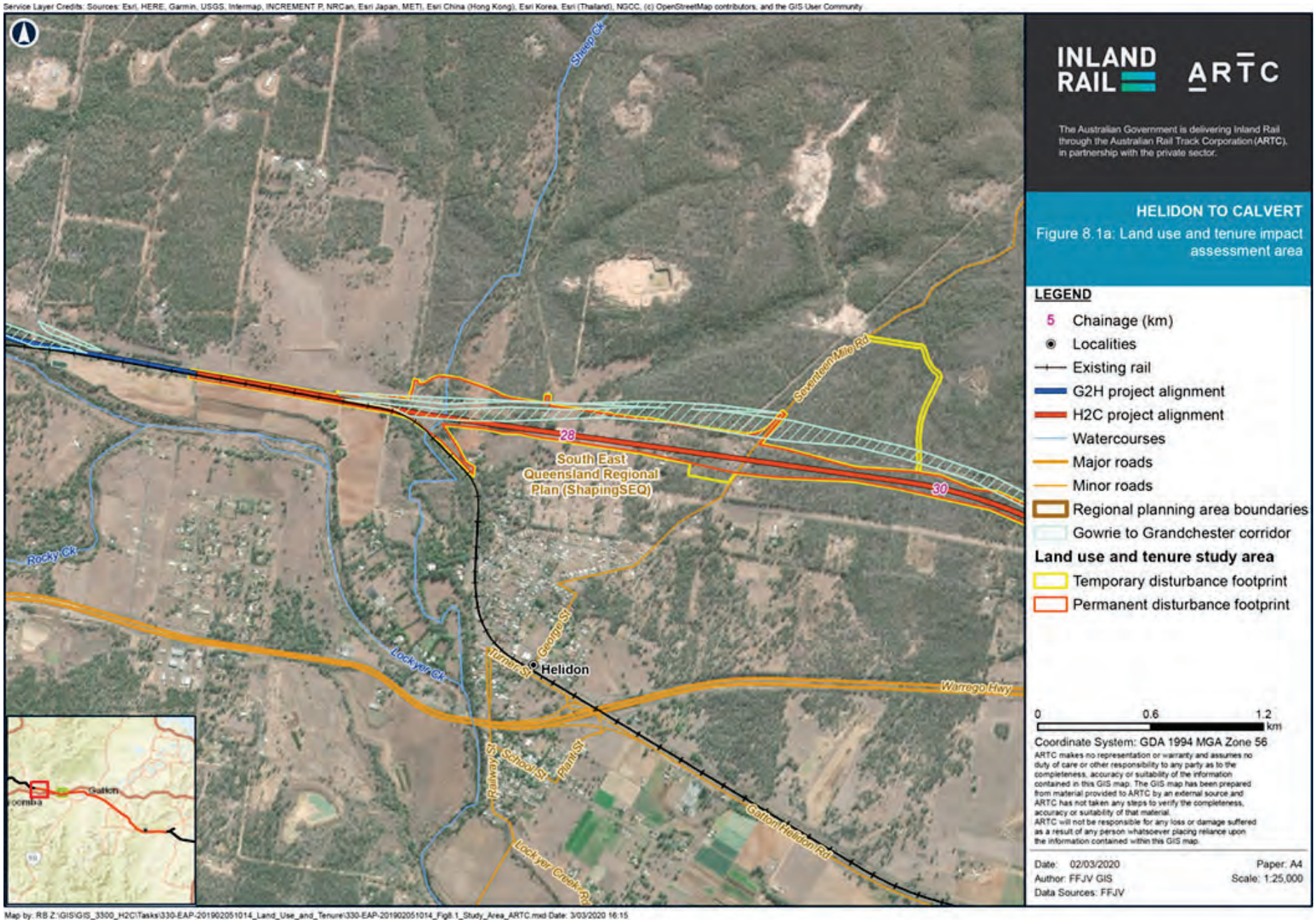
The land use study area includes the:

- Permanent operational disturbance footprint: The rail corridor that will include the corridor, extent of earthworks, rail formation, tracks and associated infrastructure as well as other permanent works associated with the Project (e.g. where changes to the road network are required). The land requirement for the Project is expected to comprise a corridor with a width of 40 m to 62.5 m and extending wider where earthworks, structures and other associated infrastructure are required. For the existing rail corridor, the existing width has been generally maintained (where possible), and locally widened to accommodate the proposed works.
- Temporary construction disturbance footprint: Construction footprint where only temporary disturbance is proposed (e.g. laydown areas and compound sites).

Notable land uses approximately 1 kilometre (km) either side of the proposed alignment (land use study area / EIS investigation corridor) are also assessed to capture potential instances in which indirect impacts to land use and tenure may occur. Indirect impacts may include where the Project is within proximity to mining operations or where traversing agricultural land, which may result in both direct and indirect impacts on agricultural activities within and adjacent to the rail corridor.

Additional land may also be required for the Project, such as for legally secured offset areas; however, this detail is unknown at this stage and as such has not been considered in this assessment.

The land use study area is depicted in Figure 8.1a to Figure 8.1i.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Sheep Ck
Seventeen Mile Rd
28
30
South East Queensland Regional Plan (ShapingSEQ)
Rocky Ck
Lockyer Ck
George St
Turners St
Helidon
Warrego Hwy
Railway St
School St
Plant St
Gatton Helidon Rd
Lockyer Creek Rd
Gatton
Toowoomba
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Figure 8.1a: Land use and tenure impact assessment area
LEGEND
5 Chainage (km)
Localities
Existing rail
G2H project alignment
H2C project alignment
Watercourses
Major roads
Minor roads
Regional planning area boundaries
Gowrie to Grandchester corridor
Land use and tenure study area
Temporary disturbance footprint
Permanent disturbance footprint
0
0.6
1.2
km
Coordinate System: GDA 1994 MGA Zone 56
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Data Sources: FFJV
Paper: A4
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Map by: RB Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 3/03/2020 16:15

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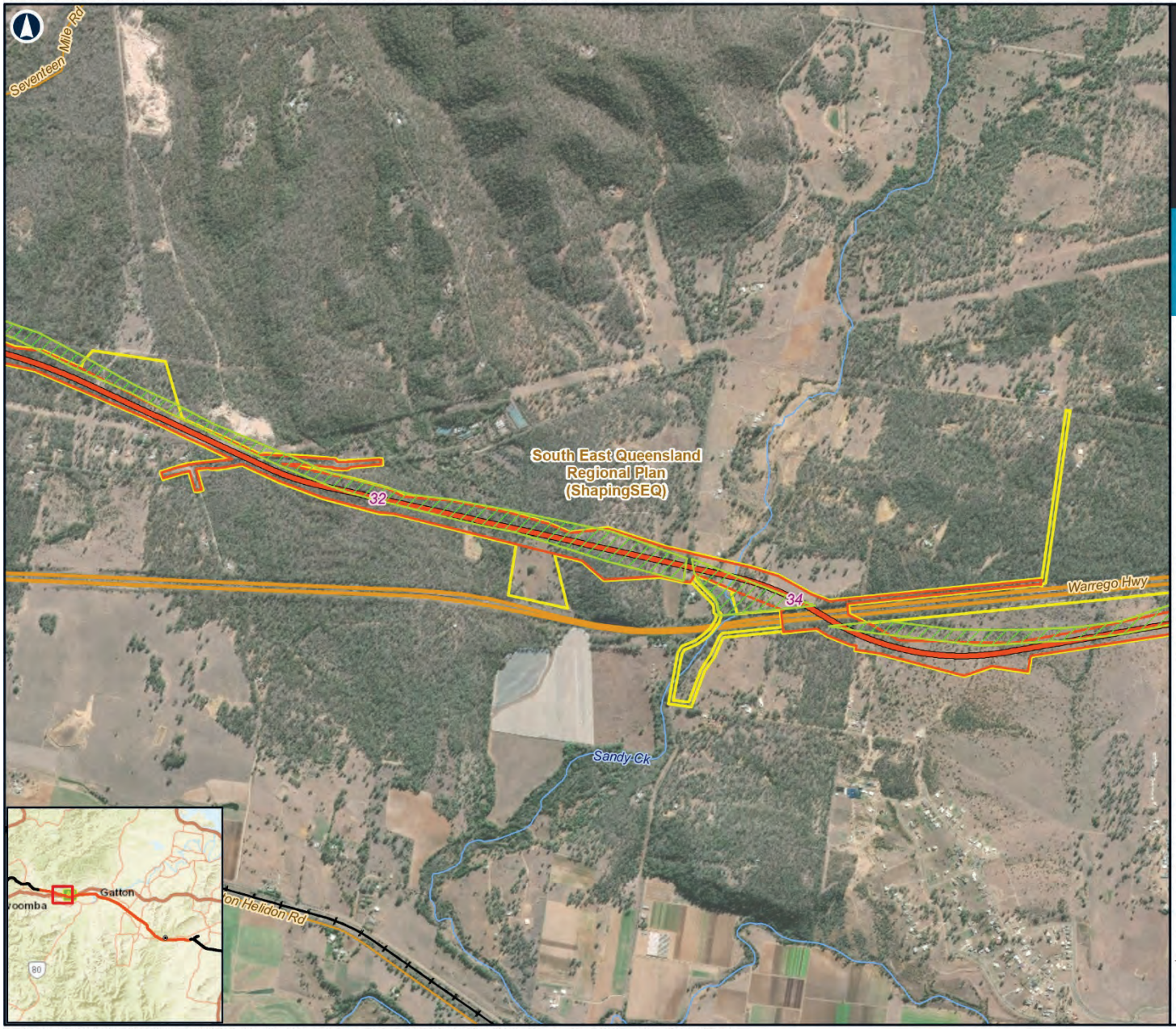

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Figure 8.1b: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

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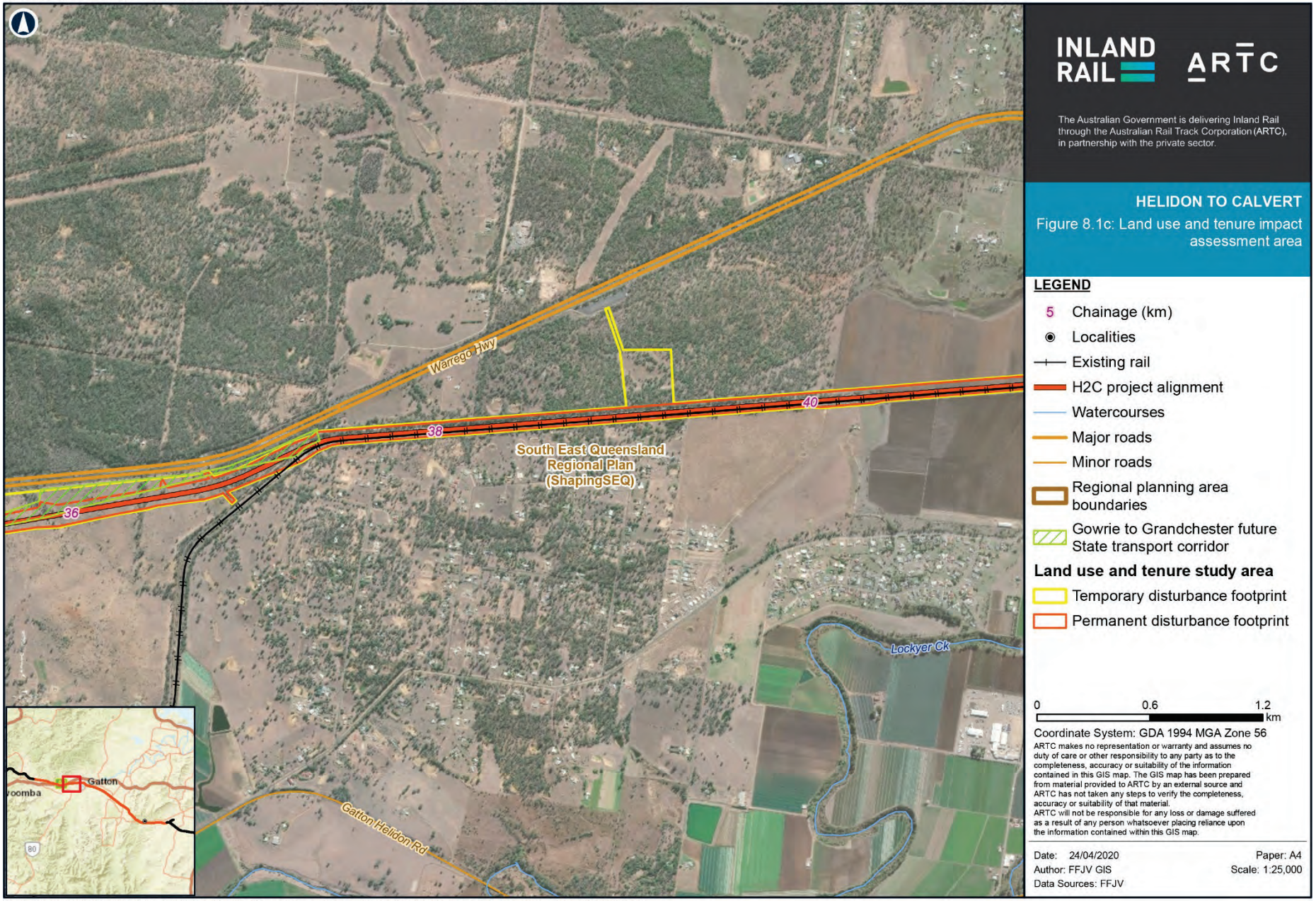

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Figure 8.1c: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

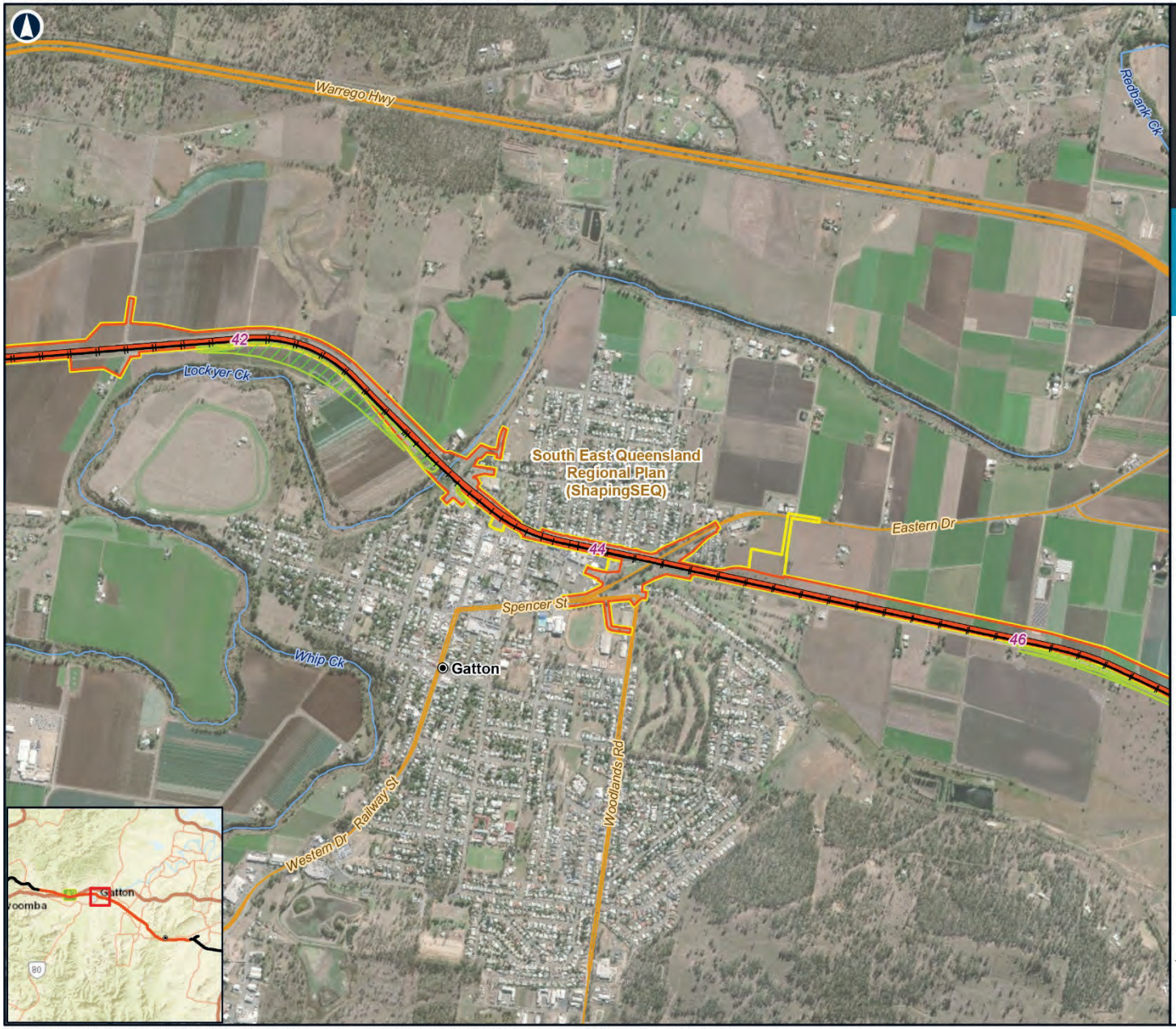

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Figure 8.1d: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

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Figure 8.1e: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

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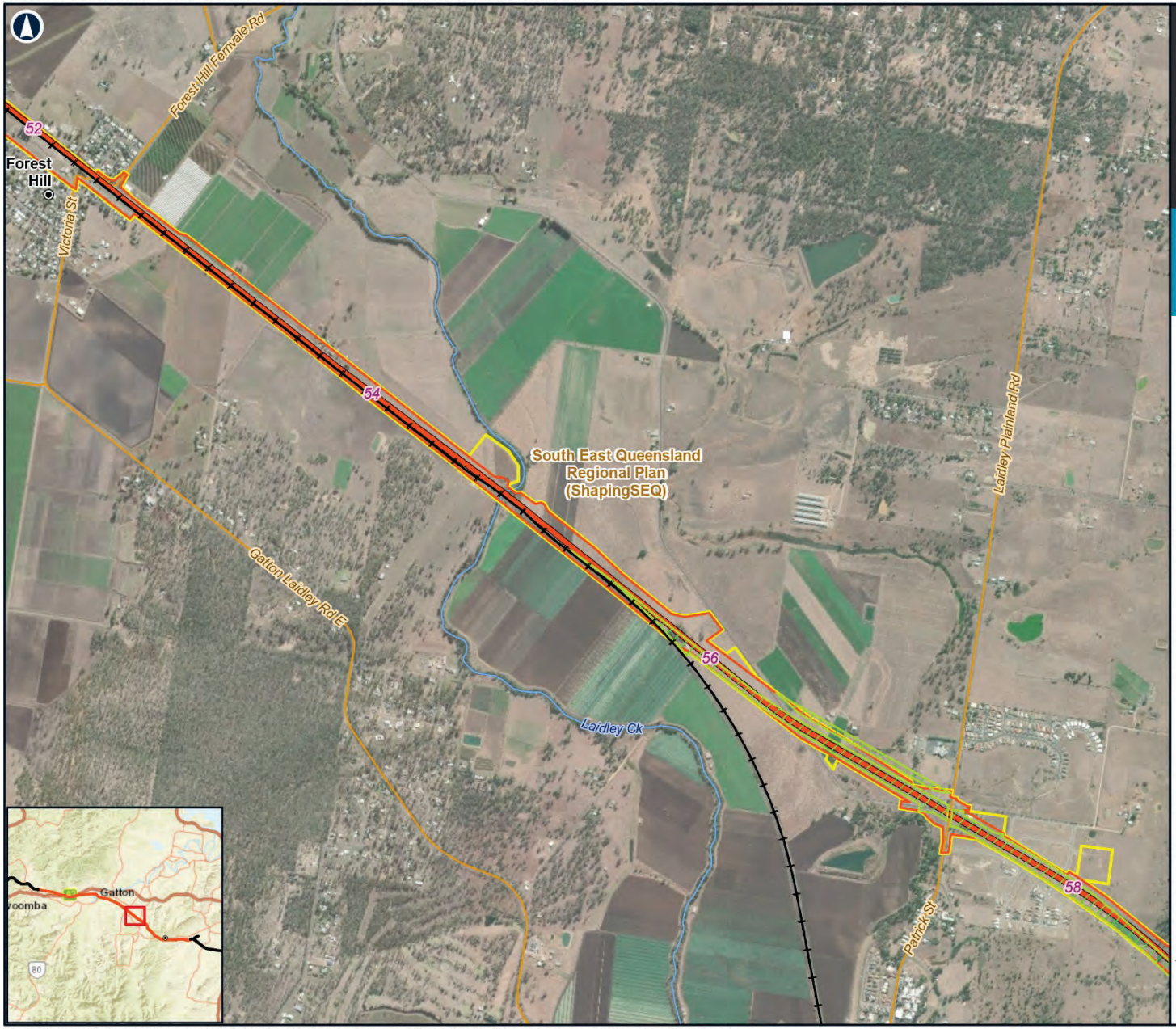

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Figure 8.1f: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

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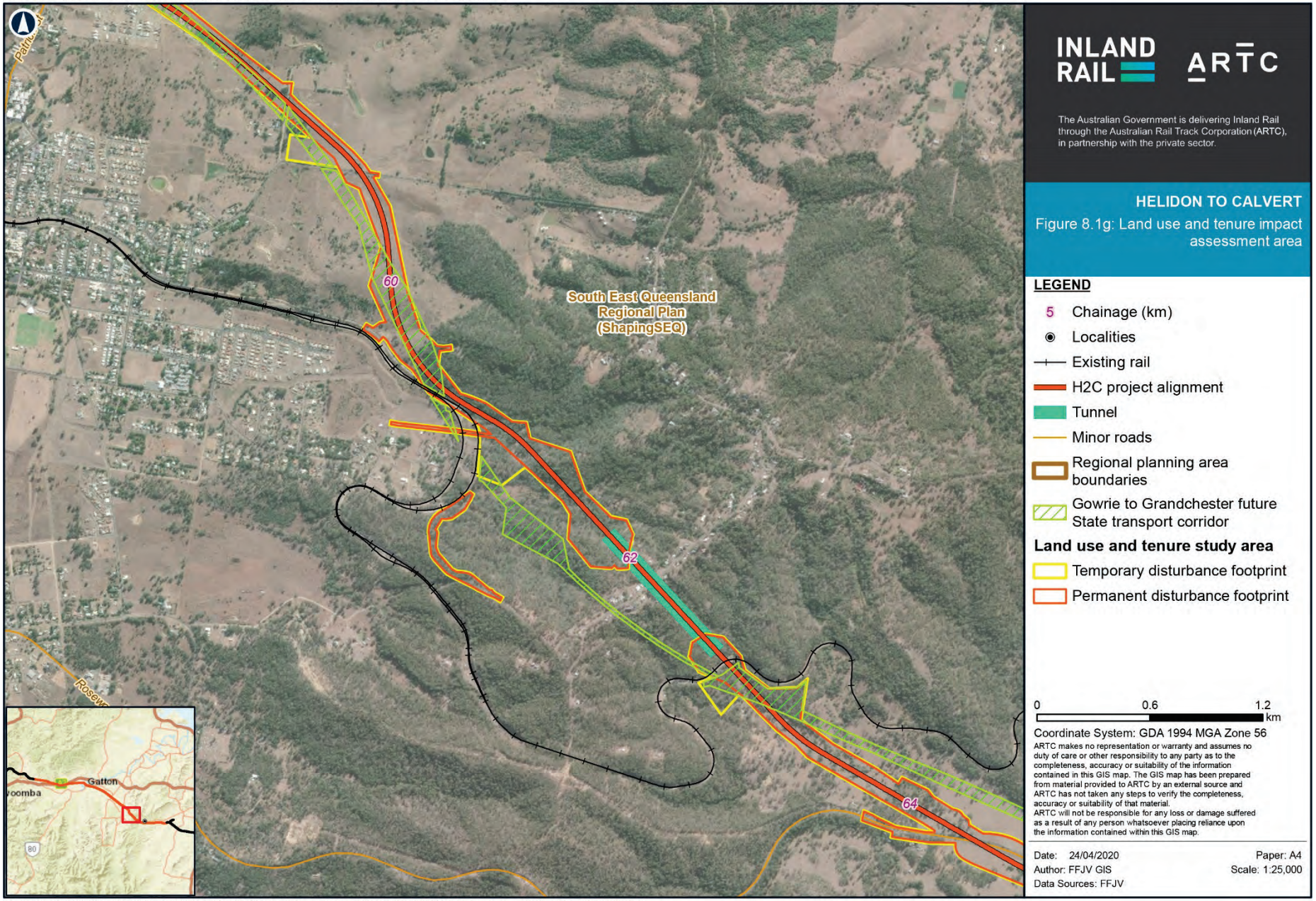

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Figure 8.1g: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Tunnel
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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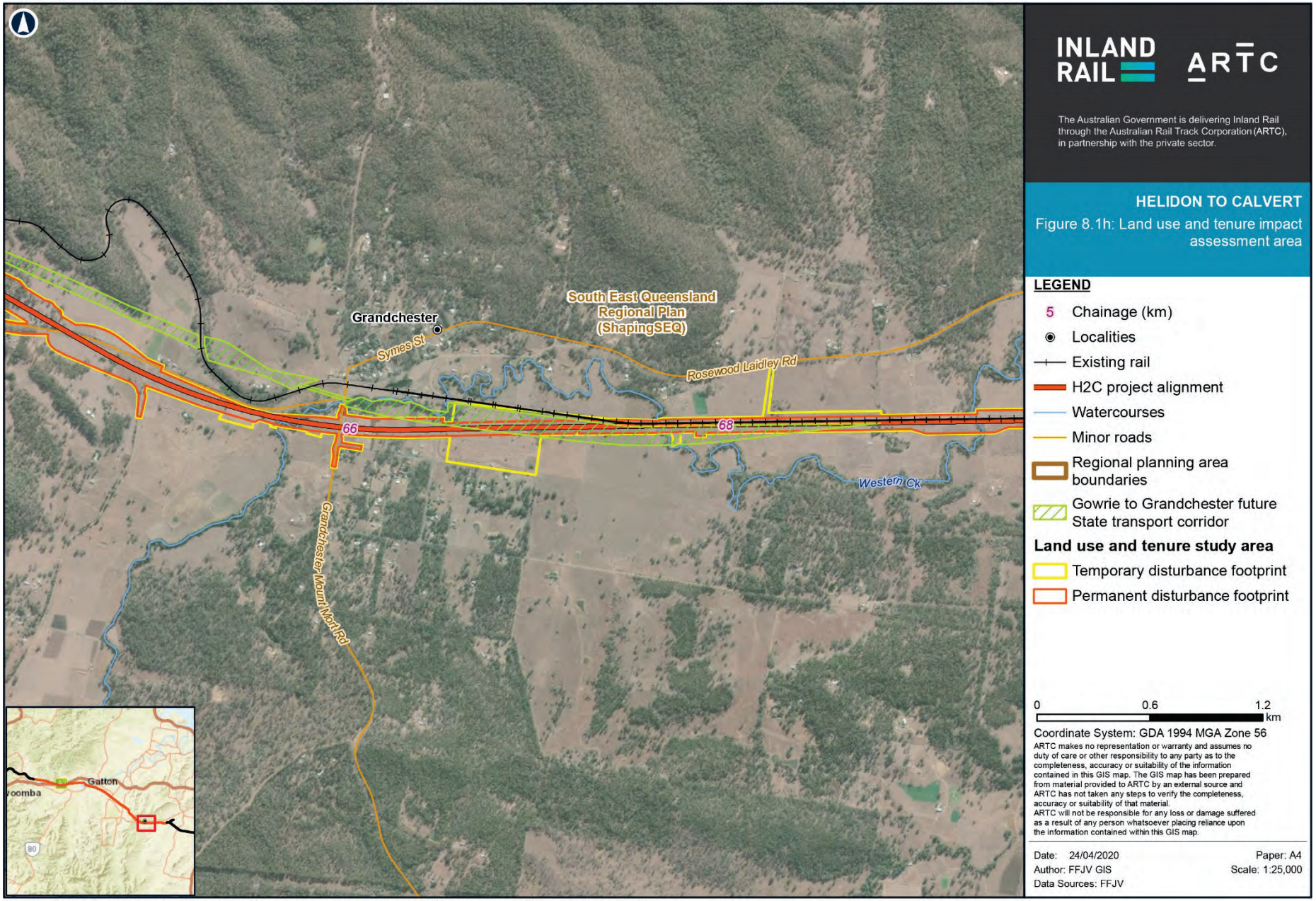

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Figure 8.1h: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Minor roads
- Regional planning area boundaries
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

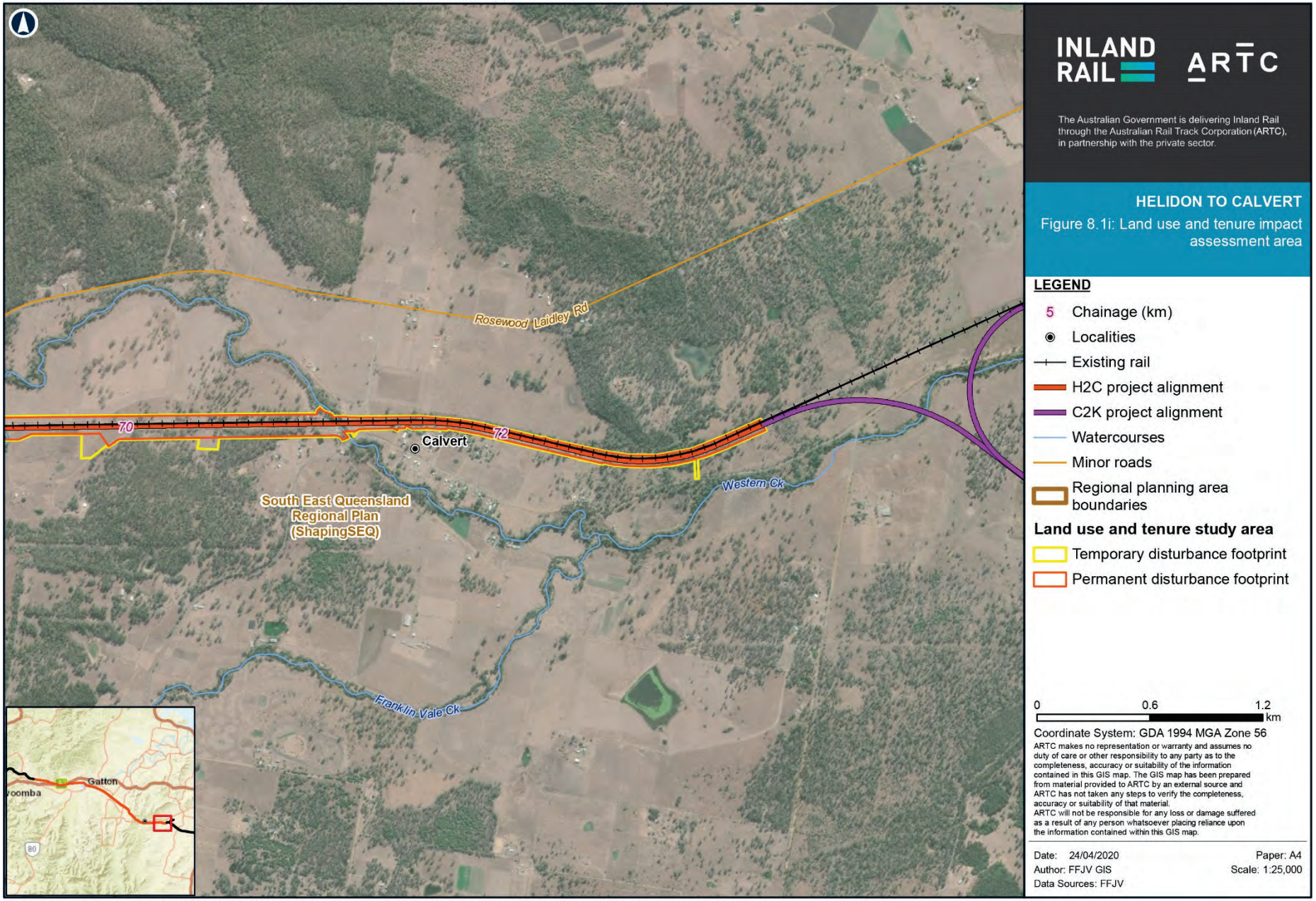

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Figure 8.1i: Land use and tenure impact assessment area

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- C2K project alignment
- Watercourses
- Minor roads
- Regional planning area boundaries

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.1_Study_Area_ARTC.mxd Date: 24/04/2020 15:24

8.5.2 Impact assessment methodology

A compliance impact assessment method has been adopted for the assessment of impacts to land use and tenure (refer Figure 8.2 and Chapter 4: Assessment methodology). The compliance impact assessment methodology focuses on assessing the extent of compliance with the land use and planning instruments relevant to the land use study area and project activities.

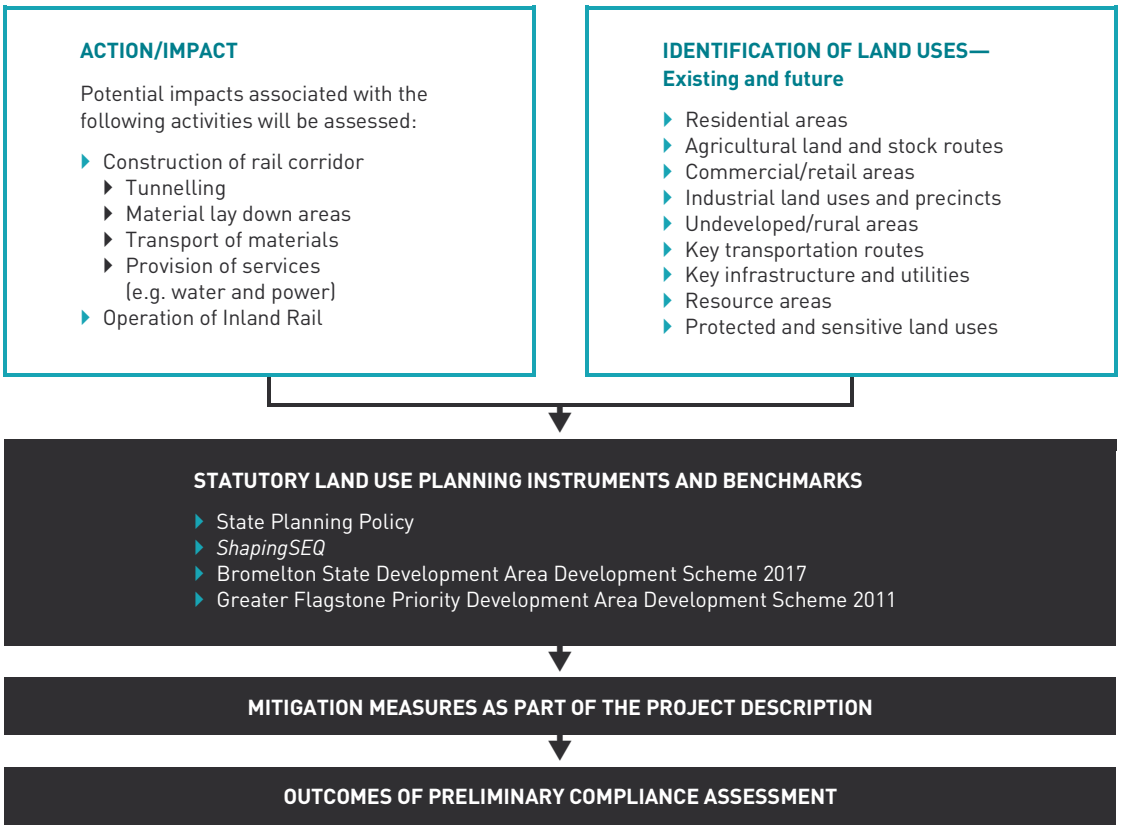

FIGURE 8.2: LAND USE COMPLIANCE IMPACT ASSESSMENT METHODOLOGY

8.5.3 Data sources

This section details the desktop analysis undertaken to identify existing land uses and constraints related to the Project. Details of the relevant database sources, search dates, and type of information considered for the desktop study are summarised in Table 8.3.

TABLE 8.3: DATABASE AND DOCUMENT REVIEW SUMMARY

Database/data source name
Queensland globe data layers[1] (accessed 21 February 2020) from online database: **qldglobe.information.qld.gov.au**

Boundaries:

- Local government
- Locality.

Economy:

- Resources:
  - Coal resources:
    - Coal resource boundary
    - Coal resource area.
  - Extractive resources:
    - KRA transport route
    - KRA haulage corridor
    - KRA transport route separation area
    - KRA resource/processing area
    - KRA separation area.

Environment:

- Nature refuge
- Parks:
  - Protected area roads
  - Protected tracks and trails
  - Protected areas.

Farming:

- Agricultural land audit:
  - Current agriculture:
    - Aquaculture
    - Cattle feedlot
    - Forestry plantations
    - Land-based aquaculture
    - Pasture production
    - Piggeries
    - Poultry farms
  - Region boundary
  - Sown pasture
  - State planning policy and regional interests.

Imagery and Base Maps:

- Imagery

Planning cadastre:

- Coordinated projects—the Coordinator-General
- Land parcel tenure
- Land parcels:
  - Land parcel
  - Land parcel label
  - Natural boundary
  - Rights and interests:
    - Easement parcel
    - Strata parcel
    - Volumetric parcel.
  - Road parcel.
- Priority Development Areas
- Land use
- Lease and reserve parcel
- Regional planning:
  - *SEQ Regional Plan 2017—ShapingSEQ*.
- State Development Areas:
  - State Development Areas.

Society:

- NNTT:
  - Registered native title bodies corporate
  - Future act determination applications
  - Future act objections
  - Future act notices current
  - Indigenous land use agreements
  - Native title determination outcomes
  - Native title determinations
  - Register of native title claims
  - Schedule of native title determination applications
  - Representative Aboriginal and Torres Strait Islander body areas.

Transportation:

- Airports and heliports
- Ports
- Railway line
- Railway stop
- Regulated air services
- Road
- Stock routes:
  - Stock routes
  - Stock routes reserves
  - Water facility.

Database/data source name	
Mining and exploration permits data layers (accessed 29 September 2020) from online database: https://georesglobe.information.qld.gov.au/	

▸ Exploration permits:
  ▸ Coal
  ▸ Mineral
  ▸ Mineral development licence
  ▸ Petroleum
  ▸ Geothermal
  ▸ Greenhouse gas
▸ Production permits:
  ▸ Mining claim
  ▸ Mining lease
  ▸ Petroleum lease
  ▸ Greenhouse lease
  ▸ Geothermal lease
	▸ Infrastructure permits:
	  ▸ Mining lease infrastructure
	  ▸ Pipeline licence area
	  ▸ Pipeline licence centre line
	  ▸ Petroleum facility licence
	▸ Historical production permits
	  ▸ Historical mining claim
	  ▸ Historical mining lease
	  ▸ Historical mining lease (points)
	  ▸ Historical mineral freehold selection (points)
	  ▸ Historical geothermal lease
	  ▸ Historical greenhouse lease
	  ▸ Historical petroleum lease

Utilities (data obtained from utility owners by ARTC and provided to FFJV)	
Energex electrical network spatial data	Geographical Information System (GIS) files
Ergon Energy utility network	GIS files
ICC: ▸ Council roads ▸ Lot and property boundaries with ID and type attributes ▸ Council managed utilities/services infrastructure.	GIS files
LVRC: ▸ Property boundaries ▸ Council managed infrastructure.	GIS files
NBN GIS data	GIS files
Powerlink	GIS files
Optus utility network information	GIS files
Queensland Urban Utilities assets: ▸ Sewer ▸ Water ▸ Recycled water.	GIS files
Santos pipeline alignments	MapInfo TAV
Seqwater infrastructure	GIS files
Telstra geographic data	DXF format

Table note:
1. Layers as per the Queensland Globe Data Layers Catalogue (DNRME, 2020).

8.6 Existing environment

The Project uses the existing West Moreton System rail corridor for approximately 50 per cent of the length of the alignment. Of the total 488.44 hectares (ha) required for the permanent operational disturbance footprint, 86.7 ha or approximately 18 per cent, is within the existing rail corridor.

Where the Project deviates from the existing West Moreton System rail corridor, the Project predominantly follows the protected Gowrie to Grandchester future State transport corridor, a greenfield corridor protected for future railway land under the TPC Act. Approximately 80.02 ha, or 16 per cent, of the total area of the permanent operational disturbance footprint is located within the Gowrie to Grandchester future State transport corridor.

The Gowrie to Grandchester study was a joint venture between the DTMR (formerly Queensland Transport) and Queensland Rail (QR). The purpose of the study was to investigate a rail corridor that would help mitigate constraints on rail operations caused by the Toowoomba and Little Liverpool Range crossings. The study was completed in 2003 (DTMR, 2002).

The Gowrie to Grandchester future State transport corridor was declared a 'future public passenger transport corridor' in 2005 in the Public Passenger Transport Guideline made under the TPC Act. Since its gazettal, no further planning has been undertaken by DTMR.

Between Helidon and Calvert, the permanent operational disturbance footprint traverses 193 properties, and 36 easements. The temporary construction disturbance footprint traverses 341 properties and 37 easements. The area of these properties and interests within the permanent operational and temporary construction disturbance footprints, as well as tenure and existing land uses of these properties, are detailed in Appendix G: Directly Impacted Properties.

The land tenure, existing land uses, future land use intent and development activity within the land use study area are outlined below.

8.6.1 Land tenure

Within Queensland, tenure types are generally defined as:

- Freehold—Land is alienated from the State and the ownership rests with the owner as an estate in fee simple and is dealt with under the *Land Title Act 1994* (Qld)
- Lands lease—Land held by the State, where leases are issued for several purposes including pastoral, grazing and commercial or industrial purposes, or where land is leased to the State for a rail transport purpose. Lands lease tenure may also be dedicated as State forests.
- State land—land that is unallocated State land
- Reserve land—land that has been dedicated as a reserve for a public or community purpose.

Where there is no tenure within the cadastral boundary, land may also be identified as:

- Road type parcel—land that has been designated as road
- Unlinked parcel—land with no tenure type under the Digital Cadastre Database mapping
- Watercourse—land that is a watercourse.

Except for freehold land, tenure and interests in land in Queensland are primarily administered by the Department of Resources (former DNRME) under the provisions of the Land Act. Freehold land is held by way of an indefeasible title recorded in the Freehold Land Register under the provisions of the *Land Title Act 1994*.

The tenure of land within the land use study area is predominantly freehold, with 59.7 per cent of the permanent operational disturbance footprint and 77.7 per cent of the temporary construction disturbance footprint consisting of freehold tenure.

Where the Project is positioned within the existing West Moreton System rail corridor, the tenure of the existing rail corridor is lands lease, leased by the State to QR. Where the Project deviates from the existing rail corridor, the tenure of land within the land use study area is predominantly freehold but also consists of lands lease, State land and reserve tenure, as well as road parcels and watercourses.

The tenure arrangements for the Project are the subject of negotiations with the State (DTMR) and these arrangements will be finalised prior to the commencement of construction. It is expected that tenure for State-owned land for construction (temporary construction disturbance footprint) will be managed by way of construction leases granted by the Constructing Authority to ARTC. For operation (permanent operational disturbance footprint), the rail corridor will be the subject of a lease from the Minister administering the TI Act to the State (under Section 240 of the TI Act), which must then be subleased to the railway manager (ARTC).

Table 8.4 provides a summary of land tenure within the land use study area. Tenure within the land use study area is shown in Figure 8.3a to Figure 8.3i.

TABLE 8.4: TENURE WITHIN THE LAND USE STUDY AREA

	Permanent operational disturbance footprint			Temporary construction disturbance footprint		
Type of tenure	No. of land parcels	Area (ha)	% of footprint	No. of land parcels	Area (ha)	% of footprint
Freehold	158	291.38	59.7	302	113.3	77.7
Lands lease	24	88.28	18.1	26	3.47	2.4
Road	128	90.63	18.6	182	24.08	15.6
Reserve	4	7.49	1.5	6	3.53	2.4
Unlinked	53	6.53	1.3	83	1.00	0.7
State land	7	2.77	0.6	7	0.25	0.2
Watercourse	9	1.36	0.3	10	0.2	0.1
Total	**193***	**488.44**	**100.0**	**341***	**145.83**	**100.0**

Table note:
* Land parcels only, excludes road, unlinked and watercourses.

8.6.1.1 State land

Under the Land Act, unallocated State land can be made available through various forms of leasehold tenure or dedicated for community purposes, such as roads or reserves. Leases are issued over State land for a specific purpose, which may include pastoral, grazing, commercial or industrial purposes. The Land Act provides for the following types of leasehold tenures:

- Term lease—issued for terms of 1 to 100 years
- Perpetual lease—held by the leaseholder in perpetuity and issued for a specific purpose (e.g. agricultural or commercial use)
- Freeholding lease—where freehold title has been approved but the leaseholder is paying off the purchase price by annual instalments
- Road licence—when a road has been temporarily closed, allowing the licensee to use the land until the licence is surrendered or cancelled
- Permit to occupy—for short-term occupation of State controlled land.

The following two land parcels with leases are identified to be located within the land use study area:

- Lot 165 on CC1892—lands lease parcel with a term lease
- Strata parcel A on AP3298 (Kessling Drive)—lands lease parcel with a road licence that does not have an end date.

Under the Land Act, unallocated State land may also be dedicated as a reserve for a particular public or community purpose. Trustees may be appointed to run the day-to-day management of the reserve and may lease or issue a permit over the reserve, subject to approval by the Minister for the Department of Resources (former DNRME).

As identified in Table 8.4, the land use study area contains four parcels of reserve tenure.

The types of tenure and associated leases on these land parcels are:

- Lot 184 on CC3374—Reserve for University and College, trustee is The University of Queensland
- Lot 19 on SP161916—Reserve for Grandchester Recreational Park, trustee is Grandchester Park Recreation Reserve Association
- Lot 499 on SP197170—Reserve for open space and drainage, trustee is LVRC
- Lot 5 on SP219946—Reserve for drainage, trustee is LVRC
- Lot 169 on CC2193—Reserve for educational institution, trustee is BTStraps Incorporated.

In addition to these land parcels, there are seven parcels of State land tenure within the land use study area. These land parcels are unallocated State land and are not subject to a leasehold or reserve tenure.

8.6.1.2 Easements

An easement gives a person the right to use someone else's land for a specified purpose, for example to gain access to other land. The permanent operational and temporary construction disturbance footprints traverse 36 and 37 easements respectively. Easements throughout the land use study area would be associated with rights to use land for purposes such as crossing the land or related to services located on, underneath or above the land.

8.6.1.3 Mineral resource interests

The *Mineral Resources Act 1989* provides the framework for exploration, development and mining tenure.

There are no mineral resource interests located within the land use study area. There are six granted mining leases and one mining lease application within 1 km of the land use study area at Helidon between approximate chainage (Ch) 28.00 km and Ch 30.00 km. These mining leases are predominantly associated with established sandstone mining operations and are detailed in Table 8.5 and shown on Figure 8.3a and Figure 8.3b.

TABLE 8.5: MINERAL RESOURCE INTERESTS WITHIN 1 KM OF THE LAND USE STUDY AREA

Permit type	Permit No.	Permit name	Holder name	Permit status	Approximate distance from land use study area
Mining Lease	ML 50202	Nevanna II	Perkins, Neville William	Granted	910 m north of Ch 28.02 km
Mining Lease	ML 50181	Nevanna	Perkins, Neville William	Granted	520 m north of Ch 28.25 km
Mining Lease	ML 50282	N/A	Helidon Sandstone Industries Pty Ltd	Granted	760 m north of Ch 28.89 km
Mining Lease	ML 50182	Regent	Helidon Sandstone Industries Pty Ltd	Granted	450 m north of Ch 29.16 km
Mining Lease	ML100122	N/A	Helidon Sandstone Industries Pty Ltd	Application	450 m north of Ch 29.16 km
Mining Lease	ML 50285	Stephens Bros	Stephens, Peter James	Granted	990 m north of Ch 29.68 km
Mining Lease	ML 50097	Helidon Gold	Stephens, Peter James	Granted	970 m north of Ch 29.97 km

Source: DNRME, 2019c

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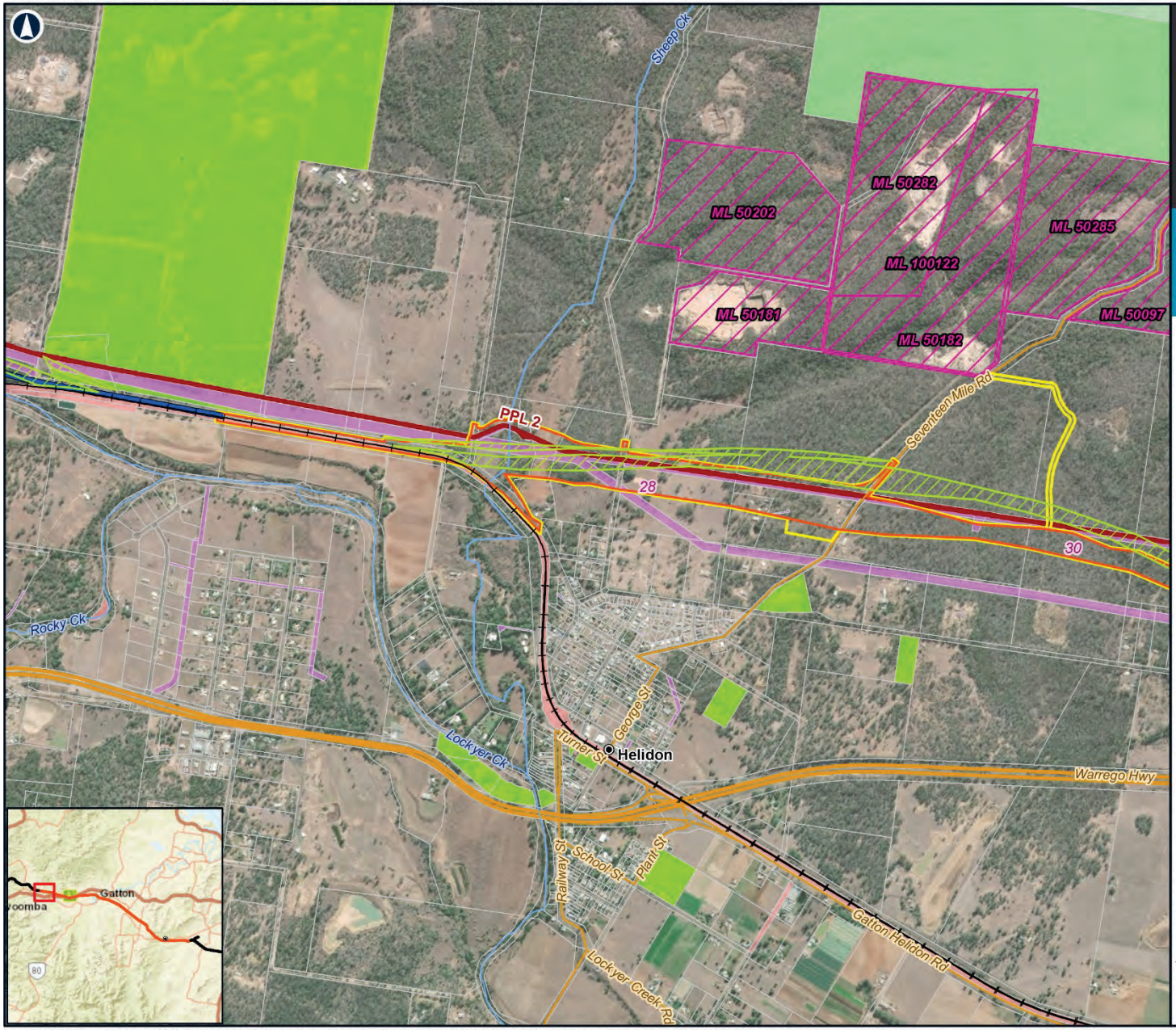

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Figure 8.3a: Land tenure

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- G2H project alignment
- Watercourses
- Major roads
- Minor roads
- Petroleum pipeline licences
- Cadastre
- Gowrie to Grandchester future State transport corridor
- Mining leases

Tenure, other than freehold

- Lands Lease
- National Park
- Reserve
- State Forest
- State Land
- Easement

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.3_Land_Tenure_ARTC.mxd Date: 24/04/2020 15:48

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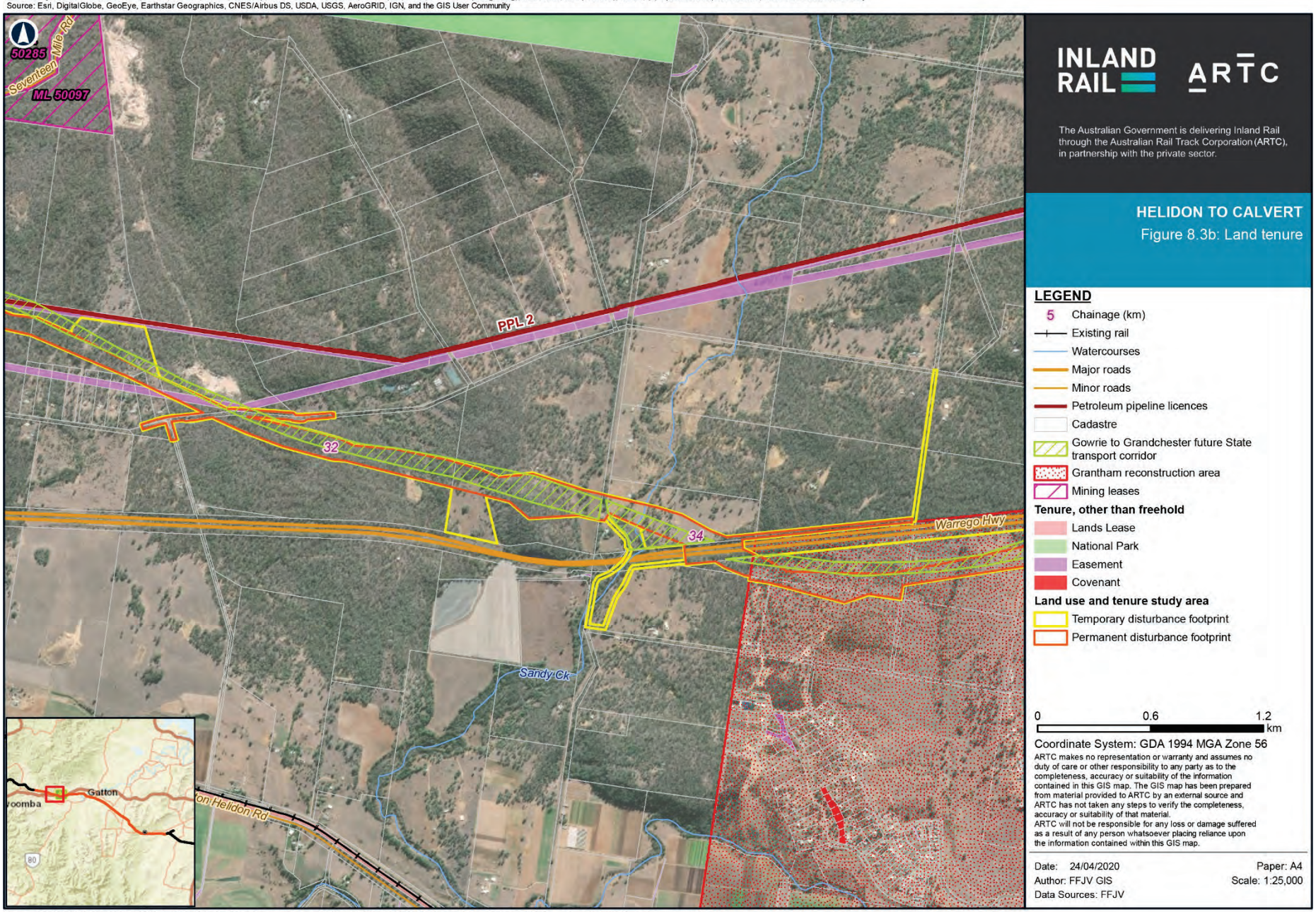

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Figure 8.3b: Land tenure

LEGEND

- 5 Chainage (km)
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Petroleum pipeline licences
- Cadastre
- Gowrie to Grandchester future State transport corridor
- Grantham reconstruction area
- Mining leases

Tenure, other than freehold

- Lands Lease
- National Park
- Easement
- Covenant

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV
Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.3_Land_Tenure_ARTC.mxd Date: 24/04/2020 15:48

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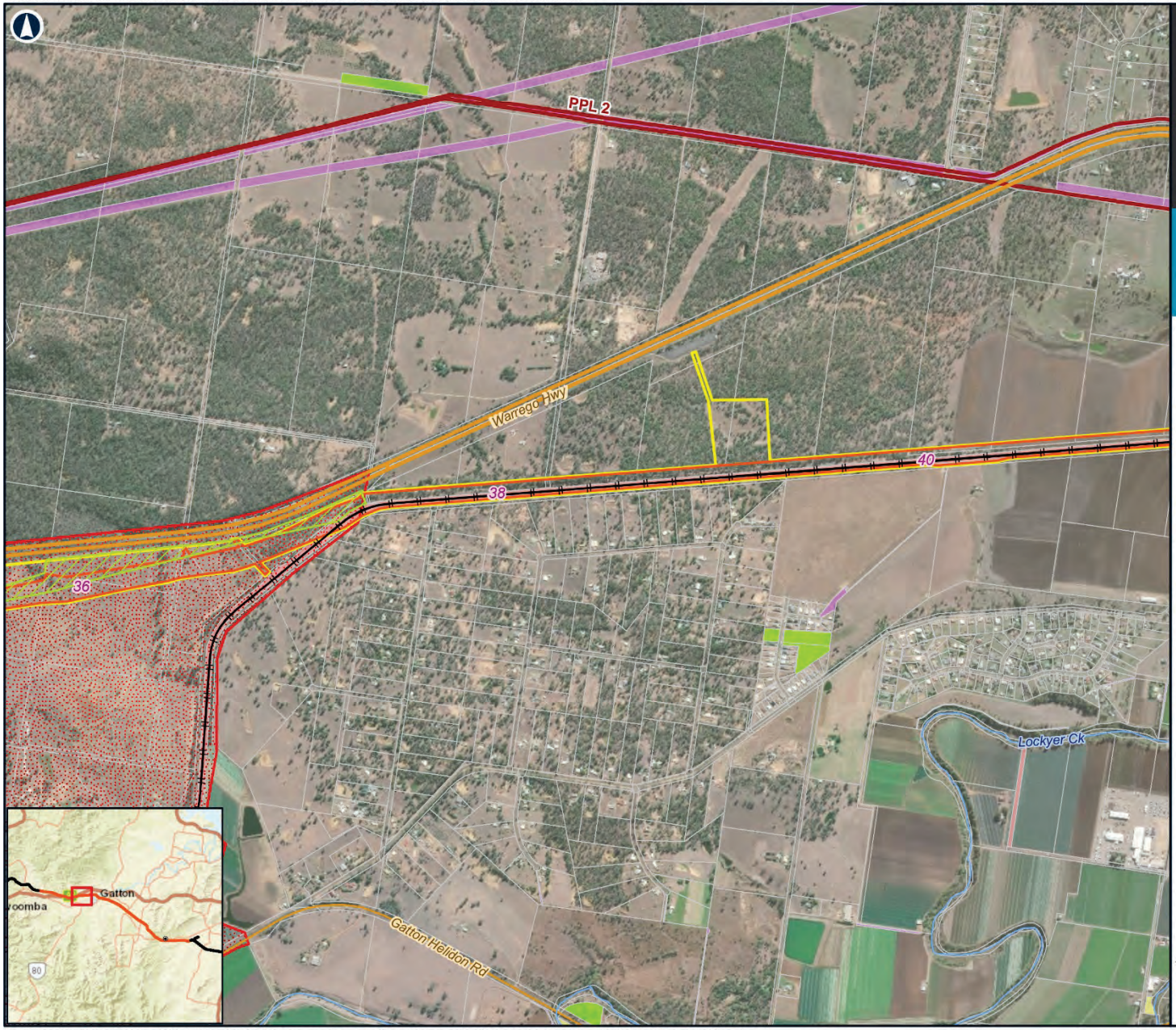

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Figure 8.3c: Land tenure

LEGEND

- 5 Chainage (km)
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Petroleum pipeline licences
- Cadastre
- Gowrie to Grandchester future State transport corridor
- Grantham reconstruction area

Tenure, other than freehold

- Lands Lease
- Reserve
- State Land
- Easement

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

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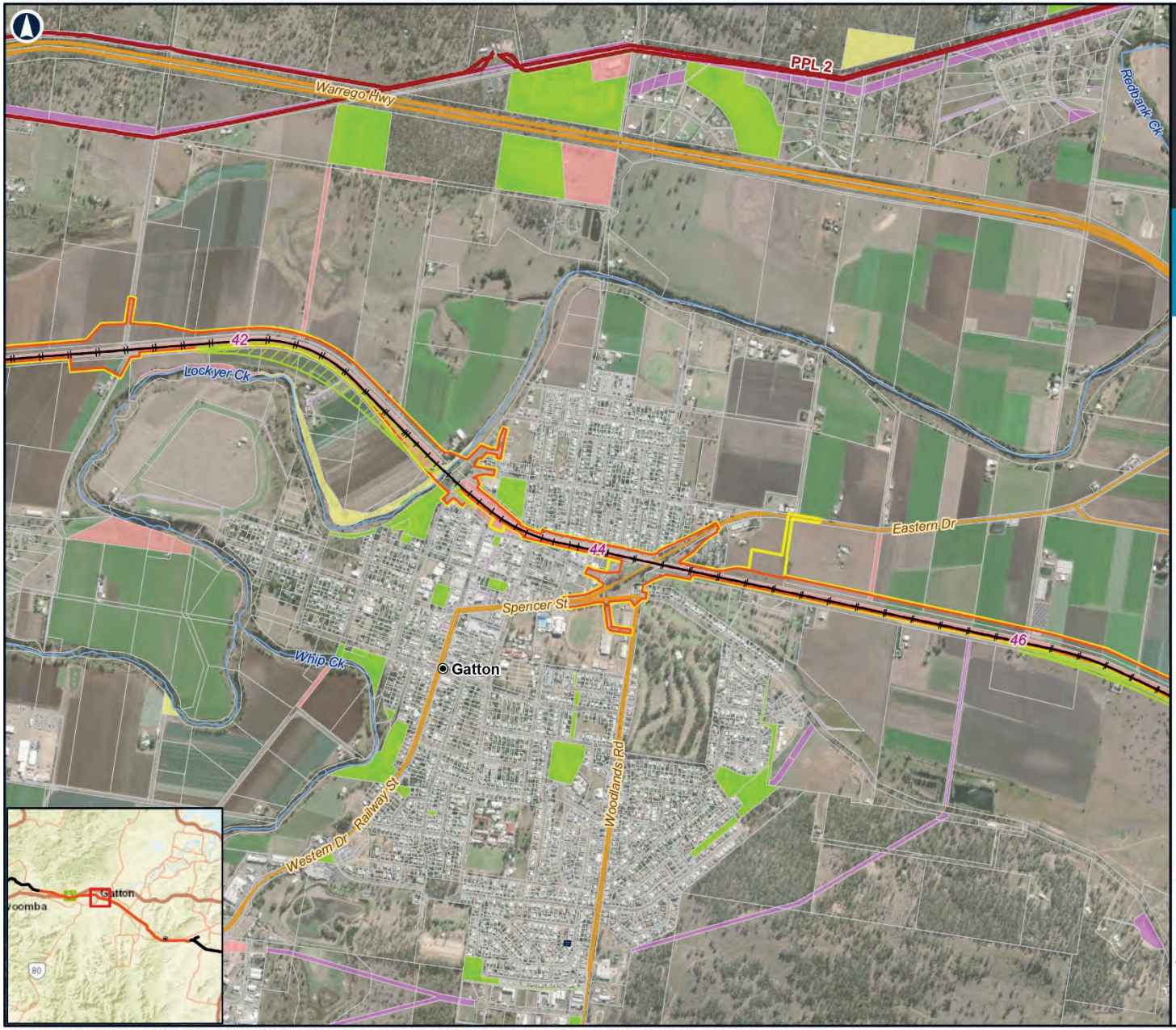

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Figure 8.3d: Land tenure

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Petroleum pipeline licences
- Cadastre
- Volumetric parcels
- Gowrie to Grandchester future State transport corridor

Tenure, other than freehold

- Lands Lease
- Reserve
- State Land
- Easement
- Covenant

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.3_Land_Tenure_ARTC.mxd Date: 24/04/2020 15:48

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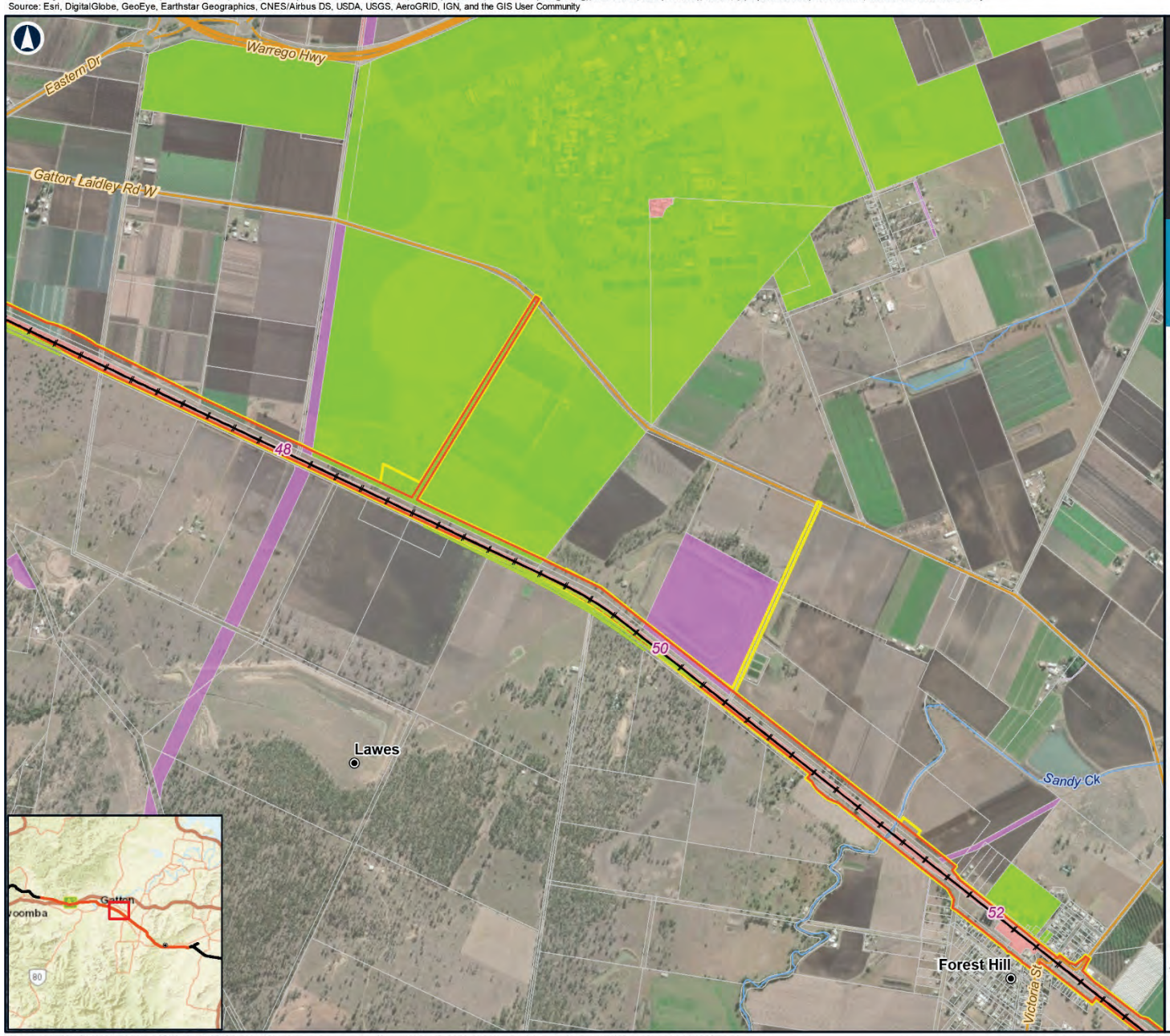

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Figure 8.3e: Land tenure

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Tenure, other than freehold

- Lands Lease
- Reserve
- Easement

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.3_Land_Tenure_ARTC.mxd Date: 24/04/2020 15:48

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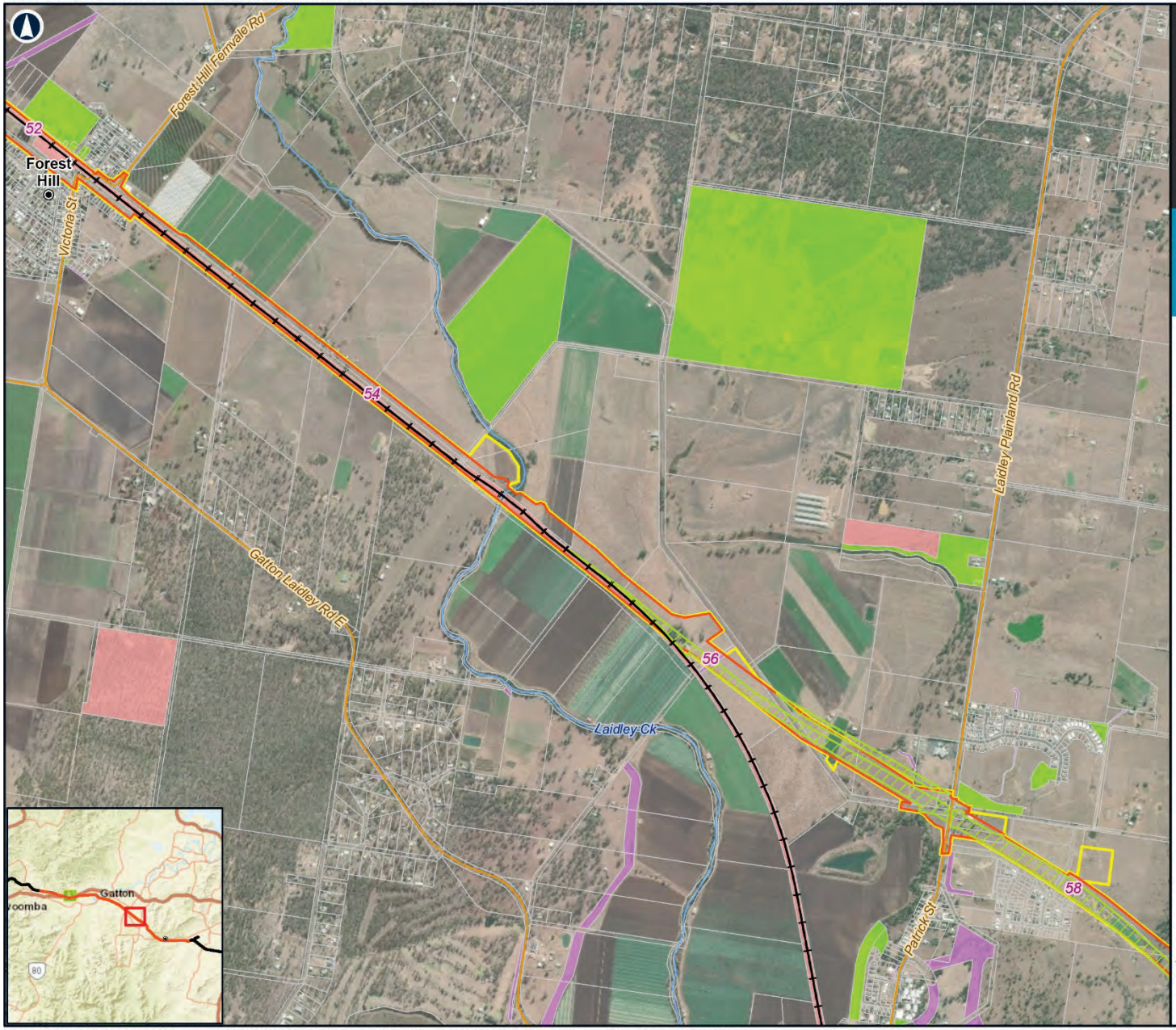

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Figure 8.3f: Land tenure

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Tenure, other than freehold

- Lands Lease
- Reserve
- Easement

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

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Scale: 1:25,000

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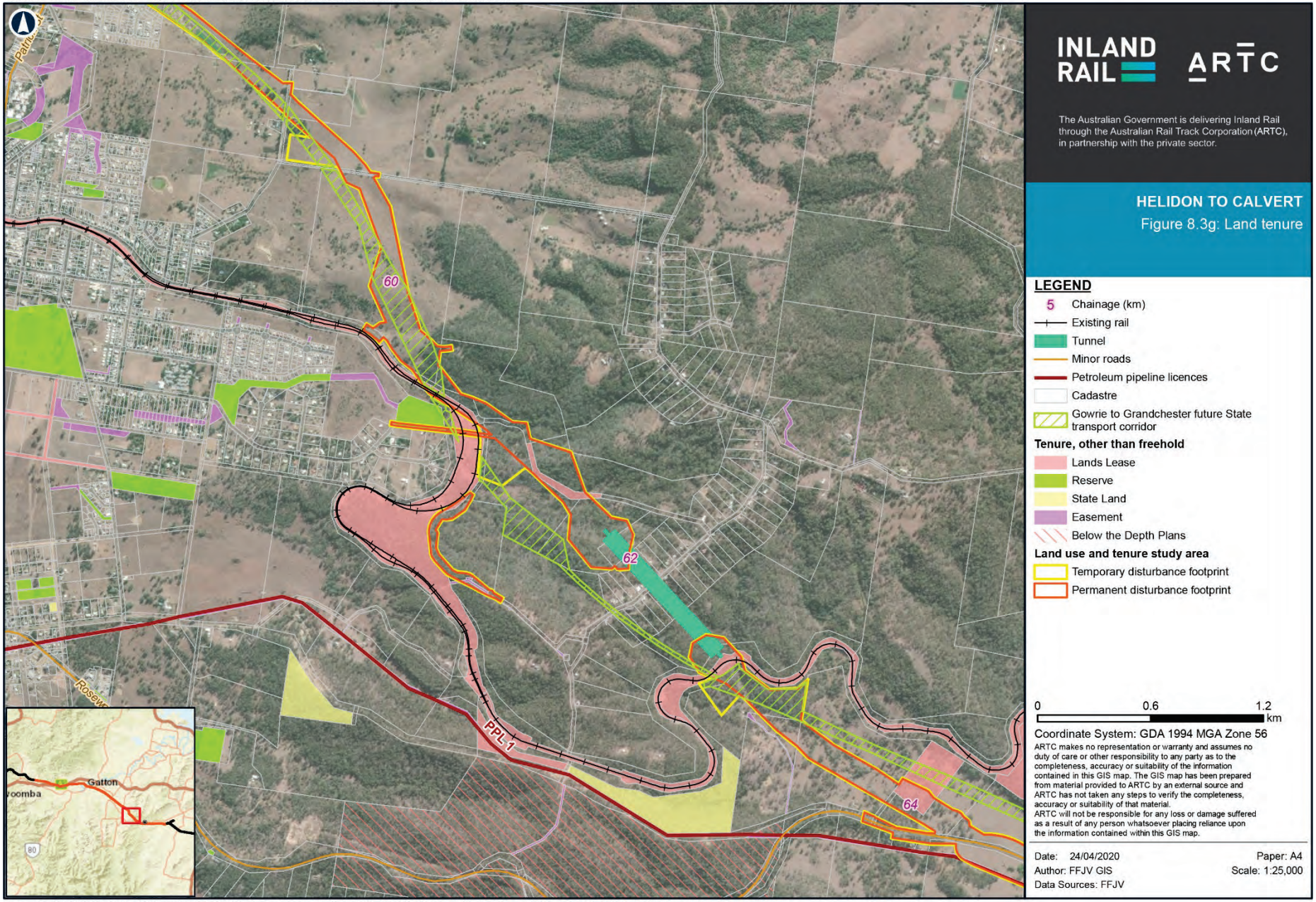

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Figure 8.3g: Land tenure

LEGEND

- 5 Chainage (km)
- Existing rail
- Tunnel
- Minor roads
- Petroleum pipeline licences
- Cadastre
- Gowrie to Grandchester future State transport corridor

Tenure, other than freehold

- Lands Lease
- Reserve
- State Land
- Easement
- Below the Depth Plans

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.3_Land_Tenure_ARTC.mxd Date: 24/04/2020 15:48

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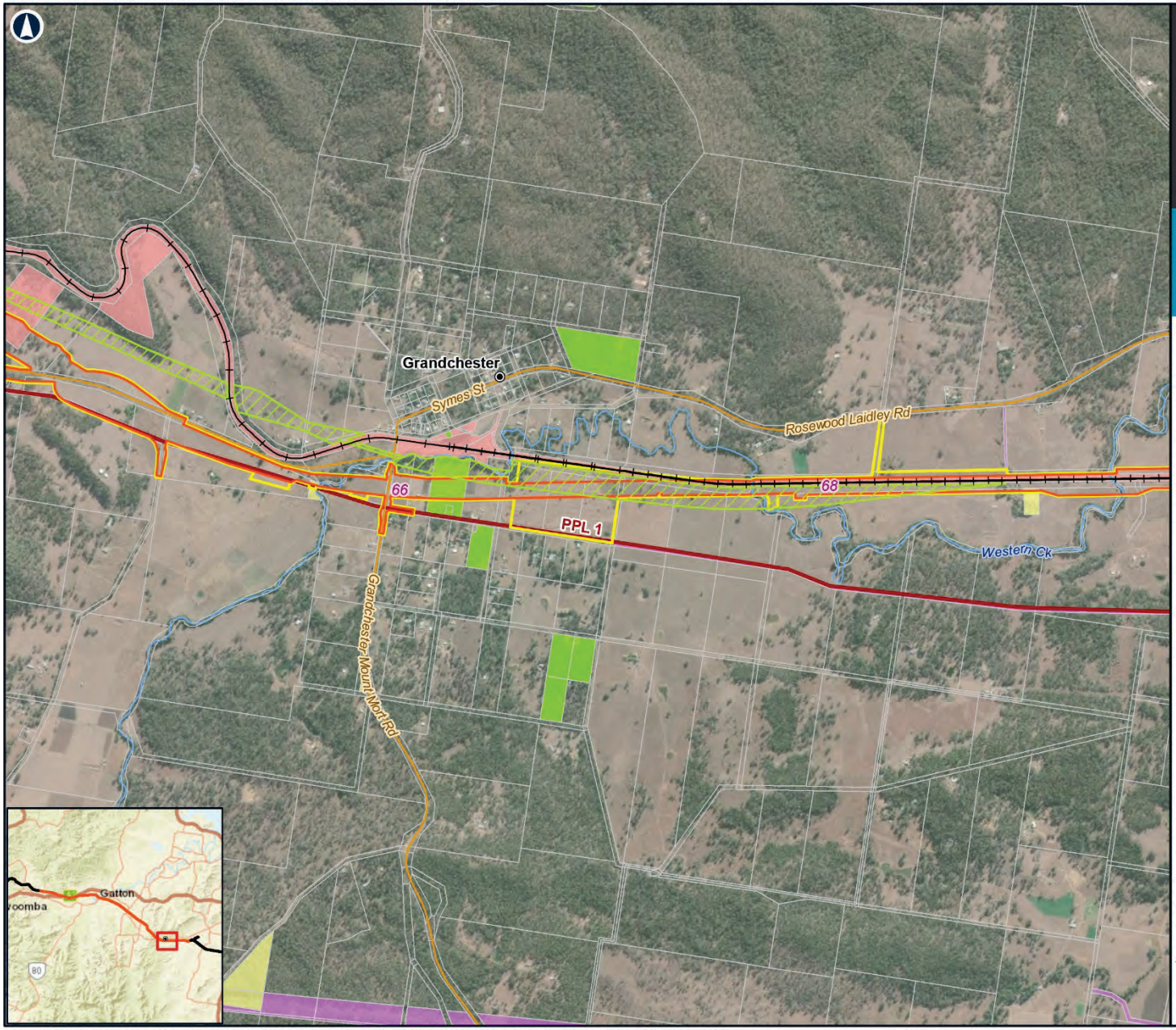

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Figure 8.3h: Land tenure

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Petroleum pipeline licences
- Cadastre
- Gowrie to Grandchester future State transport corridor

Tenure, other than freehold

- Lands Lease
- Reserve
- State Land
- Easement

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.3_Land_Tenure_ARTC.mxd Date: 24/04/2020 15:48

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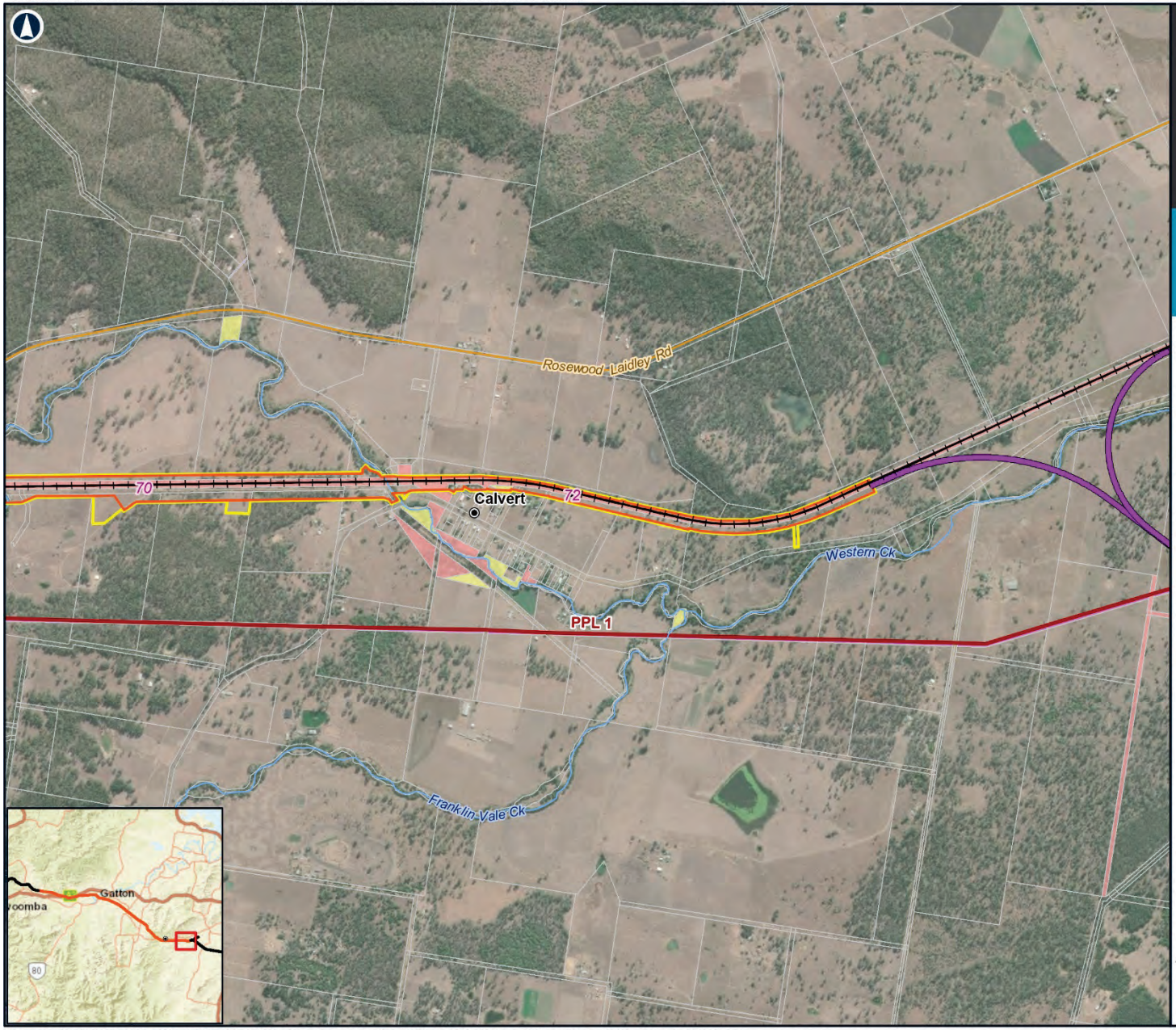

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HELIDON TO CALVERT

Figure 8.3i: Land tenure

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- C2K project alignment
- Watercourses
- Minor roads
- Petroleum pipeline licences
- Cadastre

Tenure, other than freehold

- Lands Lease
- Reserve
- State Land
- Easement

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

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8.6.1.4 Petroleum and gas resource interests

Several different authorities for petroleum and gas exploration and production activities in Queensland are granted under the *Petroleum and Gas (Production and Safety) Act 2004* (Qld). Petroleum and gas authorities are granted for:

- Exploration—authority to prospect, potential commercial area and petroleum lease
- Production—petroleum lease
- Infrastructure development—petroleum facility licence and petroleum pipeline licence
- Information gathering—petroleum survey licence, water monitoring authority and data acquisition authority.

The land use study area intersects three petroleum pipeline licences, which are detailed in Table 8.6 and show on Figure 8.3a to Figure 8.3i. Infrastructure and utilities within the land use study area are further discussed in Section 8.6.2.2.

There are no petroleum exploration, gas exploration, or production permits granted within the land use study area.

TABLE 8.6: PIPELINE LICENCES WITHIN THE LAND USE STUDY AREA

Permit type	Permit No.	Permit purpose	Holder name	Location
Pipeline licence	PPL 2	Gas	Apt Petroleum Pipelines Pty Limited	PPL 2 is located within the land use study area at Helidon at approximate chainage Ch 27.00 km to Ch 29.00 km
Pipeline licence	PPL 1	Oil	Moonie Pipeline Company Pty Ltd	PPL 1 is located within the land use study area at Grandchester at approximate chainage Ch 65.00 km

Source: DNRME, 2019c

As part of consultation undertaken for the Project, holders of resource interests were contacted to inform them of the Project and provide them with the opportunity to discuss it with the Project team. Refer Chapter 5: Stakeholder engagement and Appendix C: Consultation Report for further background.

8.6.1.5 Native title

As identified in Section 8.6.1, tenure within the land use study area is predominantly freehold where native title rights have been extinguished, except in the instance where freehold tenure was invalidly granted.

Where the land use study area uses existing rail and traverses existing road corridors, native title rights have been extinguished through the establishment of public works. In accordance with Section 253 of the NT Act, public works includes a 'road, railway or bridge that is constructed or established by or on behalf of the Crown, or a local government body or other statutory authority of the Crown, in any of its capacities'.

Searches of the National Native Title Register and Register of Native Title Claims, administered by the NNTT, were undertaken on 21 February 2020. No successful native title determinations were identified over the land use study area. There is one yet to be determined native title claim for the Yuggera Ugarapul People, which has been accepted for registration over the land use study area. The Jagera Yagara Gurrangnam People claim area, which also covers the land use study area, was not accepted for registration by the federal courts.

For those areas within the land use study area in relation to which native title has not been extinguished, ARTC will seek the extinguishment of the native title rights and interests in question prior to construction of the Project, by compulsory process, to enable the granting of the necessary interests in Crown lands required to construct the Project.

Native title claims relevant to the land use study area are summarised in Table 8.7. Details on consultation undertaken with the native title claimants within the land use study area is provided in Chapter 5: Stakeholder engagement and Appendix C: Consultation Report.

TABLE 8.7: NATIVE TITLE CLAIMS RELEVANT TO THE LAND USE STUDY AREA

Native title Status	Name	Tribunal file no.	Summary
Accepted for registration	Yuggera Ugarapul People	QC2017/005	This active native title claim has been accepted as a registered claim by the Native Title Tribunal. As of 5 October 2018, the claim has not yet been determined by the courts. The permanent operational disturbance footprint is entirely located within this claim area.
Not accepted for registration	Jagera Yagara Gurrangnam	QC2019/002	On 7 February 2020, this native title claim was not accepted for registration under Section 190A of the NT Act.

Source: NNTT, 2019

A Cultural Heritage Management Plan for the Project was developed between ARTC and the relevant Aboriginal party (Yuggera Ugarapul) in 2018 (CLH017009) and approved under the ACH Act. Further detail on Indigenous cultural heritage is provided within Chapter 18: Cultural heritage.

8.6.2 Land use

The Project is approximately 47 km in length, starting within the existing West Moreton System rail corridor at Helidon, traversing east for approximately 1.3 km. The Project then deviates from the West Moreton System rail corridor and continues east for approximately 4 km. The Project aligns with the Gowrie to Grandchester future State transport corridor west of Grantham, continuing within the protected future transport railway corridor for approximately 6.3 km. The Project then uses the West Moreton System rail corridor northwest of Placid Hills, continuing within the existing rail corridor for approximately 18.4 km while traversing through the localities of Gatton, Lawes and Forest Hill.

The Project deviates from the West Moreton System rail corridor at Laidley North, continuing southeast for approximately 4.9 km while predominantly within the Gowrie to Grandchester future State transport corridor. Deviating from the Gowrie to Grandchester future State transport corridor, the Project enters the western tunnel portal at Laidley and passes beneath the Little Liverpool Range. The Project exits the tunnel at the eastern tunnel portal and traverses east for approximately 4.2 km. The Project re-joins the West Moreton System rail corridor east of Grantham, continuing within the existing corridor for approximately 5.9 km through to Calvert.

Grazing land is the predominant land use within the 488.44 ha permanent and 145.83 ha temporary construction disturbance footprints. The next most common land use is also generally of an agricultural nature, with 50.38 ha of land within the permanent operational disturbance footprint and 9.07 ha of land within the temporary construction disturbance footprint being land classified as irrigated seasonal horticulture. Other land uses include land classified as residential, services (which primarily includes commercial and recreational services located within the Gatton township) and land in transition (which includes land located to the north of Laidley currently being developed into a housing estate).

Existing land use based on the QLUMP (Queensland Government, 2019a) within and adjacent to the land use study area, as per each locality traversed by the Project, described in Table 8.8 and shown in Figure 8.4a to Figure 8.4i.

TABLE 8.8: LAND USE WITHIN AND ADJACENT TO LAND USE STUDY AREA

Locality	Land use[1] within land use study area	Land use[1] adjacent to land use study area (approximately 1 km either side)
Within existing West Moreton System rail corridor (Ch 26.00 km to Ch 27.14 km)		
Helidon	At Helidon, the existing West Moreton System rail corridor is mapped as grazing native vegetation. Where the Project extends wider than the existing rail corridor, land use within the land use study area is mapped as grazing land.	Land uses adjacent to the land use study area at Helidon, include the Helidon Magazine Explosives Reserve, grazing land, irrigate seasonal horticulture and some parcels of residential uses.

Locality	Land use[1] within land use study area	Land use[1] adjacent to land use study area (approximately 1 km either side)
New greenfield rail corridor (Ch 24.14 km to Ch 37.40 km)		
Helidon	Land use within the land use study area at Helidon consists of large parcels of grazing land and rural residential properties.	Land uses adjacent to the land use study area at Helidon mainly consists of grazing land with sandstone mines to the north and rural residential properties to the south.
Grantham	Land use within the land use study area at Grantham primarily consists of grazing land, with some small parcels of residential and cropping uses. The land use study area also crosses Sandy Creek at Ch 33.7 km and the Warrego Highway at Grantham, traversing along the northern boundary of the Grantham Reconstruction Area, a masterplanned community that was created through the 'Strengthening Grantham Project'.	Land uses adjacent to the land use study area at Grantham are characterised by grazing land, rural residential properties and land in transition associated with the Grantham Reconstruction Area.
Within existing West Moreton System rail corridor (Ch 37.40 km to Ch 55.50 km)		
Placid Hills	The Placid Hills locality is adjacent to south of the land use study area where the Project realigns with the existing West Moreton System rail corridor. However, the land use study area does not traverse land located within the locality.	Land uses adjacent to the land use study area at Placid Hills are predominantly residential uses.
Gatton	To the east of the Gatton township, the existing West Moreton System rail corridor is mapped as grazing native vegetation.	Adjacent to the land use study area west of the Gatton township, land uses predominantly consist of grazing land, with some parcels of irrigated seasonal horticulture and transportation uses associated with the Warrego Highway, including a truck stop. Land use within the Gatton township adjacent to the land use study area includes residential land parcels, some small pockets of industrial uses, and services including commercial, recreational and public open space. Notable land uses within the Gatton township include the Gatton Racecourse, Peace Lutheran Primary School, Gatton Showground, Gatton State School, Cahill Park, Gatton Jubilee Golf Course and the Gatton Caravan Park. Land use adjacent to the land use study area to the east of the Gatton township primarily consists of irrigated seasonal horticulture and grazing land.
Lawes	When within the Gatton township, the existing corridor is mapped as commercial services.	Land use adjacent to the land use study area at Lawes predominantly consists of parcels of irrigated seasonal horticulture and large parcels of grazing land and the UQ Gatton Campus.
Forest Hill	To the west of the Gatton township, the existing corridor is mapped as irrigated seasonal horticulture and grazing native vegetation. The Project also crosses Lockyer Creek at Ch 43.2 km.	Land use adjacent to the land use study area at Forest Hill generally consists of residential and community services. Notable land uses within the Forest Hill township include Furley Park and Forest Hill State School. Land surrounding the Forest Hill township predominantly consists of irrigated seasonal horticulture and grazing land.
Laidley North	Where the Project extends wider than the existing rail corridor, land uses within the land use study area include grazing land, commercial services, grazing modified pastures, residential (including Gatton Caravan Park) and irrigated seasonal horticulture.	Land use adjacent to the land use study area at Laidley North primarily consists of irrigated seasonal horticulture and grazing land.

Locality	Land use[1] within land use study area	Land use[1] adjacent to land use study area (approximately 1 km either side)
New greenfield rail corridor (Ch 55.50 km to Ch 67.60 km)		
Laidley North	Where greenfield rail corridor is required at Laidley North, the land use study area traverses Laidley Plainland road, bypassing Laidley township to the north. Land uses within the land use study area primarily consist of parcels of irrigated seasonal horticulture, grazing and land in transition, which is identified to be residential properties within the Valley Vista Estate.	Land use adjacent to the land use study area at Laidley North includes grazing land, land in transition, residential and community services within the Laidley township, including Laidley District State School.
Laidley	Land use within the land use study area at Laidley consist of grazing land, with some residential land uses where the Project enters a proposed western tunnel portal at the Little Liverpool Range.	Land use adjacent to the land use study area at Laidley includes grazing land, residential uses and community services within the Laidley township, including Laidley State High School.
Grandchester	Land use within the land use study area at Grandchester includes other minimal use (residual native cover) where the Project exits the proposed eastern tunnel portal and grazing land.	Land use adjacent to the land use study area at Grandchester primarily consists of grazing land, residential uses, a hotel and other community facilities, including Grandchester State School.
Within existing West Moreton System rail corridor (Ch 67.60 to Ch 73.44 km)		
Grandchester	The existing West Moreton System rail corridor is mapped as grazing native vegetation.	Land use adjacent to the land use study area at Grandchester primarily consists of large parcels of grazing land, with some other minimal use, consisting of land with residual native cover and the Bowman Park Koala Refuge.
Calvert	Where the Project extends wider than the existing corridor, land use within the land use study area is also mapped as grazing native vegetation.	Land use adjacent to the land use study area at Calvert consists of residential land uses and larger parcels of grazing land.

Table note:

1. Land use as per the QLUMP (Queensland Government, 2019a).

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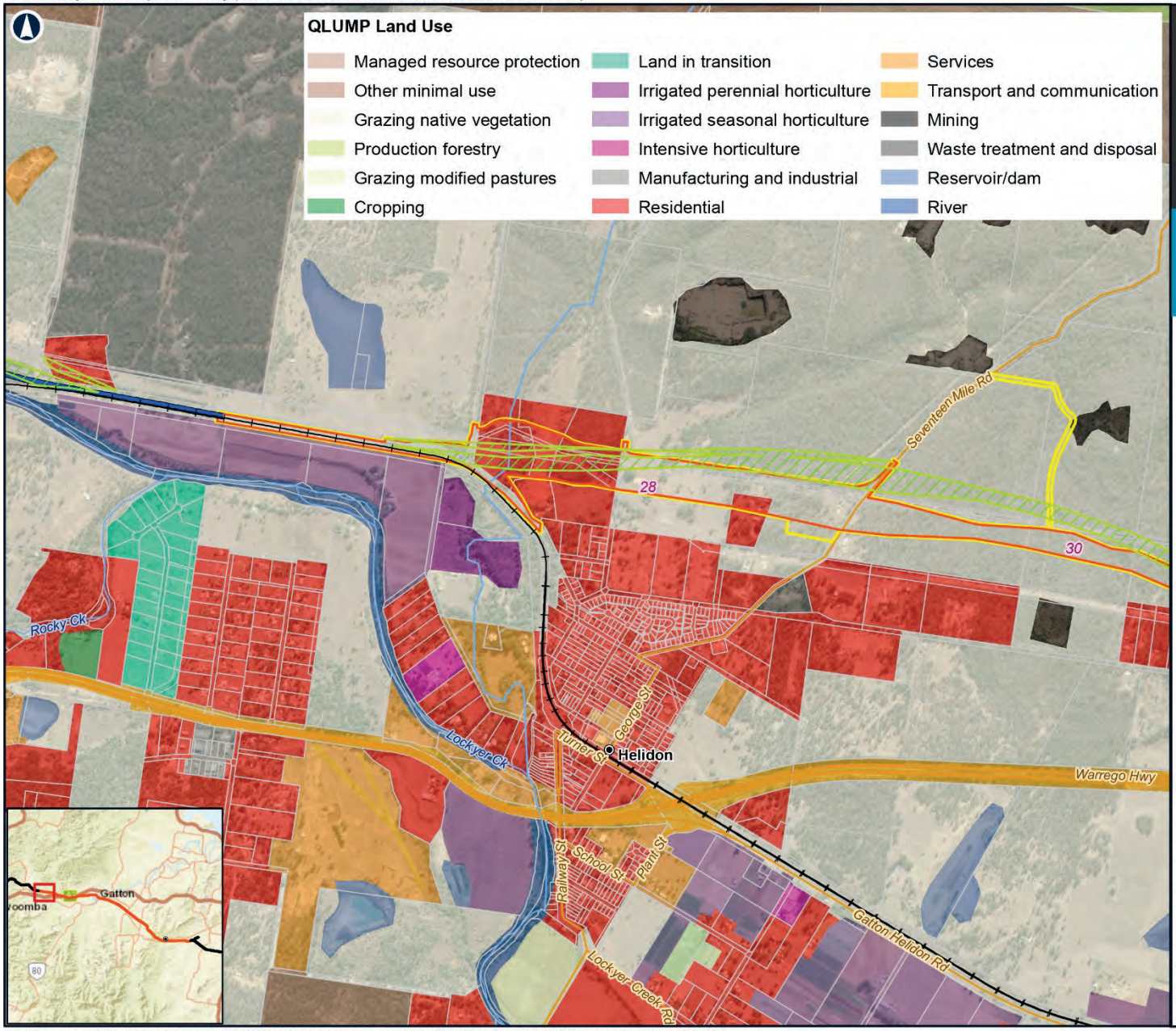

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Figure 8.4a: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- G2H project alignment
- Watercourses
- Major roads
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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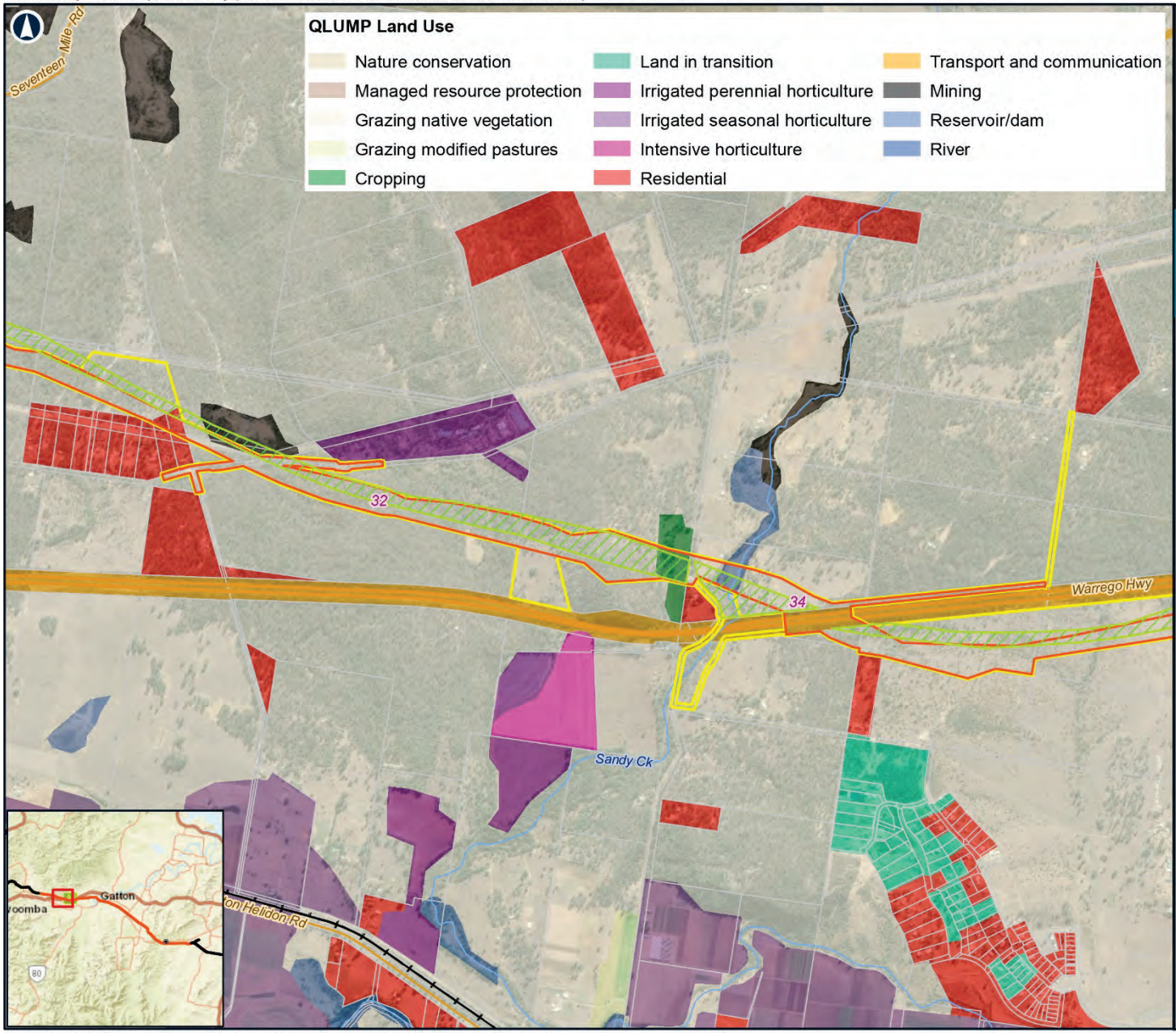

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Figure 8.4b: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

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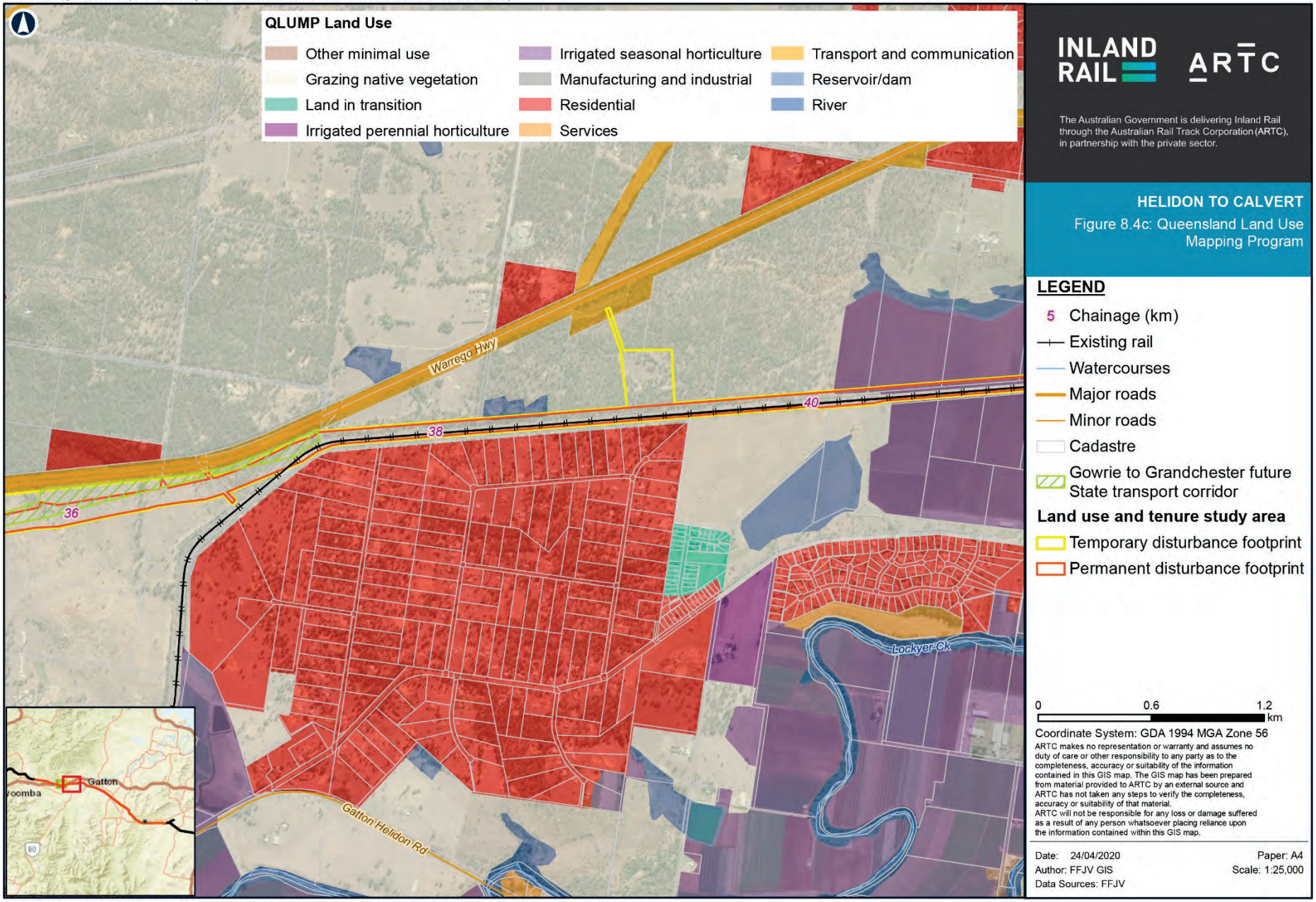

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Figure 8.4c: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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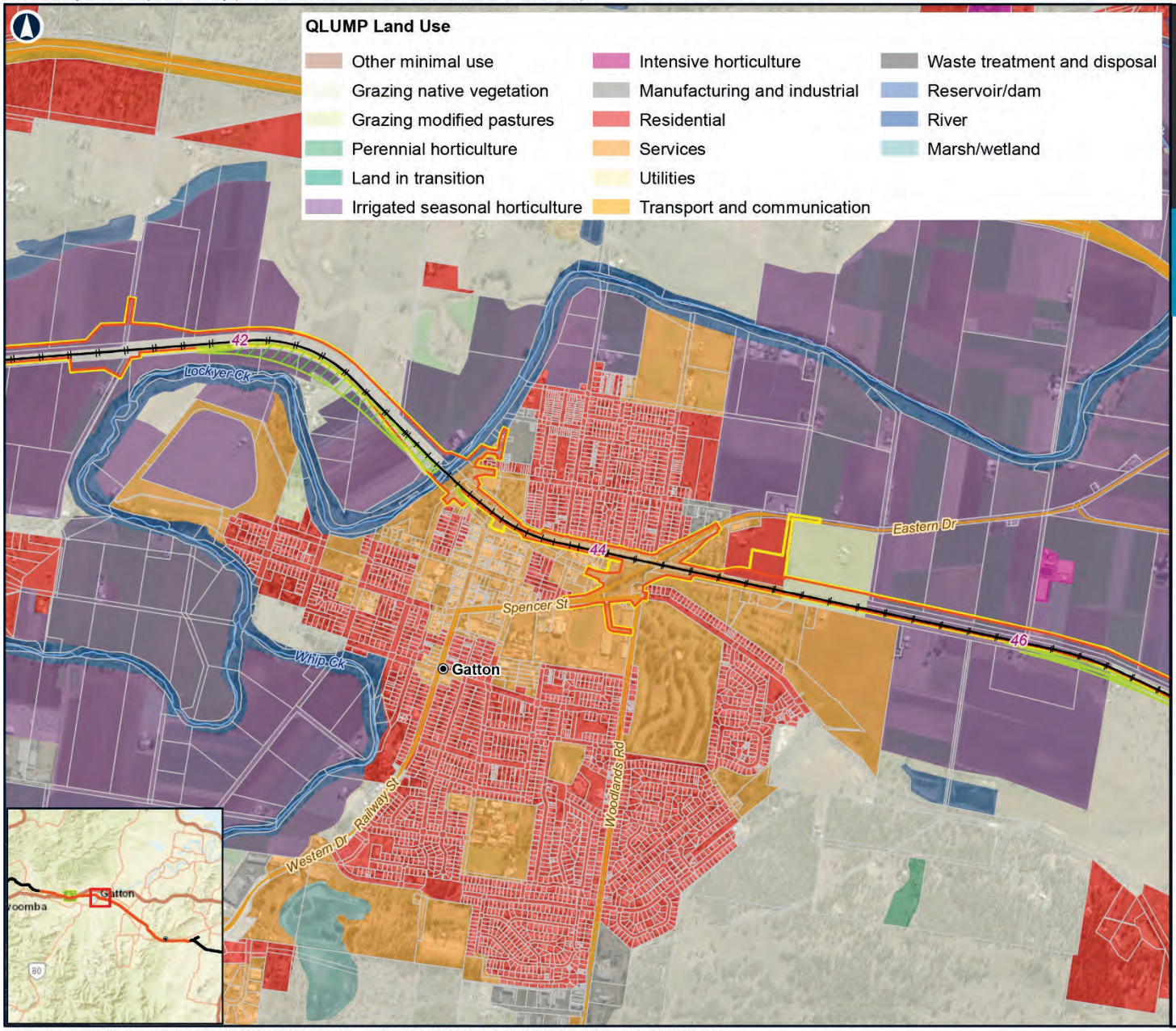

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Figure 8.4d: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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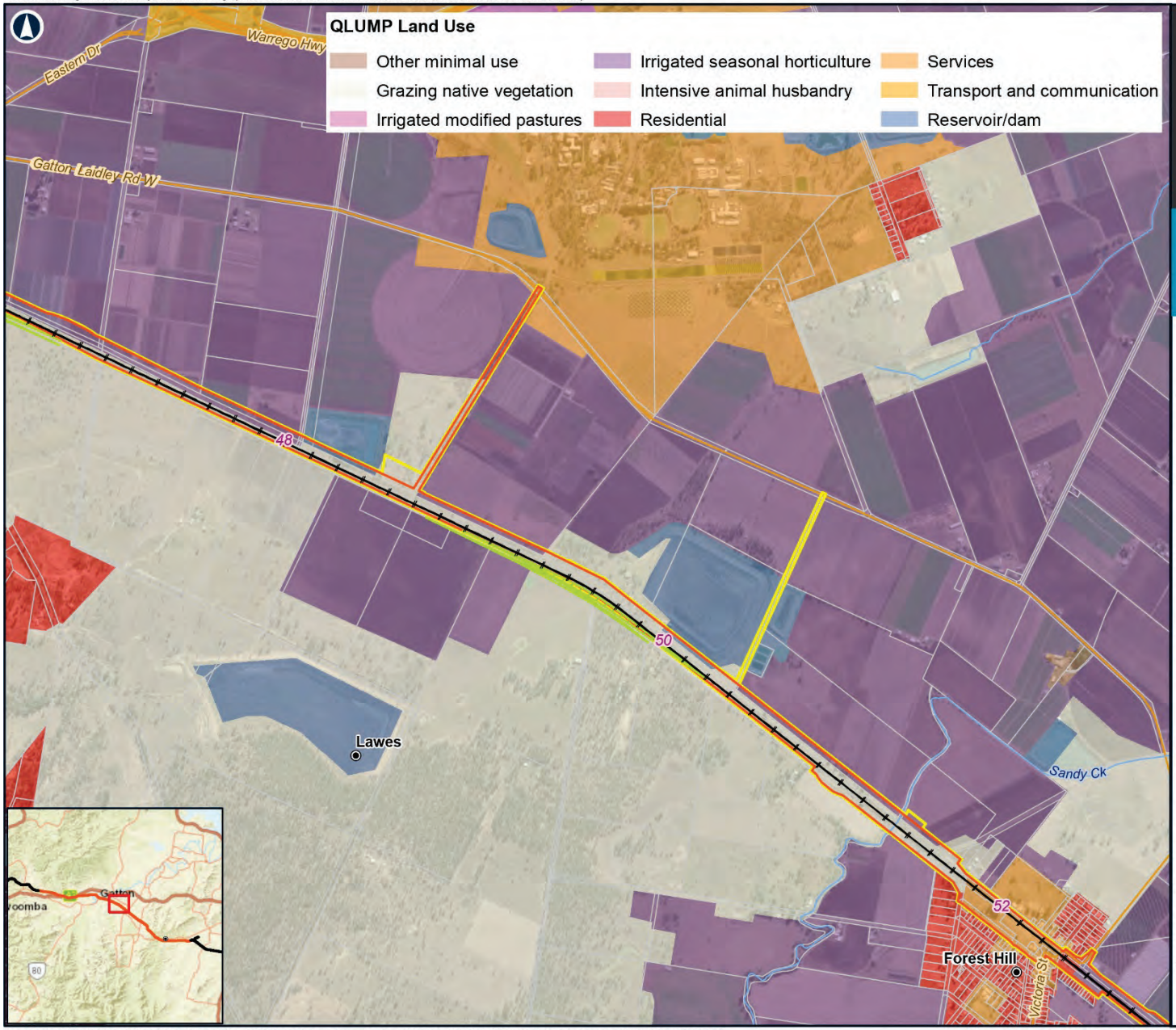

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Figure 8.4e: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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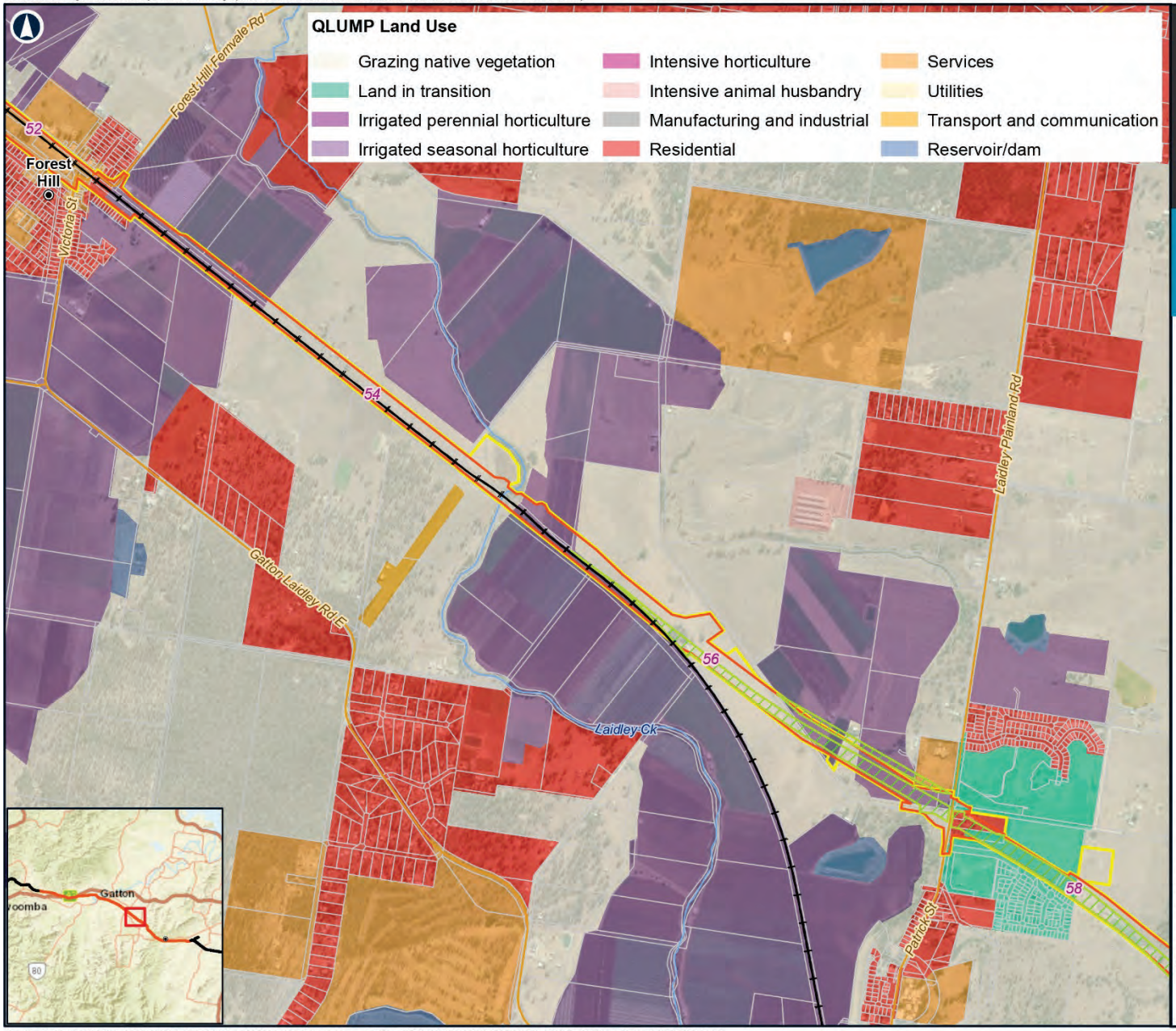

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Figure 8.4f: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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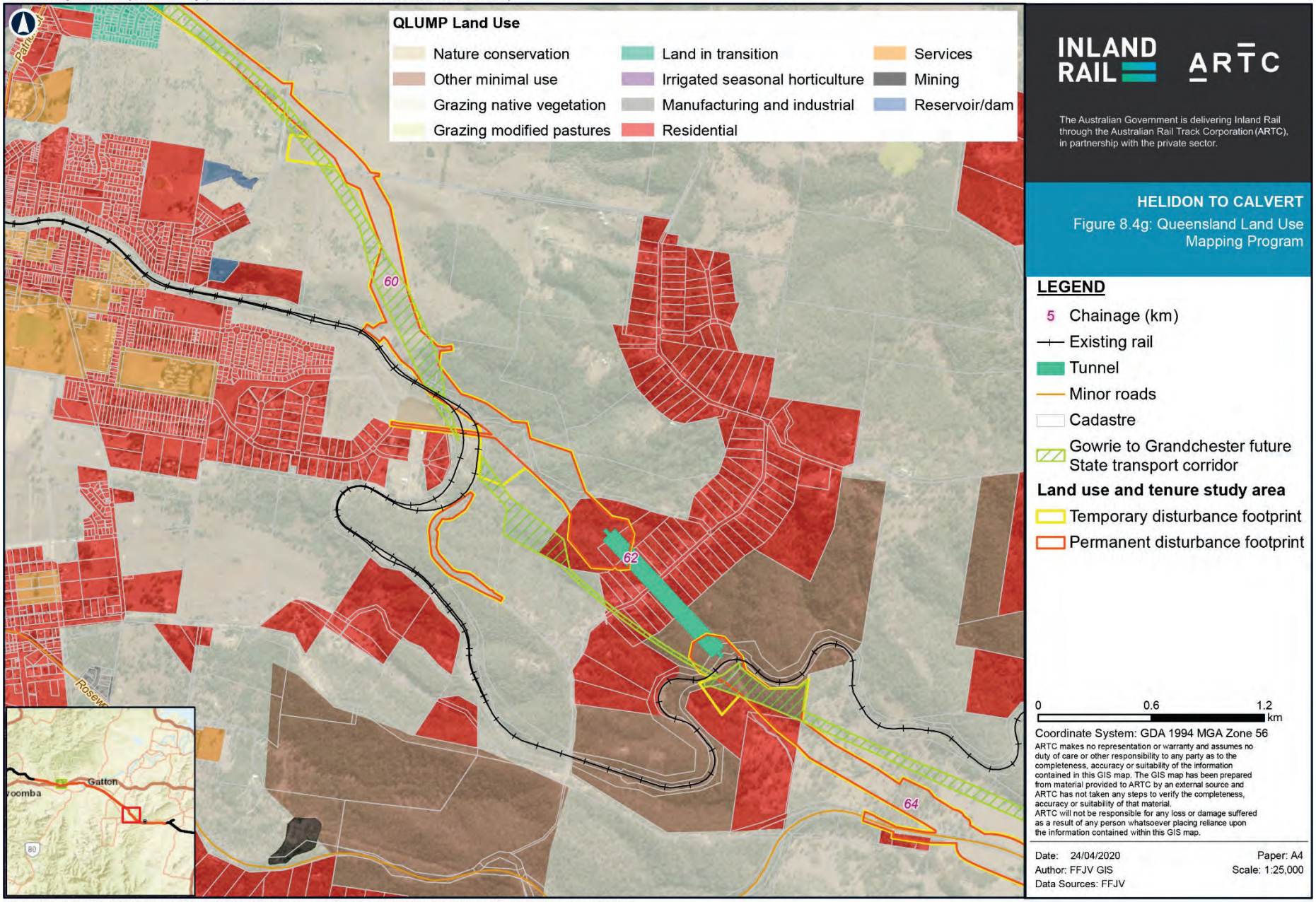

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Figure 8.4g: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Existing rail
- Tunnel
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

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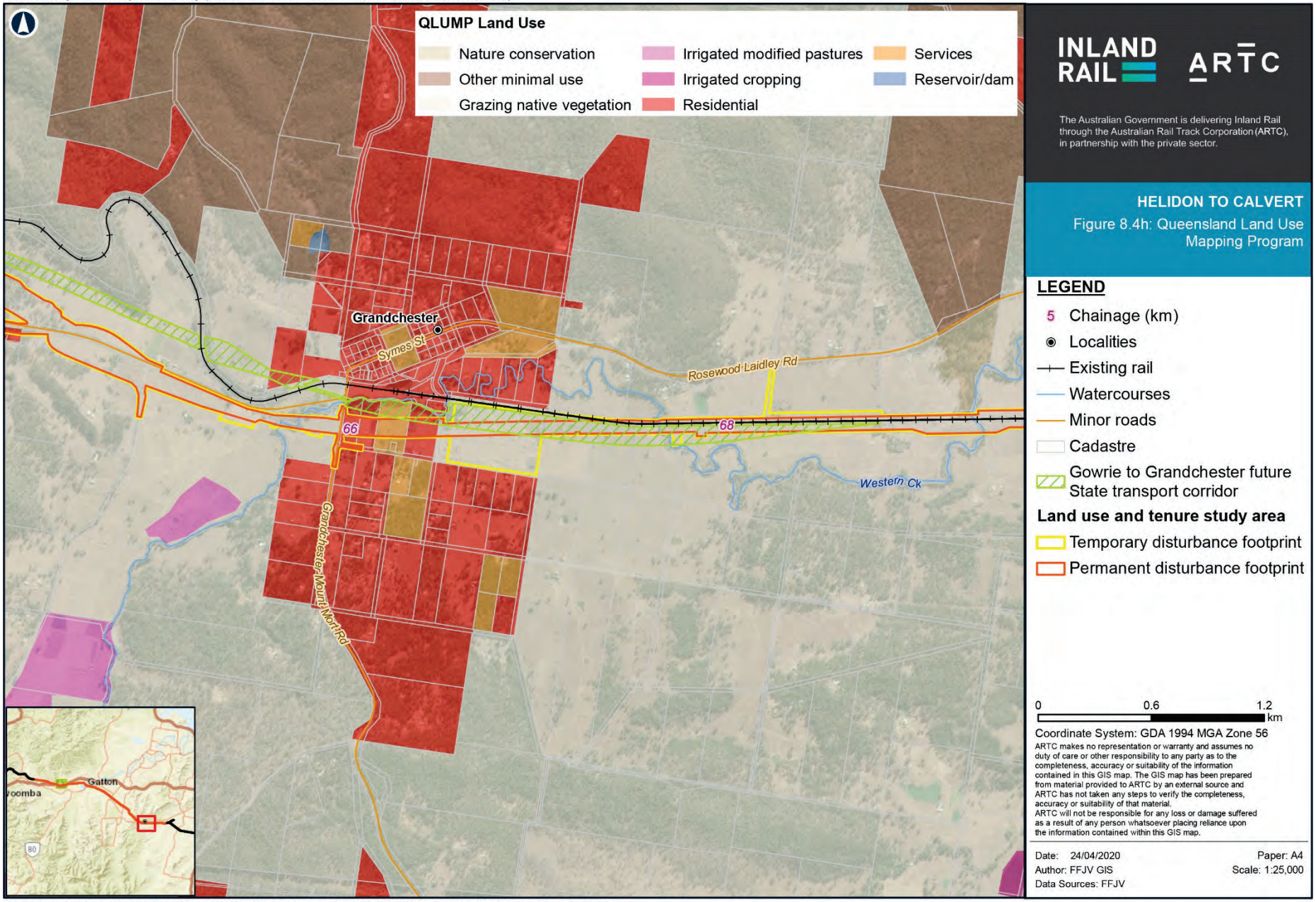
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QLUMP Land Use
Nature conservation
Other minimal use
Grazing native vegetation
Irrigated modified pastures
Irrigated cropping
Residential
Services
Reservoir/dam
Grandchester
Symes St
Rosewood Laidley Rd
66
68
Western Ck
Grandchester-Mount Mort Rd
Gatton
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Figure 8.4h: Queensland Land Use Mapping Program
LEGEND
5 Chainage (km)
Localities
Existing rail
Watercourses
Minor roads
Cadastre
Gowrie to Grandchester future State transport corridor
Land use and tenure study area
Temporary disturbance footprint
Permanent disturbance footprint
0
0.6
1.2
km
Coordinate System: GDA 1994 MGA Zone 56
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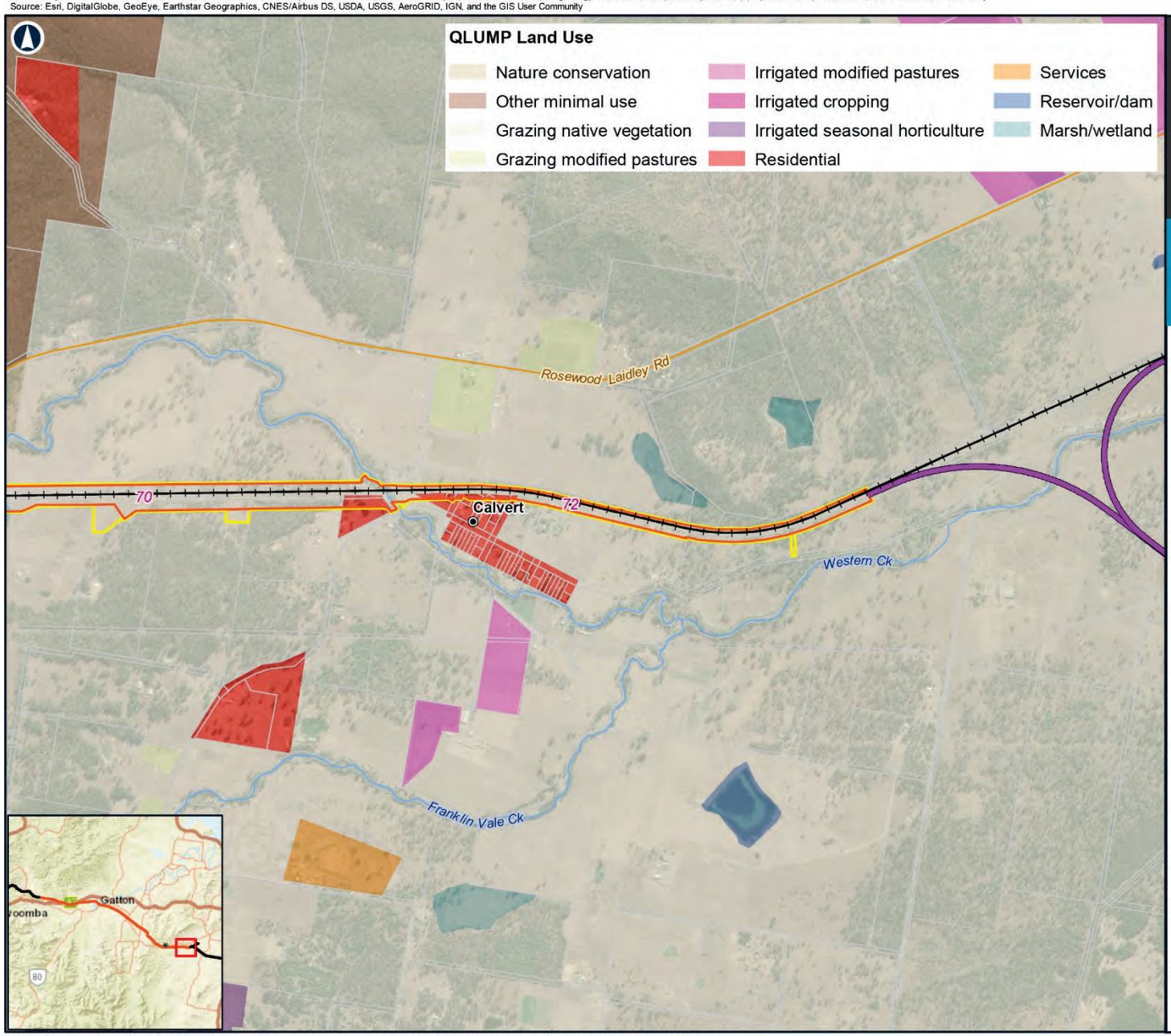

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Figure 8.4i: Queensland Land Use Mapping Program

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- C2K project alignment
- Watercourses
- Minor roads
- Cadastre

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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Data Sources: FFJV

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Table 8.9 provides a summary of the total areas of land uses within the land use study area.

TABLE 8.9: EXISTING LAND USES WITHIN THE LAND USE STUDY AREA

	Permanent operational disturbance footprint		Temporary construction disturbance footprint	
Land use	**Area (ha)**	**% of footprint**	**Area (ha)**	**% of footprint**
Grazing native vegetation	345.56	70.7	117.93	80.9
Irrigated seasonal horticulture	50.38	10.3	9.07	6.2
Residential	39.63	8.1	8.38	5.7
Services	24.31	5.0	3.59	2.5
Other minimal use	9.74	2.0	1.34	0.9
Land in transition	4.41	0.9	0.75	0.5
Transport and communication	3.32	0.7	1.76	1.2
Reservoir/dam	3.07	0.6	1.51	1.0
Grazing modified pastures	3.05	0.6	0.39	0.3
Cropping	2.03	0.4	0.13	0.1
River	1.59	0.3	0.18	0.1
Mining	0.53	0.1	0.27	0.2
Nature conservation	0.50	0.1	0.25	0.2
Manufacturing and industrial	0.24	Less than 0.1%	0.16	0.1
Irrigated perennial horticulture	0.08	Less than 0.1%	0.12	0.1
Total	**488.44**	**100.0**	**145.83**	**100.0**

Source: QLUMP (Queensland Government, 2019a)

The permanent operational disturbance footprint will use the existing West Moreton System rail corridor for approximately 18 per cent of the area required for this footprint. Although land use within the existing West Moreton System rail corridor continues to be mapped as the adjoining land use under QLUMP, the existing rail corridor is not used for agricultural, residential and other non-infrastructure-related uses.

Furthermore, the permanent operational disturbance footprint will use the Gowrie to Grandchester future State transport corridor for approximately 17 per cent of area required for this footprint. Land located within the Gowrie to Grandchester future State transport corridor is mapped under the QLUMP (Queensland Government, 2019a) as the existing land use; however, the future intent of the land is for a railway corridor.

For the areas of the permanent operational disturbance footprint outside the existing West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor, land use is mapped as being predominantly grazing land (73 per cent). Other land uses include irrigated seasonal horticulture, residential, services, transport and communication and other minimal use. Table 8.10 provides a summary of land use within the permanent operational disturbance footprint that are located outside the West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor.

TABLE 8.10: LAND USE WITHIN THE PERMANENT OPERATIONAL DISTURBANCE FOOTPRINT OUTSIDE THE EXISTING RAIL AND FUTURE STATE TRANSPORT CORRIDORS

Land use	**Area (ha)**	**% of footprint**
Grazing native vegetation	221.03	72.6
Irrigated seasonal horticulture	33.02	10.8
Residential	26.59	8.7
Services	11.29	3.7
Transport and communication	3.22	1.1
Other minimal use	2.97	1.0
Grazing modified pastures	2.03	0.7
Reservoir/dam	2.03	0.7
Land in transition	0.93	0.3
River	0.56	0.2
Cropping	0.34	0.1
Mining	0.34	0.1
Irrigated perennial horticulture	0.06	0.0
Total	**304.41**	**100.0**

Source: QLUMP (Queensland Government, 2019a)

Notable land use within, or close to, the land use study area is summarised in Table 8.11 and illustrated on Figure 8.5a to Figure 8.5i. Notable land uses include areas where there are recreational and commercial uses as well as land use of State significance (i.e. reserves and resource areas).

TABLE 8.11: NOTABLE EXISTING LAND USE WITHIN AND ADJACENT TO THE STUDY AREA

Notable existing land uses	Description	Relation to land use study area	Approximate chainage
Helidon Magazine Explosives Reserve	The Helidon Magazine Reserve is located at Helidon and is managed by the Department of Resources (former DNRME) with the primary purpose for the safe storage, distribution and disposal of explosives.	Approximately 20 m to the north of the land use study area at Airforce Road at Helidon.	Ch 26.0 km
Sandstone mines	Multiple mining leases associated with various sand mining operations, including the Helidon Sandstone Industries Pty Ltd and Nevanna Sandstone Mine.	The closest mining lease is approximately 450 m to the north of the land use study area at Helidon.	Ch 28.0 km to Ch 32.0 km
Grantham township	The Grantham township is located on the West Moreton System rail corridor, located to the south of the land use study area. Following the damaging 2011 floods, the township was moved to higher ground and as a masterplanned community through the 'Strengthening Grantham Project' and the declaration of the Grantham Reconstruction Area.	The land use study area traverses the northern boundary of the Grantham Reconstruction Area.	Ch 34.0 km to Ch 37.0 km
Gatton township	The Gatton township is located on the West Moreton System rail corridor. Land uses within the Gatton township include residential and commercial as well as the Gatton Showground, the Gatton Caravan Park, Gatton Jubilee Golf Course and other areas of public recreational space.	The land use study area traverses through the Gatton township when within the West Moreton System rail corridor.	Ch 42.0 km to Ch 46.0 km
UQ Gatton Campus	Land associated with the UQ Gatton campus is located within the land use study area when traversing through the locality of Lawes. The land use study area traverses some of the University's farms, where activities undertaken include grazing land, crop production and more intensive agricultural practices as well as some faculty buildings and part of the Gatton Solar Research Facility.	Approximately 200 m to the north east of the land use study area at Lawes.	Ch 48.0 km to Ch 50.0 km
Forest Hill township	The Forest Hill township is located on the West Moreton System rail corridor. Land use within the Forest Hill township includes residential dwellings, the Forest Hill State School and Furley Park.	The land use study area traverses through the Forest Hill township when within the West Moreton System rail corridor.	Ch 52.0 km to Ch 53.0 km
Poultry farming (Darwalla Milling Company)	The Darwalla Milling Company poultry farming operation is located at Laidley North.	Approximately 450 m to the north east of the land use study area at Laidley North.	Ch 56.0 km
Valley Vista Estate	The Valley Vista Estate is a residential housing estate located within Laidley North and comprises of residential allotments. As of June 2019, it was understood that dwellings within the Estate are still under construction.	The land use study area traverses through the Valley Vista estate.	Ch 57.3 km to Ch 58.0 km
Laidley township	Land use within the Laidley includes residential land uses, Laidley State School and some commercial land uses.	Approximately 500 m to the southwest of the land use study area at Laidley.	Ch 57.0 km to Ch 61.0 km

Notable existing land uses	Description	Relation to land use study area	Approximate chainage
Little Liverpool Range	The Little Liverpool Range is predominantly rugged and mountainous terrain with native vegetation and some residential land uses.	The land use study area passes through the Little Liverpool Range.	Ch 61.0 km to Ch 63.0 km
Grandchester township	The Grandchester township is located on the West Moreton System rail corridor. Land use residential uses, Grandchester State School, and other community facilities including sporting and recreational areas.	The land use study area passes through the Grandchester Township.	Ch 66.0 km to Ch 67.0 km
Bowman Park Koala Nature Refuge	The Bowman Park Nature Refuge is an area of land protected for nature conservation located at Grandchester.	Approximately 20 m north of the land use study area at Grandchester.	Ch 69.0 km
Calvert township	The Calvert township is located on the West Moreton System rail corridor. Land use within the Calvert township predominantly consists of rural residential allotments.	The land use study area traverses through the Calvert township when within the West Moreton System rail corridor.	Ch 71.0 km to Ch 72.0 km

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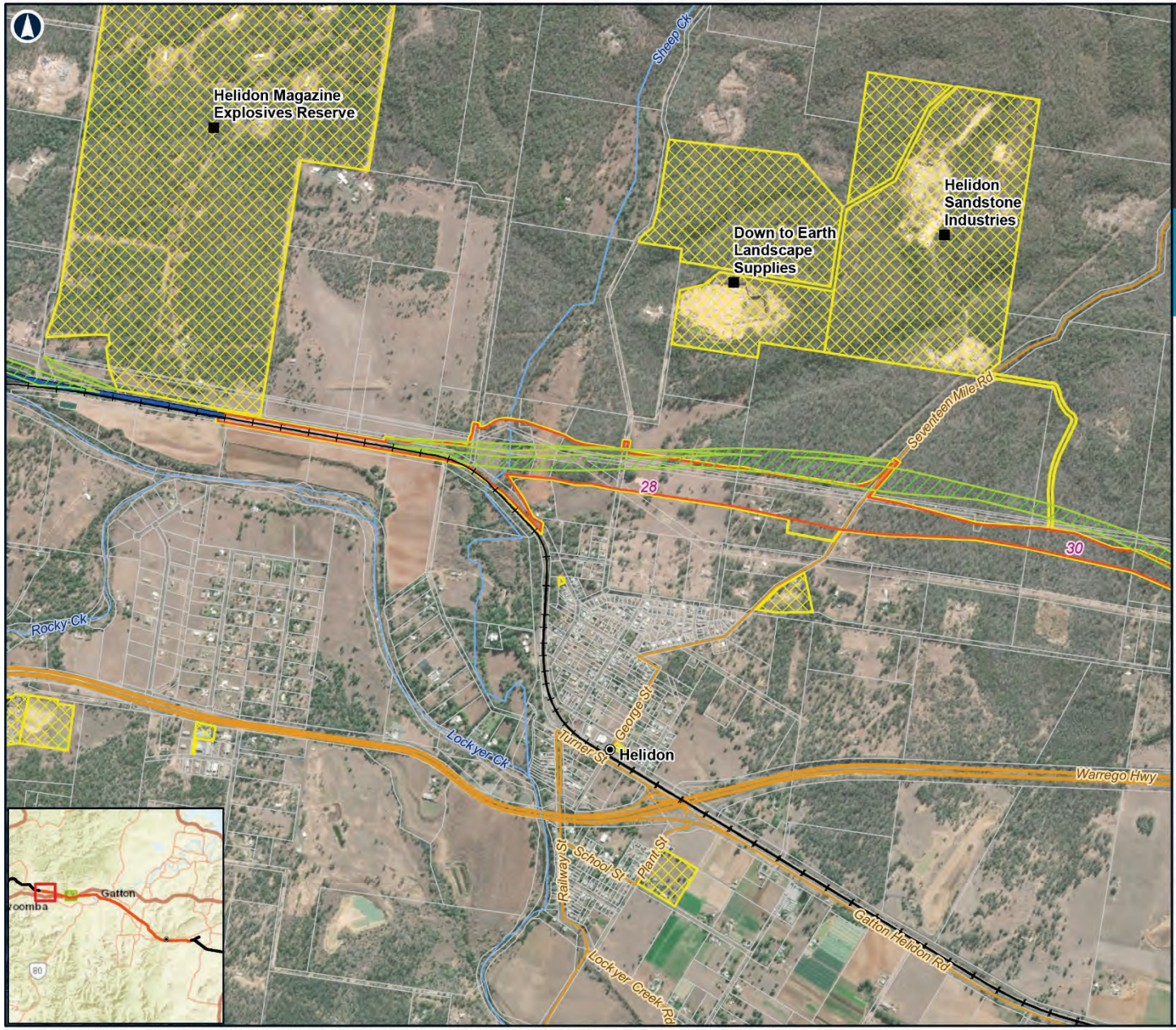

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Figure 8.5a: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- G2H project alignment
- Watercourses
- Major roads
- Minor roads
- Environmental authorities for environmentally relevant activities
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.5_Land_Use_Considerations_ARTC_v2.mxd Date: 5/5/2020 09:49

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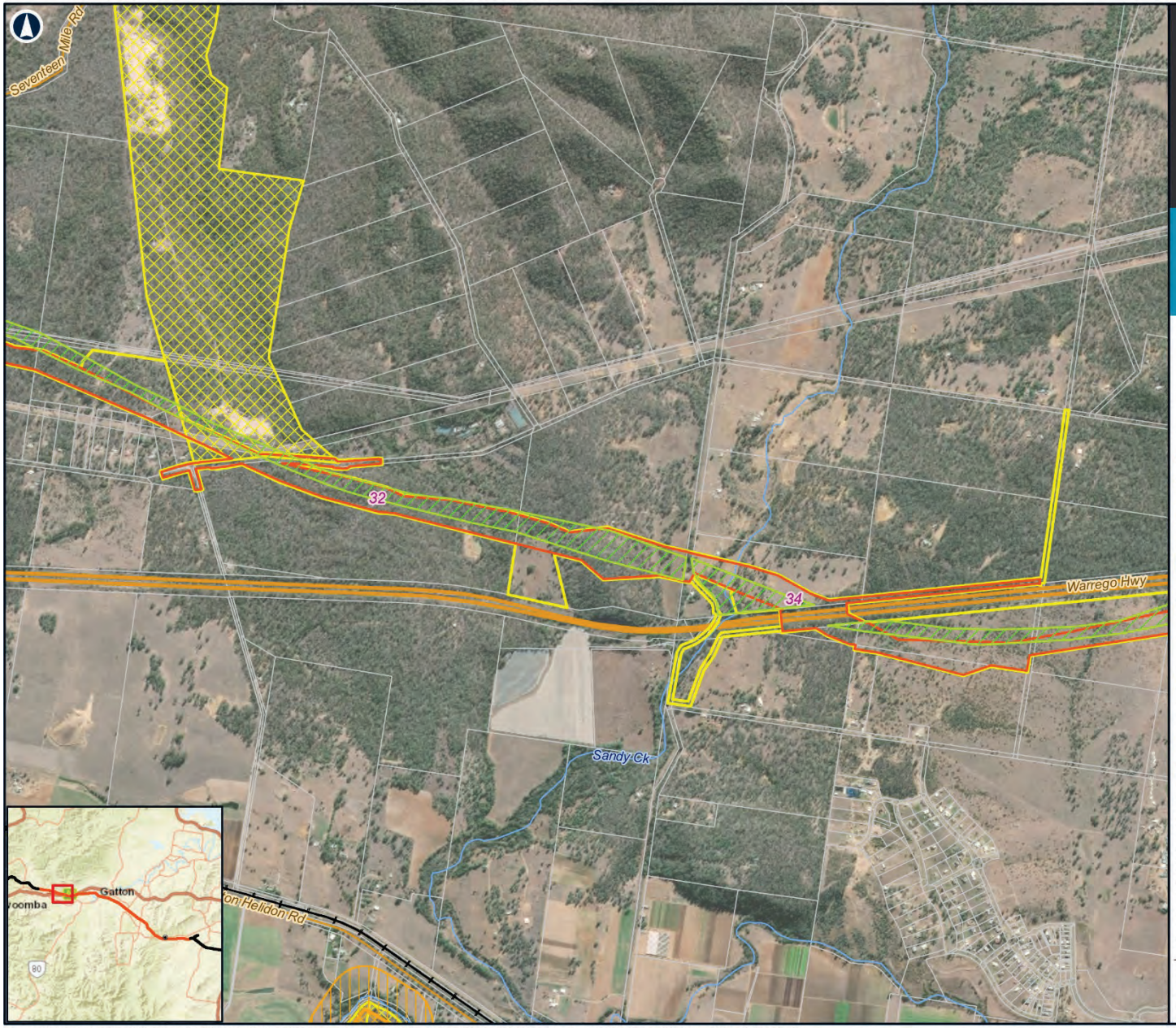

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Figure 8.5b: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Environmental authorities for environmentally relevant activities
- Key resource area (resource processing area)
- Key resource area (separation area)
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.5_Land_Use_Considerations_ARTC_v2.mxd Date: 5/5/2020 09:49

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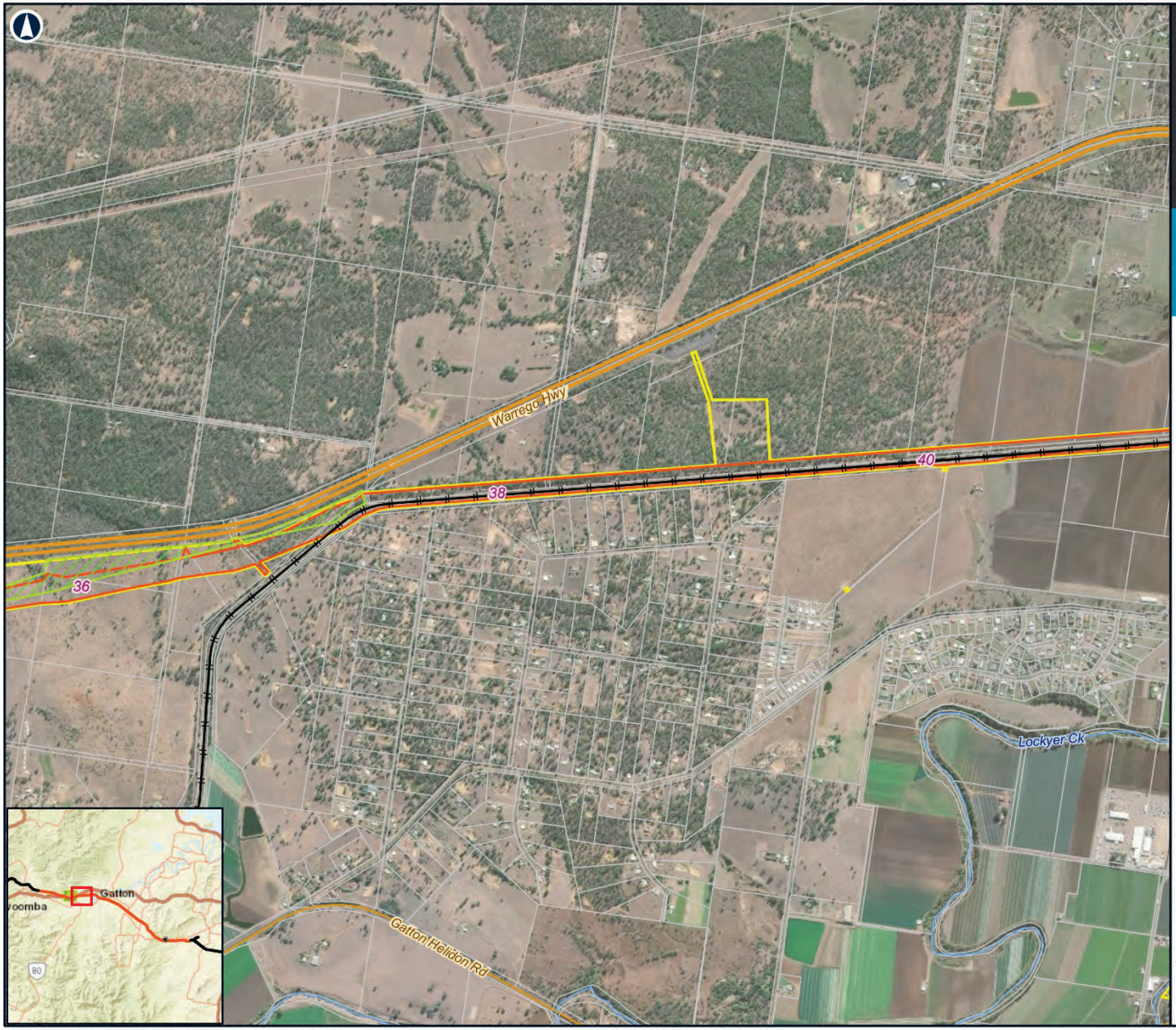

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Figure 8.5c: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Environmental authorities for environmentally relevant activities
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

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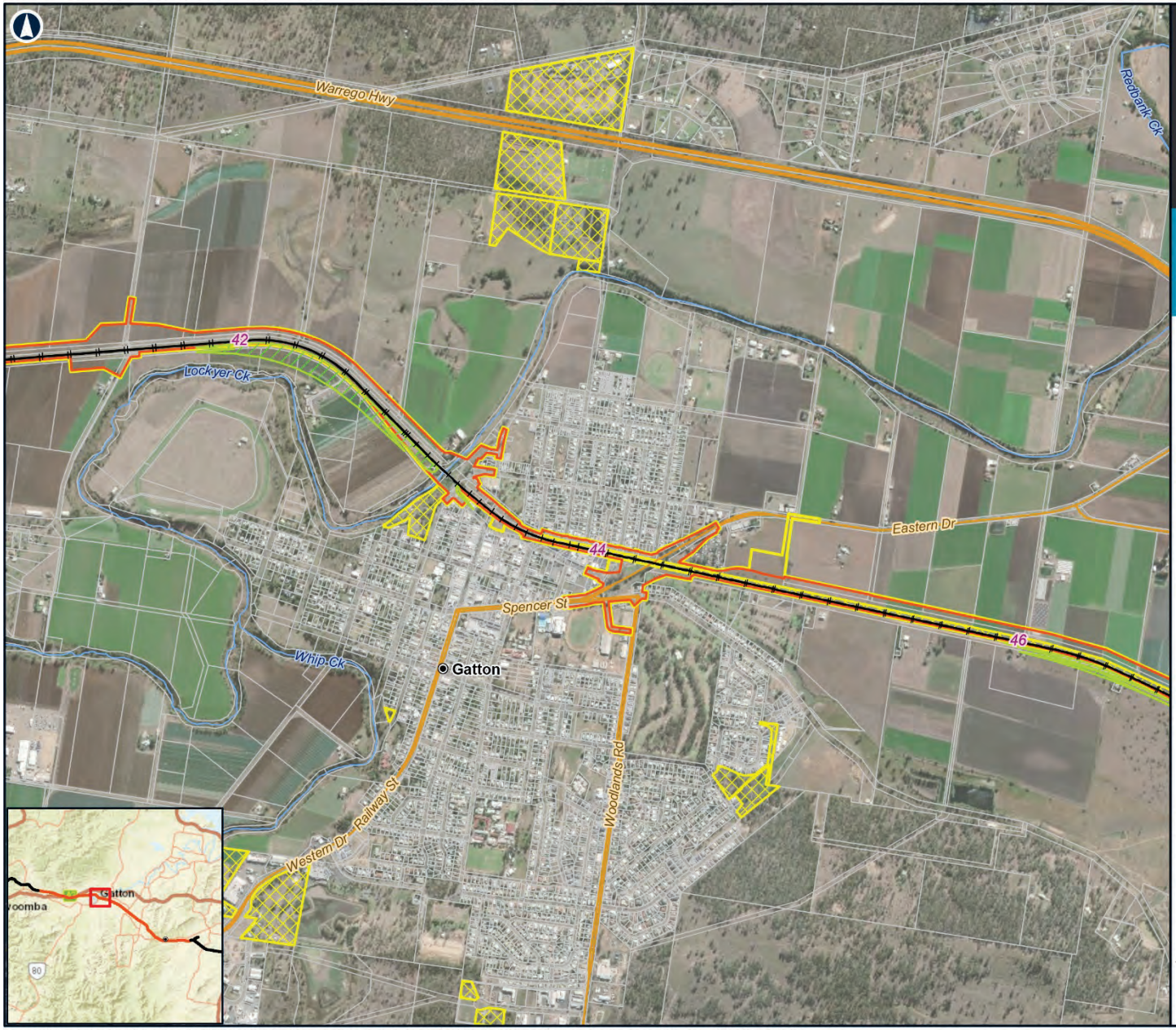

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Figure 8.5d: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Environmental authorities for environmentally relevant activities
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

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Figure 8.5e: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Environmental authorities for environmentally relevant activities
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

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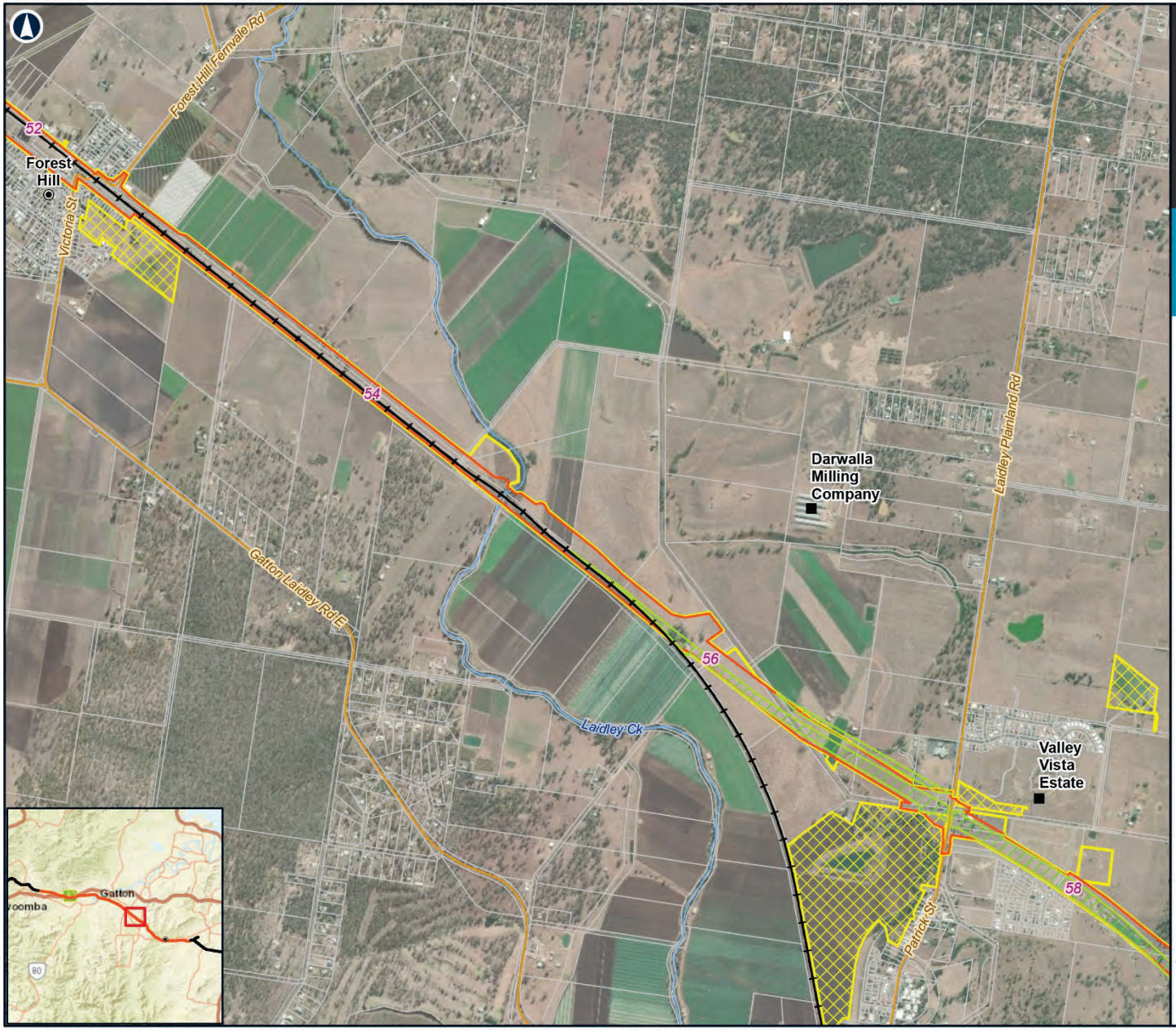

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Figure 8.5f: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Environmental authorities for environmentally relevant activities
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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Figure 8.5g: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Tunnel
- Minor roads
- Environmental authorities for environmentally relevant activities
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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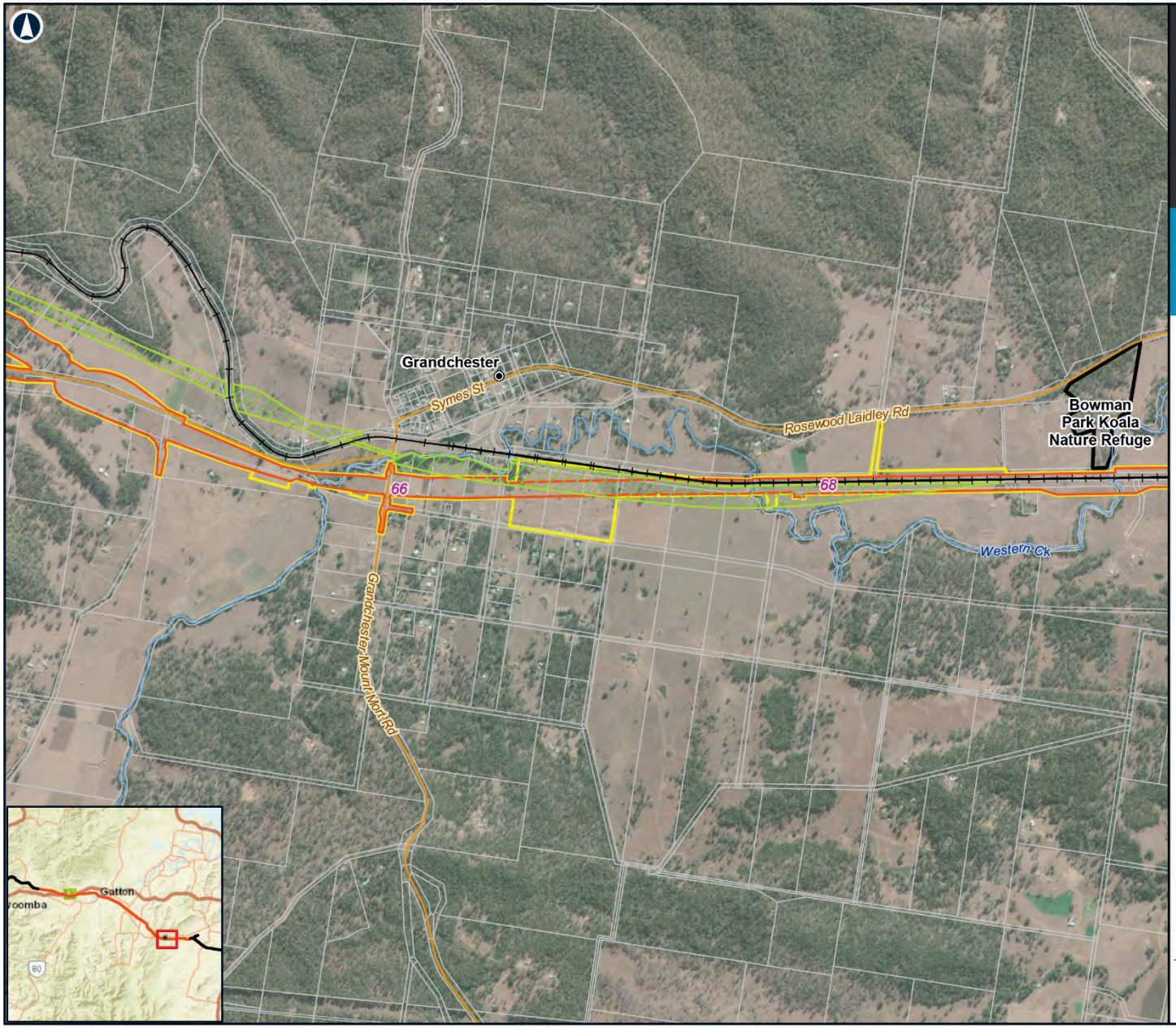

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Figure 8.5h: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Cadastre
- Gowrie to Grandchester future State transport corridor

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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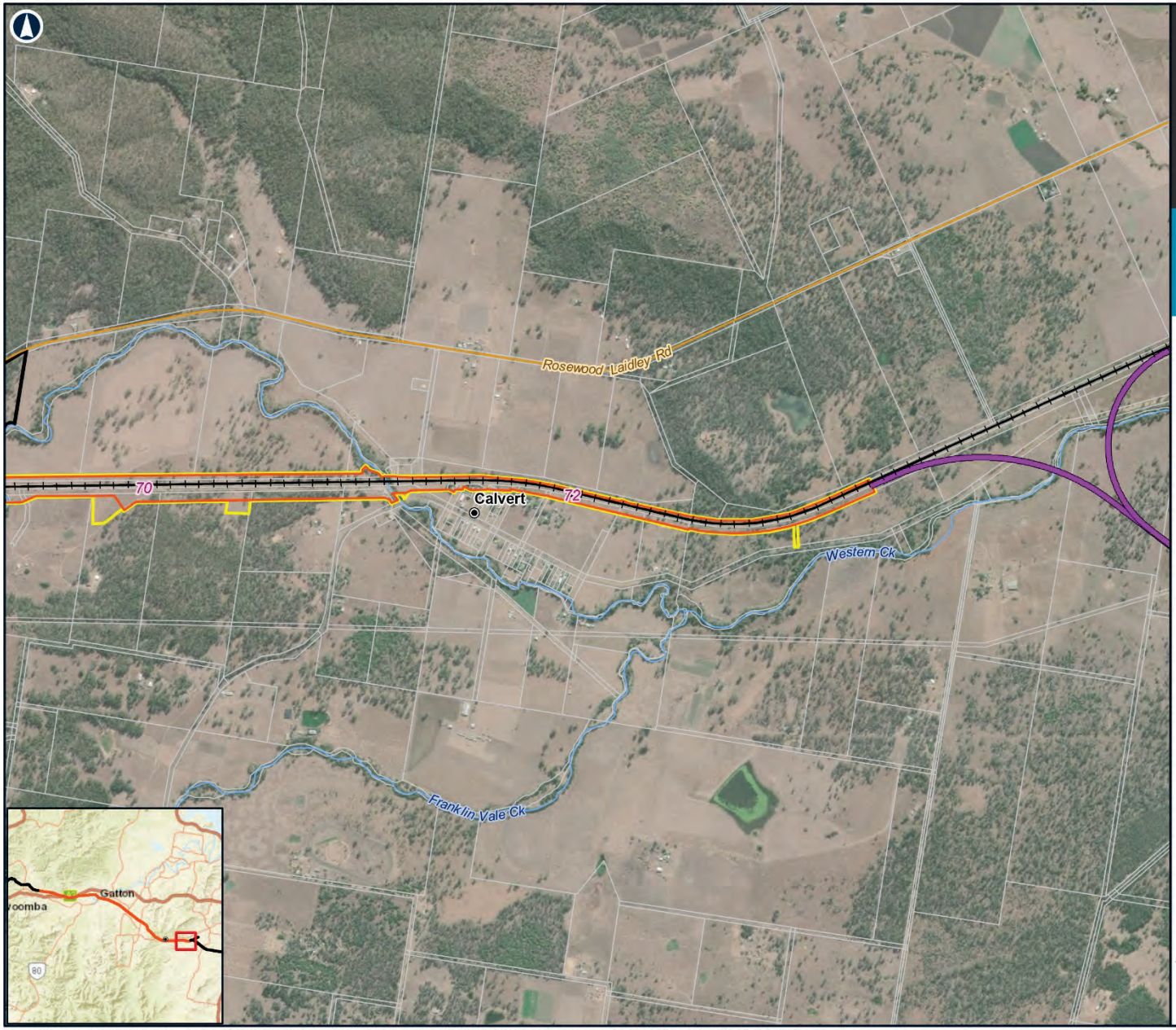

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Figure 8.5i: Land use considerations

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- C2K project alignment
- Watercourses
- Minor roads
- Cadastre

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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8.6.2.1 Agricultural uses and activities

Queensland Agricultural Land Audit

The *Queensland Agricultural Land Audit* (Department of Agriculture and Fisheries (DAF), 2018b) (the Audit) identifies land important to current and future agricultural production in Queensland.

The audit assessed current and potential agricultural land uses based on the following Agricultural Land Use Categories:

- Broadacre cropping (rainfed/irrigated)
- Annual horticulture (irrigated)
- Perennial horticulture (assumed to be irrigated)
- Intensive animal industries (i.e. cattle feedlots and piggeries state-wide, and poultry in SEQ only, eggs and aquaculture)
- Grazing—sown pasture
- Grazing—native pasture
- Plantation forestry
- Native forestry
- Sugarcane.

Current agricultural land use is mapped across the State predominantly using data from QLUMP (Queensland Government, 2019a), while also including data from the Intensive Livestock Environmental Regulation Unit database for intensive animal industries, and the Safe Food Queensland Egg Register.

The Audit then identifies agricultural potential using a rule-based approach that combines biophysical characteristics of the land, such as the soil, climate and landform as well as native vegetation, and socio-economic spatial data. These rules identify land with characteristics that best match the requirements of each Agricultural Land Use Categories.

The characteristics of land/soil resources are a fundamental determinant of potential for most agricultural land uses. Soils are classified using a four-tier hierarchy ranging from Class A (arable land) through to Class D (land that is unsuitable for agriculture). These are described in Table 8.12.

Agricultural land classified as being Class A or Class B land is the most productive agricultural land in Queensland, with soil and land characteristics that may allow successful crop and pasture production.

TABLE 8.12: DEFINITION OF AGRICULTURAL LAND CLASSES

Agricultural Land Class	Description
Land Class A—Crop land	Land that is suitable for a wide range[a] of current and potential crops with nil to moderate limitations to production: ▸ A1—Land that is suitable for a wide range of current and potential broadacre and horticulture crops with limitations to production that range from non to moderate levels ▸ A2—Land that is suitable for a wide range of current and potential horticulture crops only, with limitations to production that range from none to moderate levels.
Land Class B—Limited crop land	Land that is suitable for a narrow range[b] of current and potential crops. Land that is marginal for current and potential crops due to severe limitations but is highly suitable for pastures. Land may be suitable for cropping with engineering and/or agronomic improvements.
Land Class C—Pasture land	Land that is suitable only for improved or native pastures due to limitations that preclude continuous cultivation for crop production. Some areas may tolerate a short period of ground disturbance for pasture establishment: ▸ C1—Suitable for grazing sown pastures (with ground disturbance for establishment) or has native pastures on higher fertility soils ▸ C2—Suitable for grazing native pastures with or without the introduction of pasture species—not suitable for ground disturbance to establish pastures ▸ C3—Suitable for light grazing of native pastures in accessible areas and includes steep land more suited to forestry or catchment protection.
Land Class D—Non-agricultural land	Land not suitable for agricultural uses due to extreme limitations. This may be: undisturbed land with significant conservation and/or catchment values; land that may be unsuitable because of very steep slopes, shallow soils, rock outcrop, poor drainage, salinity, acidic drainage, or is an urbanised area.

Source: DAF, 2013

Table notes:

a. A *wide range* is defined as four or more existing crops of local commercial significance. In areas where specialised infrastructure to support an agricultural industry is present, the land may only be currently suitable for two or more crops, providing at least one is regionally significant.

b. A *narrow range* is defined as three or less crops of local commercial significance (or less than two where specialised infrastructure is present).

Other characteristics such as slope, climate, and socio-economic criteria also impact the potential for land to be used for agricultural land uses. Nonetheless, Class A and Class B land are key components of the State's interest in agriculture under the *State Planning Policy*.

In addition, the audit identified 'important agricultural areas' (IAAs). IAAs are defined by the Audit as land that has all 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 significance of the land was based on consideration of a range of criteria that reflect the current or potential contribution that the land can make to the region and state economically and socially (DAF, 2013). These criteria included:

- Current or potential contribution of agricultural development of the area to economic activity and employment (and other social factors) in the locality, region or state
- Strategic importance of the area for continuity and consistency of supply of particular products or markets locally, nationally or internationally
- Extent of investment required to develop the land for agriculture (e.g. through construction of irrigation schemes, grain storage facilities or sale yards).

The audit is based on the twelve statutory regional planning boundaries. For each region, an economic and socio-economic profile has been prepared, along with an analysis of the strengths, weaknesses, opportunities and threats for agricultural development in the region.

The Project is located within the SEQ region. The audit outlines that the dominant agricultural industries in SEQ are horticulture, poultry, cattle, dairy and cultivated turf (DAF, 2013). At a local government level, the audit identified:

- The predominant industry within Lockyer Valley is production horticulture, which contributes significantly to Queensland's overall horticulture production and economic outlook. Vegetable production is dominant within Lockyer Valley, with the area containing major producers of many fruit and vegetables, as well as milk, beef and grain enterprises. The Lockyer Valley is identified to be the most significant groundwater area in SEQ, supporting a wide range of agricultural produce and, for most of the valley, being the dominant source of water for irrigation.
- Land under agriculture production is declining within the Ipswich LGA. However, recognising that Ipswich has the established capacity to provide services such as transport and manufacturing to support and expand agriculture in surrounding LGAs.
- The Audit identifies the current predominant industry within the Scenic Rim LGA to be grazing.

The Audit also identifies the following strengths for the region:

- SEQ is near major transport hubs (airport, rail and ports) for interstate and international markets
- The region supports numerous value-adding/processing enterprises crossing many sectors (poultry, viticulture, fruit juice, ginger, garlic, fresh herbs and dairy), and many LGAs are keen to expand processing and value-adding industries
- The region supplies quarry material (including material from native forests on state land) for infrastructure and construction requirements.

There are three areas identified as IAAs within the SEQ region. The Lockyer Valley IAA is in the land use study area. The soils and biophysical properties of the area make the Lockyer Valley IAA one of the major annual horticulture areas in Australia. The combination of a unique climate, underground water supply, fertile soils and an extensive farming conditions enables the area to be a significant winter, autumn and spring vegetable production area. Proximity to markets, reliable access to transportation infrastructure and established support services also contribute to the area's agricultural development. The primary horticultural products in the Lockyer Valley are broccoli, cauliflower, potatoes, onions, pumpkins, lettuce, corn, green beans and carrots.

Relevance to Project

Land classified by the Audit located within the land use study area is summarised in Table 8.13 and shown on Figure 8.6a to Figure 8.6i.

TABLE 8.13: AGRICULTURAL LAND WITHIN THE LAND USE STUDY AREA IDENTIFIED BY THE AGRICULTURAL LAND AUDIT

Agricultural Land Audit Theme	Permanent operational disturbance footprint		Temporary construction disturbance footprint	
	Area (ha)	% of footprint	Area (ha)	% of footprint
Land Class A	177.23	36.3	45.19	31.0
Land Class B	66.40	13.6	14.76	10.1
IAA	224.24	45.9	51.52	35.3

Source: DAF, 2020

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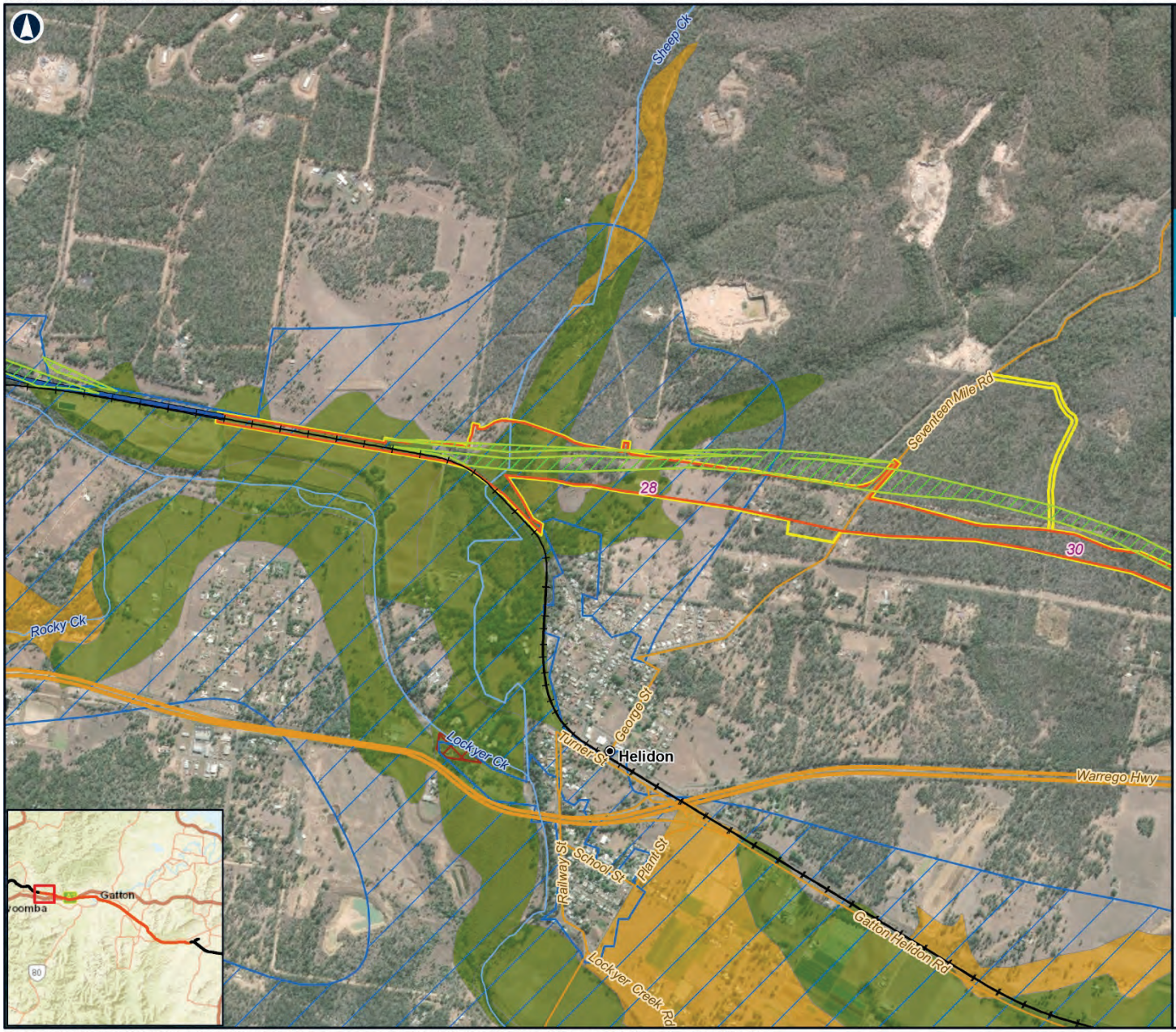

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Figure 8.6a: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- G2H project alignment
- Watercourses
- Major roads
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area
- Stock routes

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.6_Agricultural_Land_ARTC.mxd Date: 24/04/2020 16:32

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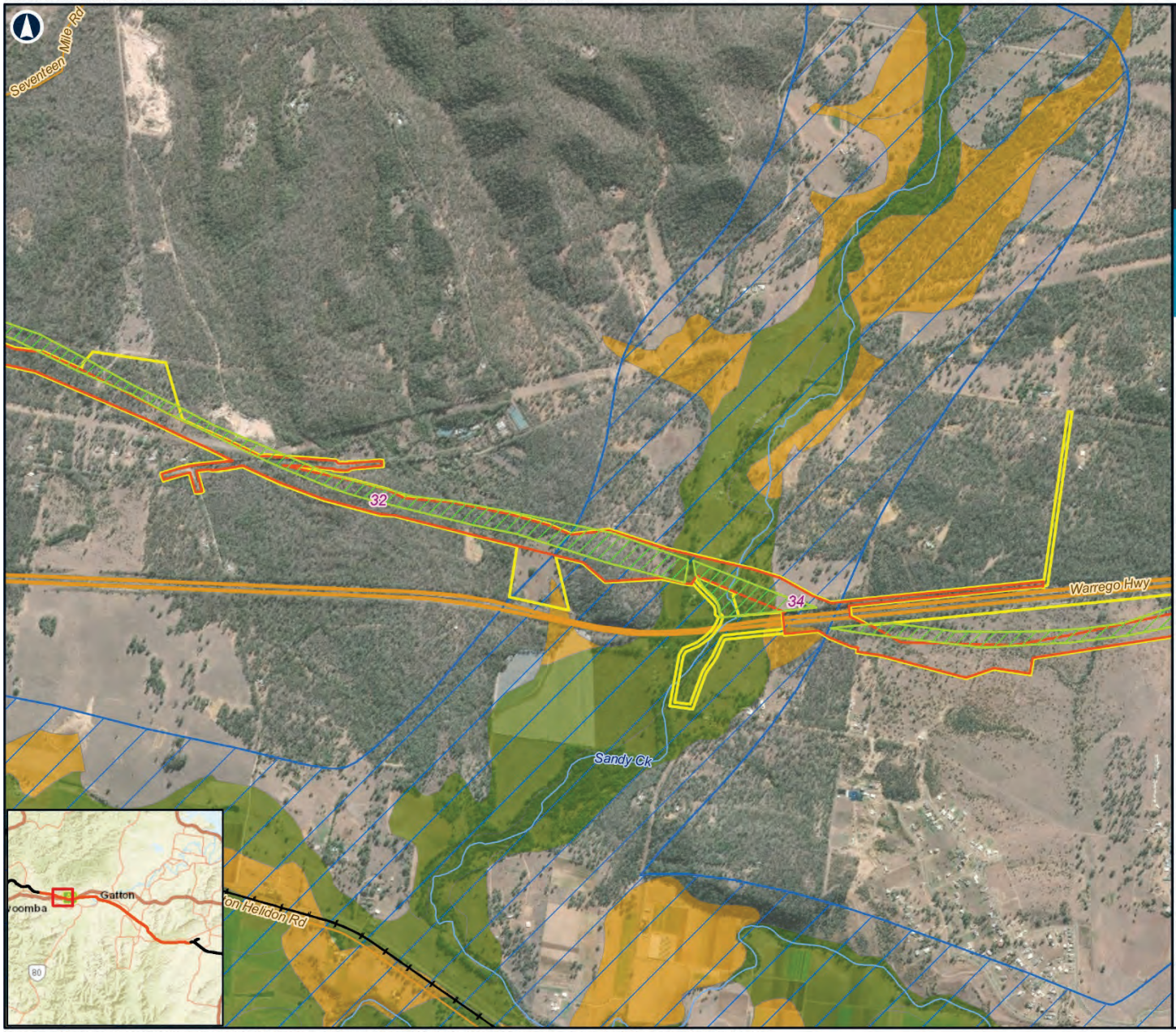

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Figure 8.6b: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.6_Agricultural_Land_ARTC.mxd Date: 24/04/2020 16:32

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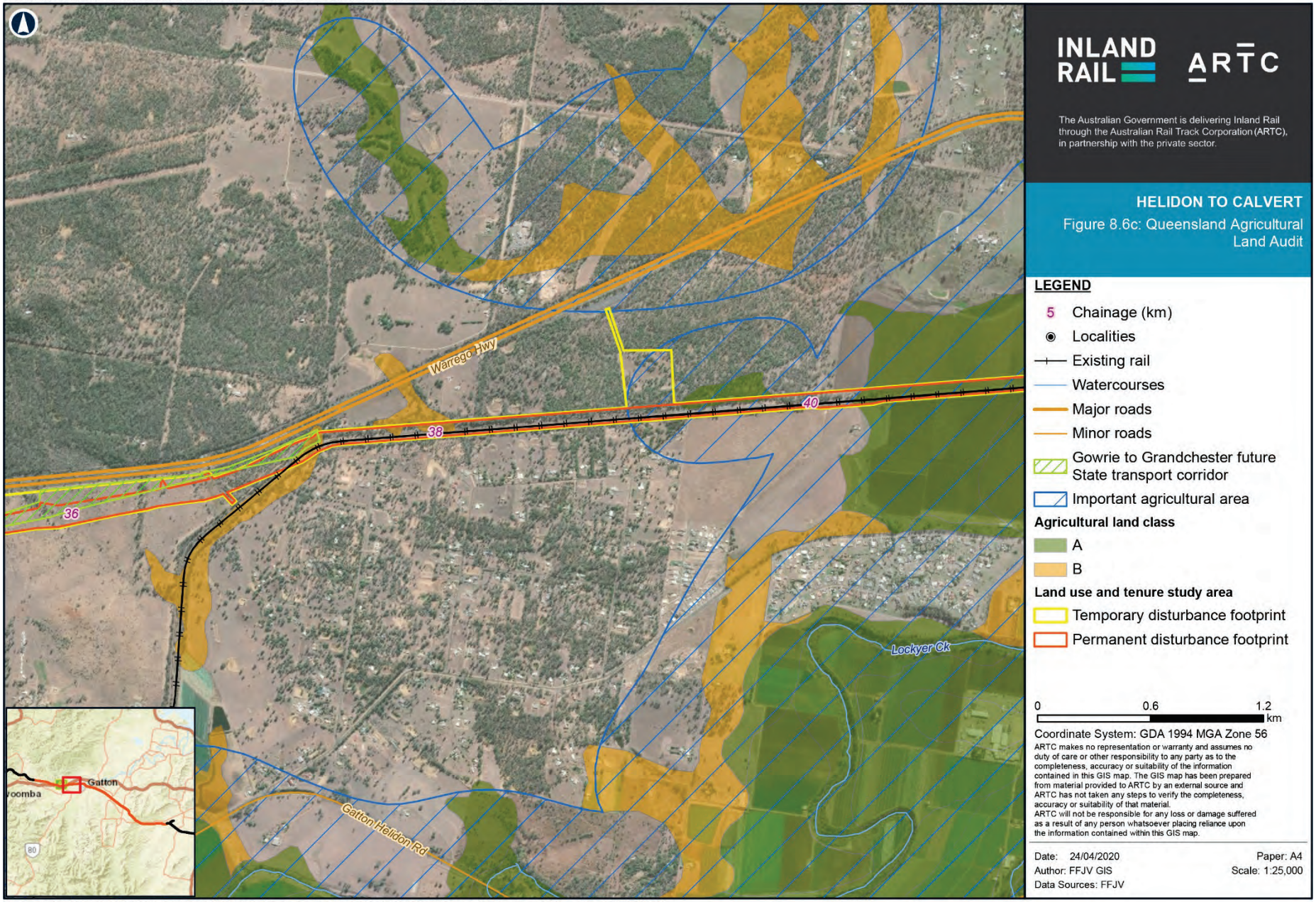

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Figure 8.6c: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.6_Agricultural_Land_ARTC.mxd Date: 24/04/2020 16:32

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

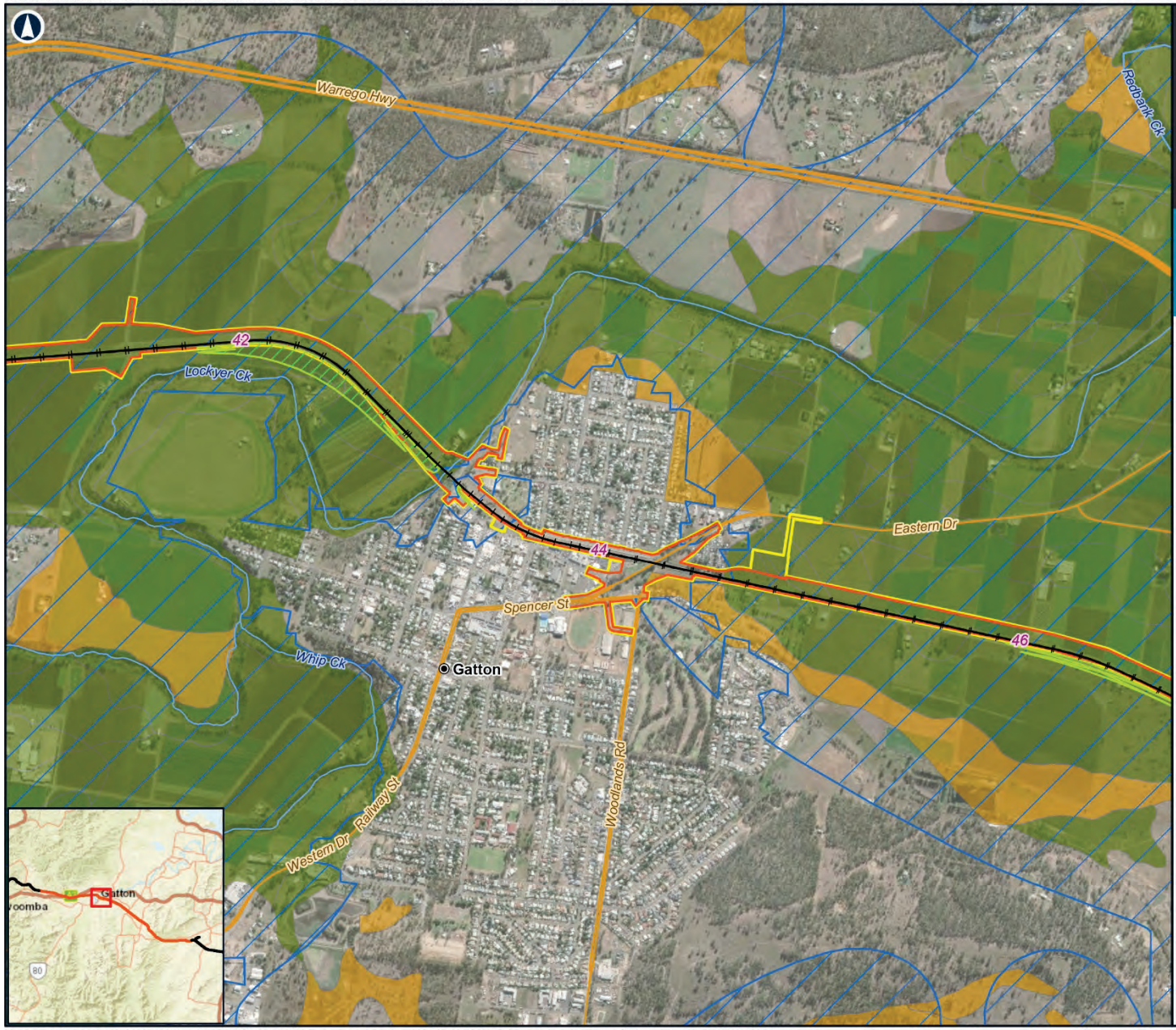

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Figure 8.6d: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.6_Agricultural_Land_ARTC.mxd Date: 24/04/2020 16:32

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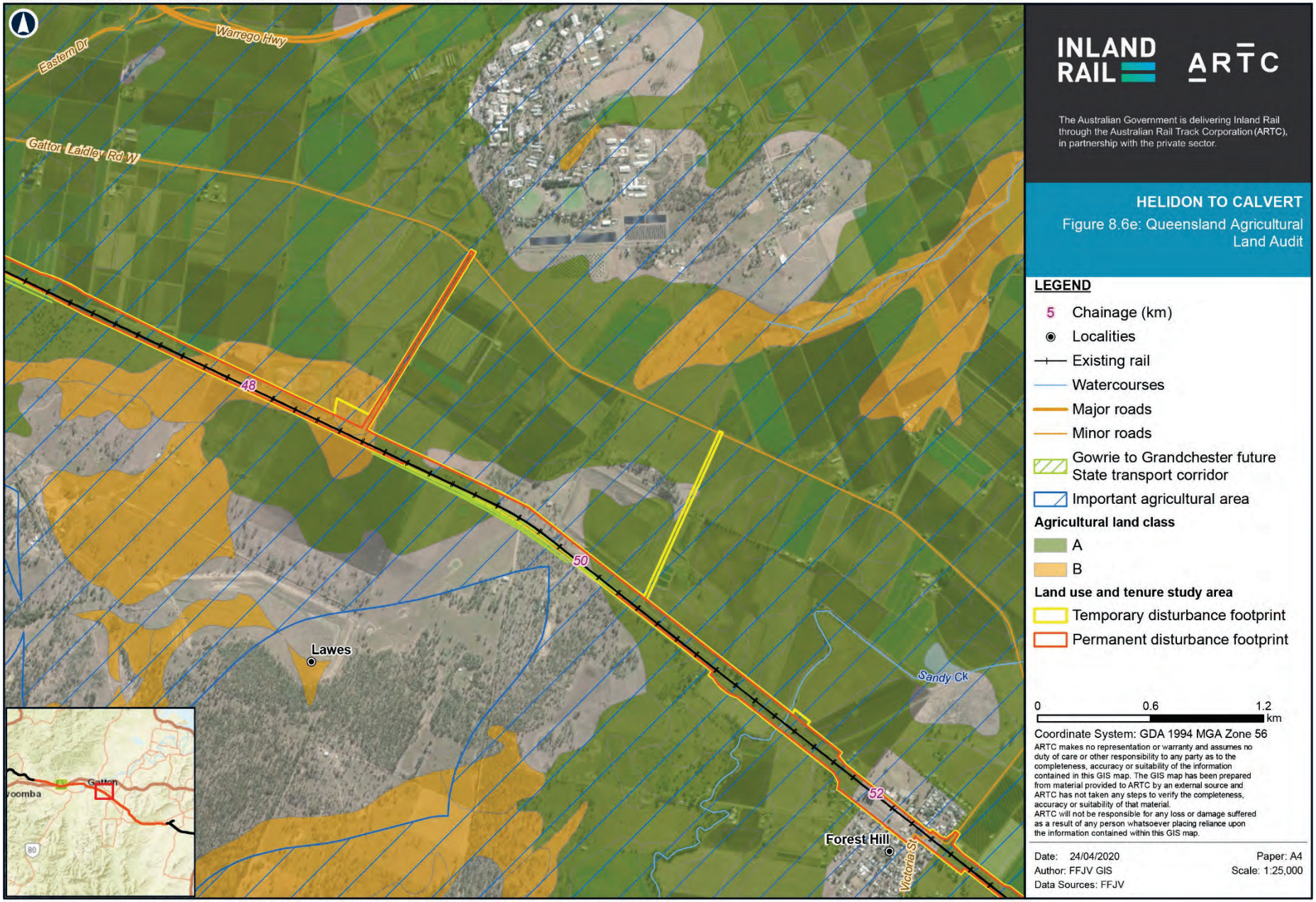

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Figure 8.6e: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV
Paper: A4
Scale: 1:25,000

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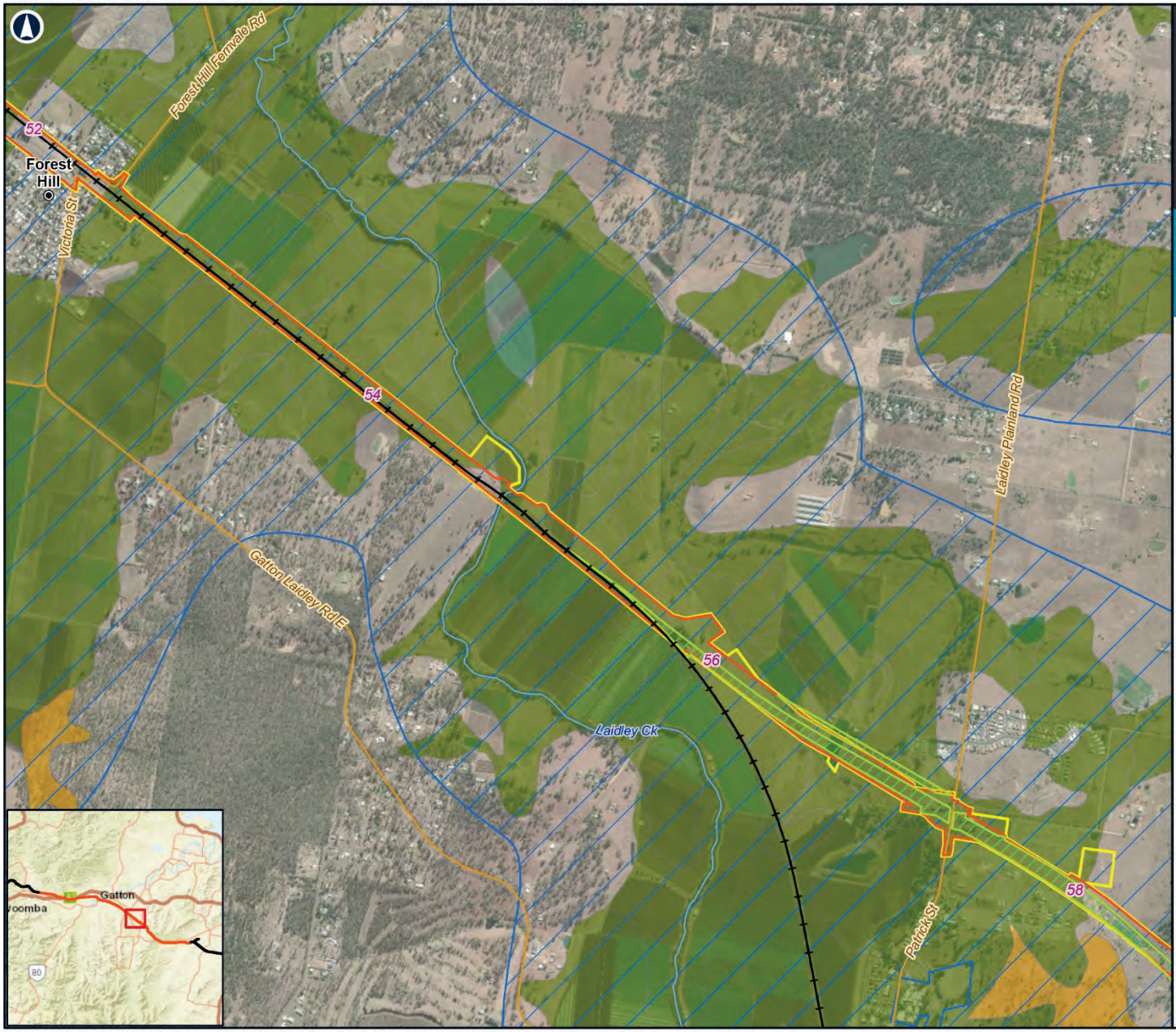

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Figure 8.6f: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020 Paper: A4
Author: FFJV GIS Scale: 1:25,000
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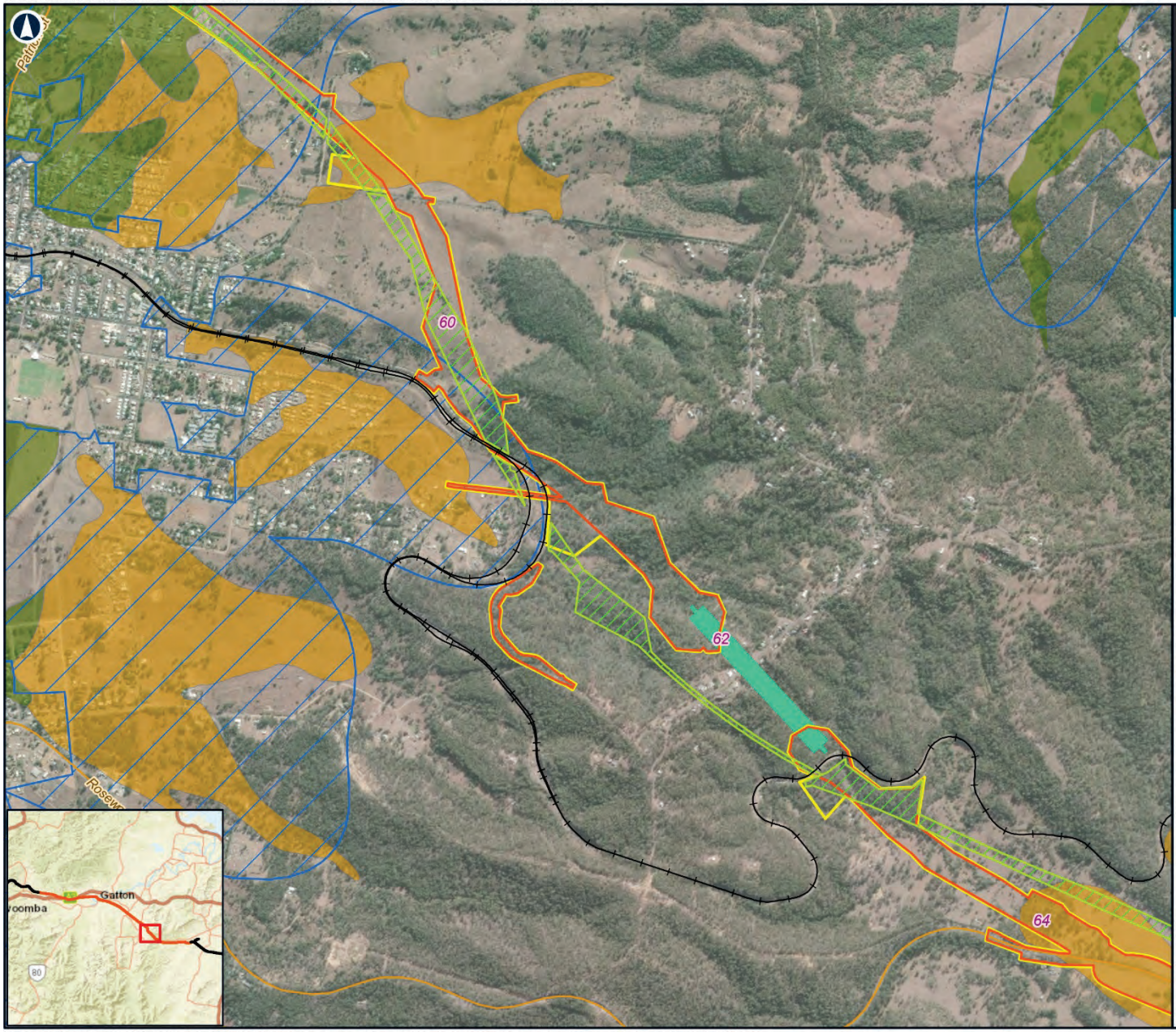

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Figure 8.6g: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Tunnel
- Minor roads
- Gowrie to Grandchester future State transport corridor
- Important agricultural area

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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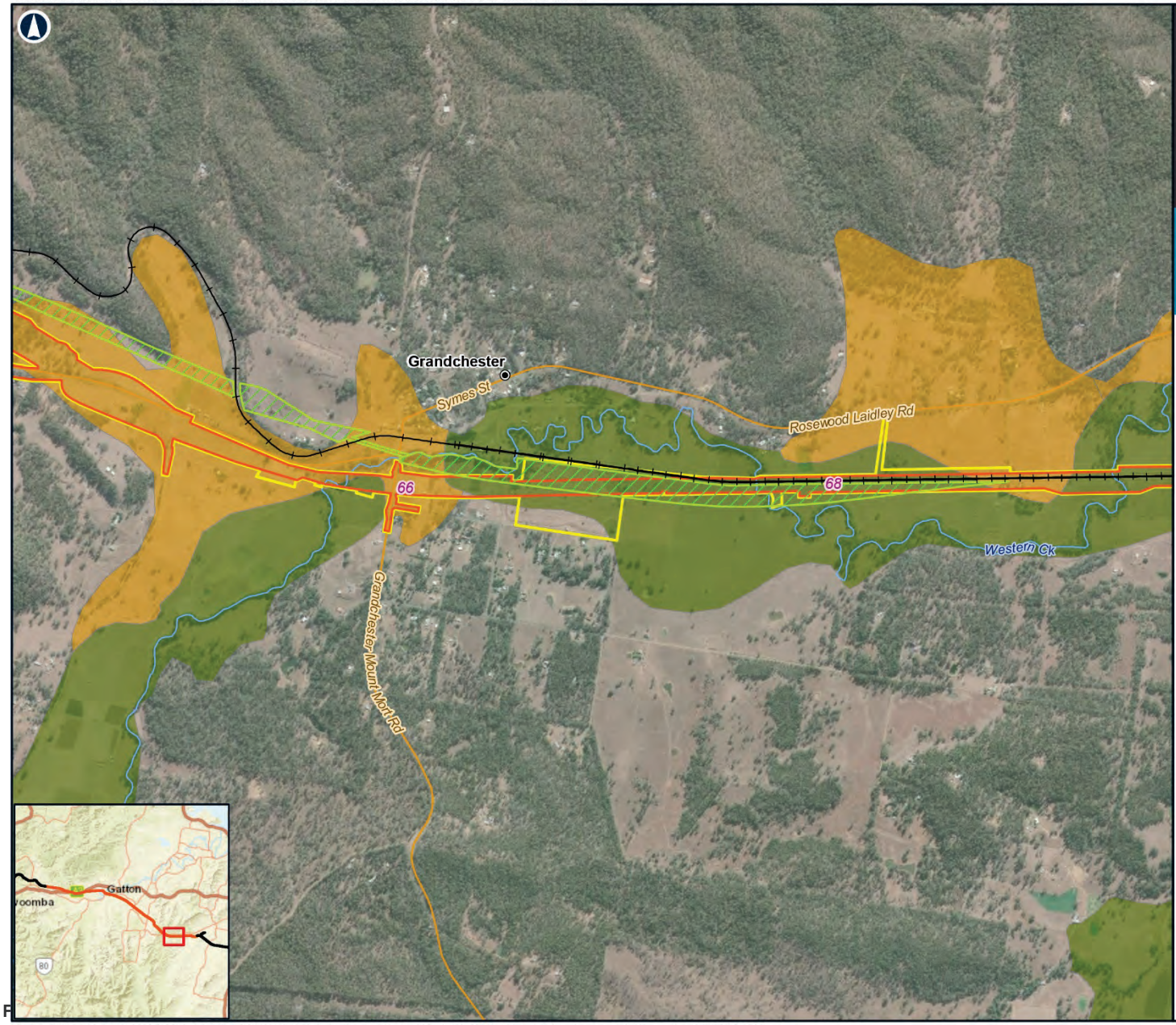

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Figure 8.6h: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- Watercourses
- Minor roads
- Gowrie to Grandchester future State transport corridor

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 24/04/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:25,000

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.6_Agricultural_Land_ARTC.mxd Date: 24/04/2020 16:32

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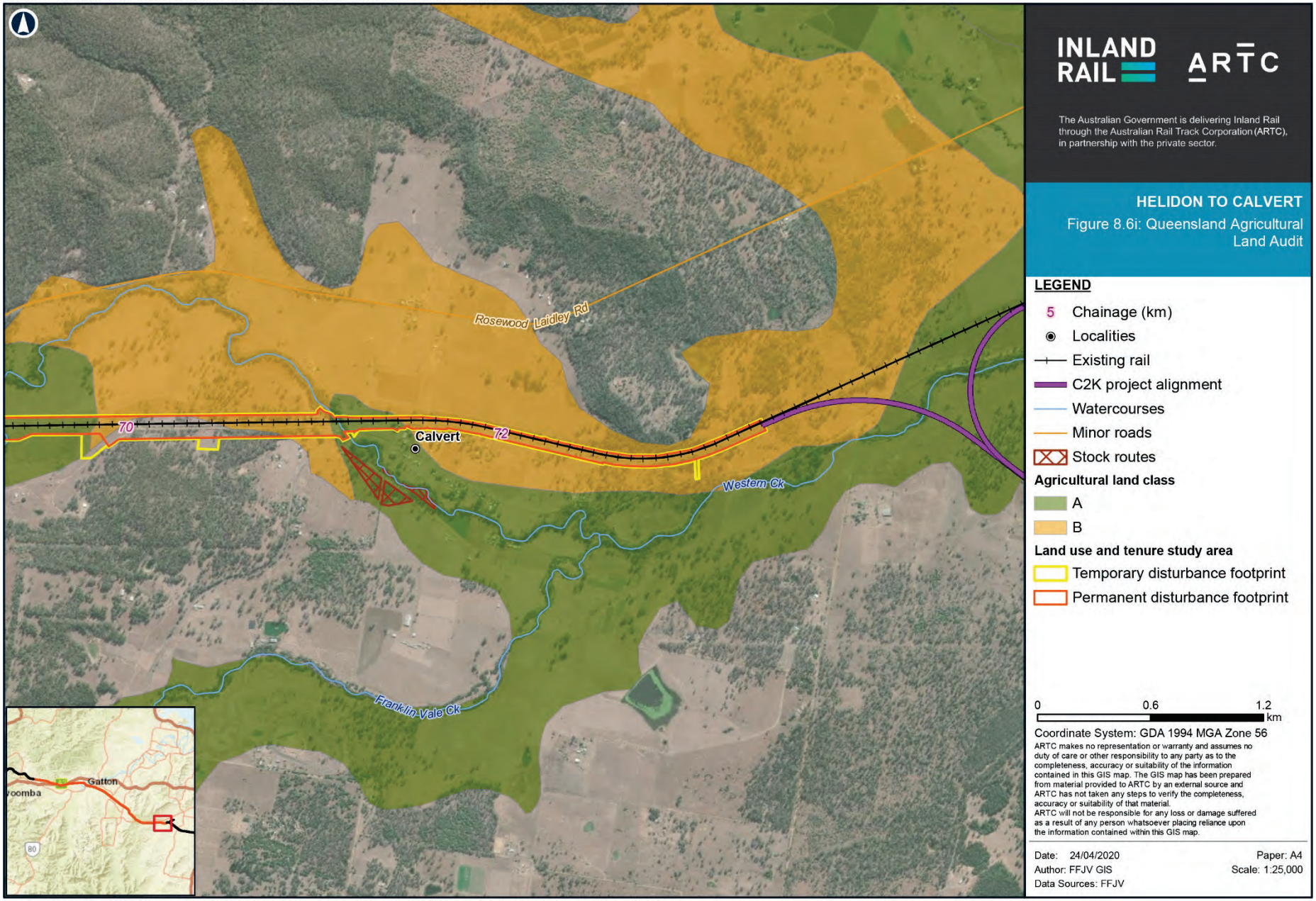

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Figure 8.6i: Queensland Agricultural Land Audit

LEGEND

- 5 Chainage (km)
- Localities
- Existing rail
- C2K project alignment
- Watercourses
- Minor roads
- Stock routes

Agricultural land class

- A
- B

Land use and tenure study area

- Temporary disturbance footprint
- Permanent disturbance footprint

0 0.6 1.2 km

Coordinate System: GDA 1994 MGA Zone 56

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Author: FFJV GIS Scale: 1:25,000
Data Sources: FFJV

Map by: RB/KG Z:\GIS\GIS_3300_H2C\Tasks\330-EAP-201902051014_Land_Use_and_Tenure\330-EAP-201902051014_Fig8.6_Agricultural_Land_ARTC.mxd Date: 24/04/2020 16:32

The permanent operational disturbance footprint will use the existing West Moreton System rail corridor for approximately 86.67 ha, or 18 per cent, of the area required for this footprint within which no agricultural activities are undertaken. The permanent operational disturbance footprint will also use the Gowrie to Grandchester future State transport corridor for approximately 80.02 ha, or 16 per cent, of the area required for this footprint, where the future land use intent is for rail infrastructure.

Both rail corridors, as well as existing road corridors, are mapped as containing Class A land, Class B land and IAA; however, no agricultural activities are undertaken within the existing rail corridor and the future intent of land within the Gowrie to Grandchester future State transport corridor is recognised by the State as future railway land.

On this basis, it is important to assess land proposed within the permanent operational disturbance footprint located outside the West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor.

Of the remaining 238.34 ha of land within the permanent operational disturbance footprint located outside the existing road corridors, West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor, approximately 63.62 ha (27 per cent) is classified as Class A land, approximately 35.50 ha (15 per cent) is Class B land and approximately 85.81 ha (36 per cent) is within the Lockyer Valley IAA (refer Table 8.14).

TABLE 8.14: AGRICULTURAL LAND CLASSIFICATIONS OUTSIDE EXISTING RAIL AND FUTURE STATE TRANSPORT CORRIDORS

Agricultural Land Audit Theme*	Disturbance footprint outside existing road, rail and future State transport	
	Area (ha)	% of 238.34 ha
Land Class A	63.62	26.7
Land Class B	35.50	14.9
IAA	85.81	36.0

Source: DAF, 2020

* Agricultural land classifications identified by the Agricultural Land Audit within the permanent operational disturbance footprint where located outside existing road corridors, West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor

Intensive animal husbandry

The audit also identifies current intensive livestock operations of piggeries, cattle feedlots and poultry farms. Piggeries, cattle feedlots and poultry farms are included in the audit where there is a current environmental authority for the use under the EP Act.

There are no intensive livestock operations with a current environmental authority located within the land use study area. One intensive livestock operation was identified to be within 1 km of the land use study area and is detailed in Table 8.15.

TABLE 8.15: CURRENT INTENSIVE LIVESTOCK OPERATIONS WITHIN 1 KM OF THE LAND USE STUDY AREA

Type	Name	Environmental authority No.	Development approval capacity*	Location	Relation to the Project
Poultry Farm	Darwalla Milling Company Pty Ltd	2014–06	1,000 to 200,000	39 Geisman Road, Laidley North	Land parcels associated with the Darwalla Milling Company are located 450 m to the north east of the land use study area at Laidley North, near Ch 56.00 km

Source: DAF, 2019

Table note:
* maximum standard animal units.

Stock routes

Stock routes 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. Currently, the stock route network in Queensland is administered under at least three acts:

- *Stock Route Management Act 2002* (formerly the *Land Protection (Pest and Stock Route Management) Act 2002*)
- *Land Act 1994*
- *Transport Infrastructure Act 1994.*

The land use study area does not traverse any known gazetted stock routes. However, there may be informal local stock routes throughout the land use study area used to transfer stock to various grazing paddocks and holding yards.

8.6.2.2 Protected and sensitive land uses

Bowman Park Koala Nature Refuge

Nature refuges are where a voluntary agreement has been entered into between a landowner and the Queensland Government to protect areas of land for nature conservation while allowing compatible land uses to continue. A nature refuge is a protected area under Section 14 of the NC Act.

The Bowman Park Koala Nature Refuge in Grandchester (Lot 2 on RP152112) is located approximately 20 m north of the land use study area at approximate Ch 69.0 km. The Bowman Park Koala Nature Refuge covers an area of approximately 10 ha and is shown on Figure 8.5h.

8.6.2.3 Infrastructure and utilities

The land use study area crosses several highways, main roads and local roads. In particular, the land use study area crosses Seventeen Mile Road, Warrego Highway, Spencer Street, Hunt Street, Laidley Plainland Road, Rosewood Laidley Road and Grandchester Mount Mort Road. In total, the permanent operational disturbance footprint will impact 36 public roads, 31 of which are local roads managed by local governments (28 in LVRC and three in ICC), and five of which are State-controlled roads managed by DTMR. This excludes works associated with proposed level crossings and drainage works proposed for Hickey Street.

At Helidon, the land use study area traverses a gas pipeline licence (PPL 2) held by APT Petroleum Pipelines Pty Ltd—the Roma to Brisbane Pipeline. The permanent operational disturbance footprint crosses the gas pipeline between Ch 27.0 km and Ch 29.0 km.

When passing through Grandchester and Calvert, the land use study area also traverses a high-pressure oil pipeline licence (PPL 1) held by Moonie Pipeline Company Pty Ltd. This pipeline has been decommissioned; however, it remains in-situ and the easement relating to the pipeline remains in place and is held by Santos Limited. The permanent operational disturbance footprint crosses this decommissioned pipeline at Ch 65.0 km.

The land use study area also crosses several other infrastructure and utilities, including communication, electrical and water utilities. Utilities identified to be located within the permanent operational disturbance footprint are summarised in Table 8.16.

Four sewage treatment plants listed on the Department of Environment and Science's Environmental Authority Register were also identified to be within, or within proximity to, the land use study area. Existing sewage treatment plants within the land use study area are summarised in Section 8.8.2.3.

Consultation with respective infrastructure providers and pipeline licensees has occurred and will continue throughout detailed design (refer Chapter 5: Stakeholder engagement and Appendix C: Consultation Report).

TABLE 8.16: UTILITIES WITHIN THE PERMANENT OPERATIONAL DISTURBANCE FOOTPRINT

Utility owners	Number of impacted utilities
APA Group	3
Energex	107
NBN Co	46
Nextgen	7
Optus/UECOMM	7
Powerlink	5
Queensland Urban Utilities	88
Santos	2
Telstra	373
TPG/Powertel/AAPT	24
Total	**662**

8.6.2.4 Current environmental authorities for environmentally relevant activities

Environmentally Relevant Activities (ERAs) are industrial or intensive agricultural activities with the potential to release contaminates into the environment. An environmental authority (EA) is required to perform an ERA. EAs are administered by a range of Queensland State Government and local government agencies under the provisions of the EP Act.

There are two categories of ERAs:

- Prescribed ERAs (as defined under Schedule 2 of the *Environmental Protection Regulation 2019*)
- Resource activities (including mining activities, petroleum activities, geothermal activities and greenhouse gas storage activities).

Resource activities relevant to the Project are identified within Section 8.6.1.3 and Section 8.6.1.4. Current prescribed ERAs within the land use study area are identified within Table 8.17 and shown on Figure 8.5.

TABLE 8.17: PRESCRIBED ENVIRONMENTALLY RELEVANT ACTIVITIES LOCATED WITHIN PROXIMITY OF THE LAND USE STUDY AREA

Permit number and primary holder	Locality (approximate chainage)	Description	EA grant date	Relationship to the Project
Prescribed ERA (Permit number: EPPR00412413)—primary holder is the Department of Resources (former DNRME)	Brookhill Magazine, Brookhill QLD 4816 (Ch 26.0 km)	This prescribed ERA is associated with the Helidon Magazine Reserve and has the following registered activities: ▸ ERA 61 Waste incineration and thermal treatment Threshold 3(b)—incinerating or thermally treating other regulated waste.	EA granted January 2009	The land use study area is located along the southern boundary of land subject to this ERA.
Prescribed ERA (Permit numbers: EPPR02546814)—primary holder is Brooks Earthmoving & Quarries Pty Ltd	362 Seventeen Mile Road, Grantham (Ch 31.0 km to Ch 32.0 km)	This prescribed ERA is associated with Brooks Quarries & Earthmoving commercial operation and has the following registered activities: ▸ ERA 16 Extraction and screening activities Threshold 2(a)—Extractive >5,000 tonnes (t) but <1,000,000 t/yr ▸ ERA 16 Extractive and screen activities Threshold 3(a)—Screening >5,000 t but <1,000,000 t/yr.	EA granted in November 2014	The land use study area traverses the southern portion of land subject to this EA.
Prescribed ERA (Permit Number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	23 East Street, Gatton (Ch 43.0 km)	This prescribed ERA has the following registered activities: ▸ ERA 63 Sewage Treatment Threshold 2—Operating a sewage pumping station with a total design capacity of more than 40 kilolitres (KL) in an hour, if the operation of sewage pumping station is not an essential part of the sewage treatment works.	EA granted in May 2014	Located adjacent to the land use study area at East Street, Gatton.
Prescribed ERA (Permit Number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Cnr Eastern Drive and Crescent Street, Gatton (Ch 44.0 km)	This prescribed ERA has the following registered activities: ▸ ERA 63 Sewage Treatment Threshold 2—Operating a sewage pumping station with a total design capacity of more than 40 KL in an hour, if the operation of sewage pumping station is not an essential part of the sewage treatment works.	EA granted in May 2014	Located adjacent to the land use study area at East Street, Gatton.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Hennessy Street, Gatton (Ch 44.0 km to Ch 48.5 km)	This prescribed ERA has the following registered activities: ▸ ERA 63 Sewage Treatment Threshold 2—Operating a sewage pumping station with a total design capacity of more than 40 KL in an hour, if the operation of sewage pumping station is not an essential part of the sewage treatment works.	EA granted in May 2014	The land use study area traverses this EA whilst within the existing West Moreton System rail corridor at Gatton.

Permit number and primary holder	Locality (approximate chainage)	Description	EA grant date	Relationship to the Project
Prescribed ERA (Permit number: EPPR00547913)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Dodt Road, Forest Hill (Ch 52.2 km)	This prescribed ERA has the following registered activities: ▸ ERA 63—Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of, (d) more than 4000 but not more than 10,000 equivalent person (EP).	EA granted September 2017	The land use study area is located adjacent to the south western boundary of land subject to this EA at Forest Hill.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Gordon Street, Forest Hill (Ch 52.5 km to Ch 53.0 km)	This prescribed ERA has the following registered activities: ▸ ERA 63 Sewage Treatment Threshold 2—Operating a sewage pumping station with a total design capacity of more than 40 KL in an hour, if the operation of sewage pumping station is not an essential part of the sewage treatment works.	EA granted in May 2014	The land use study area is located adjacent to the north eastern boundary of land subject to this EA at Forest Hill.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	267 Patrick Street, Laidley (Ch 57.0 km to Ch 57.5 km)	This prescribed ERA is associated with the Laidley Treatment Plant and has the following registered activities: ▸ ERA 63 Sewage Treatment Threshold 2—Operating a sewage pumping station with a total design capacity of more than 40 KL in an hour, if the operation of sewage pumping station is not an essential part of the sewage treatment works.	EA granted in May 2014	The land use study area traverses the north-eastern corner of land subject to this ERA.
Prescribed ERA (Permit number: EPVX02148714)—Primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Laidley Plainland Road, Laidley North (Ch 57.0 km to Ch 57.5 km)	This prescribed ERA is associated with the Laidley Treatment Plant and has the following registered activities: ▸ ERA 63 Sewage Treatment Threshold 2—Operating a sewage pumping station with a total design capacity of more than 40 KL in an hour, if the operation of essential part of the sewage treatment works.	EA granted in May 2014	The land use study area traverses land subject to this ERA at Laidley North.

8.6.3 Future land use intent and development activity

8.6.3.1 Future land use intent

A review of the relevant statutory land use planning instruments has been undertaken to identify the planned future land use intent and preferred pattern of development within the land use study area. The relevant instruments are:

- State Planning Policy (DILGP, 2017b)
- *ShapingSEQ* (DILGP, 2017a)
- Gatton Shire Planning Scheme 2007 (Gatton Shire Council, 2007)
- Laidley Shire Planning Scheme 2003 (LVRC, 2003)
- Ipswich Planning Scheme 2006 (ICC, 2006)
- Grantham Reconstruction Area Development Scheme 2011 (QRA, 2011).

State Planning Policy

The SPP expresses 17 State interests in land use planning and development across the following five key themes:

- Liveable communities and housing
- Economic growth
- Environment and heritage
- Safety and resilience to hazards
- Infrastructure.

A summary of each State interest and its relevance to the Project is provided in Table 8.18. The Project's compliance against the State interests are outlined in Section 8.9.1.

TABLE 8.18: STATE PLANNING POLICY STATE INTERESTS

State interest	State interest summary statement	Relevance to Project	
Liveable communities and housing			
Housing supply and diversity	Diverse, accessible and well-serviced housing, and land for housing, is provided and supports affordable housing outcomes	Yes	The land use study area traverses through or near to a number of townships, including Grantham, Gatton, Forest Hill, Grandchester and Calvert. Residential land uses are also traversed by the land use study area where traversing Helidon, Placid Hills and Laidley North
Liveable communities	Liveable, well-designed and serviced communities are delivered to support wellbeing and enhanced quality of life	Yes	The land use study area traverses the townships of Helidon, Gatton, Forest Hill, Laidley, Grandchester and Calvert where residential land uses present on both sides of the permanent operational disturbance footprint
Economic growth			
Agriculture	The resources on which agriculture depends are protected to support the long-term viability and growth of the agricultural sectors Audit information has been used to support the various policy elements of the State's interest in agriculture, the identification and mapping of IAA, and Agricultural Land Class A and Class B	Yes	Land uses within the land use study area predominantly consist of agricultural activities characterised by open grazing land and irrigated perennial horticulture, with small pockets of poultry farming, and rural residential land uses The land use study area traverses the Lockyer Valley IAA and land classified as both Class A and Class B agricultural land
Development and construction	Employment needs, economic growth, and a strong development and construction sector are supported by facilitating a range of residential, commercial, retail, industrial and mixed-use development opportunities	Yes	The Project will generate significant employment and economic growth, and support for the construction sector

State interest	State interest summary statement	Relevance to Project	
Mining and extractive resources	Extractive resources are protected and mineral, coal, petroleum and gas resources are appropriate considered to support the productive use of resources, a strong mining and resource industry, economical supply of construction materials and avoid land use conflicts where possible	Yes	The land use study area is located within 1 km of six mining leases and one mining lease application The Project does not traverse any KRAs identified within the SPP
Tourism	Tourism planning and development opportunities that are appropriate and sustainable are supported, and the social, cultural and natural values underpinning tourism developments are protected	Yes	The land use study area traverses and is within proximity to protected and sensitive land uses. This includes the Bowman Park Nature Refuge, which is a component of the region's natural values supporting tourism
Environment and heritage			
Biodiversity	Matters of environmental significance are valued and protected, and the health and resilience of biodiversity is maintained or enhanced to support ecological processes This State seeks to ensure that development is located in areas that avoid significant impacts on matters of environmental significance, and where adverse impacts cannot be reasonably avoided, that they are minimised This State interest also requires that ecological processes and connectivity are maintained or enhanced by avoiding fragmentation of matters of environmental significance	Yes	This State interest is applicable to the Project as the land use study area is identified as being located within mapped areas of national and state environmental significance
Coastal environment	The coastal environment is protected and enhanced, while supporting opportunities for coastal-dependent development, compatible urban form, and maintaining appropriate public use of and access to, and long, state coastal land	N/A	The land use study area is far removed from the coastal environment, including the Coastal Management District and Coastal zone
Cultural heritage	The cultural heritage significance of heritage places of Aboriginal and Torres Strait Islander cultural heritage, is conserved for the benefit of the community and future generations This State interest seeks to ensure matters of Aboriginal cultural heritage and Torres Strait Islander cultural heritage, and world, national, state and local heritage are appropriately identified, conserved and considered	Yes	This State interest is applicable to the Project as the land use study area contains areas of Aboriginal cultural heritage
Water quality	The environmental values and quality of Queensland waters are protected and enhanced This State interest seeks to ensure that development facilitates the protection or enhancement of environmental values and the achievement of water quality objectives for Queensland waters	Yes	This State interest is relevant to the Project as the land use study area traverses several watercourses. Watercourses traversed by the land use study area include Sheep Station Creek, Dinner Corner Gully, Lockyer Creek, Sandy Creek, Laidley Creek, Lagoon Creek and Western Creek

State interest	State interest summary statement	Relevance to Project	
Safety and resilience to hazards			
Emissions and hazardous activities	Community health and safety, and the natural and built environment, are protected from potential adverse impacts of emissions and hazardous activities The operation of appropriately established industrial development, major infrastructure, and sport and recreation activities is ensured	Yes	This State interest is relevant as the Project involves the construction and operation of major infrastructure
Natural hazards, risk and resilience	The risks associated with natural hazards, including the projected impacts of climate change, are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards	Yes	The land use study area is located within identified natural hazard areas including bushfire prone and flood hazard areas
Infrastructure			
Energy and water supply	The timely, safe, affordable and reliable provision and operation of electricity and water supply infrastructure is supported, and renewable energy development is enabled	Yes	The land use study area traverses, and/or is within proximity to, existing and approved major electricity locations and transmission line corridors. The land use study area also traverses water supply infrastructure
Infrastructure integration	The benefits of past and ongoing investment in infrastructure and facilities are maximised through integrated land use planning. This State interest seeks to ensure that development achieves a high level of integration with infrastructure planning, that it optimises the location of future infrastructure and that development occurs in areas currently serviced by infrastructure or are located in a logical and orderly location, form and sequence to enable the cost-effective delivery of state and local infrastructure	Yes	The Project will involve the expansion of existing infrastructure, involving the integration of Inland Rail within the existing West Moreton System rail corridor The Project will also impact highways, main roads and local roads within the land use study area
Transport infrastructure	The safe and efficient movement of people and goods is enabled, and land use patterns that encourage sustainable transport are supported	Yes	The intent of Inland Rail is to establish a rail link between Melbourne and Brisbane to serve future rail freight demand and stimulate growth for inter-capital and regional/bulk rail freight
Strategic airports and aviation facilities	The operation of strategic airports, and aviation facilities is protected, and the growth and development of Queensland's aviation industry is supported	N/A	The Project is not located within close proximity to strategic airports or aviation facilities. The closest facility is the Amberley Royal Australian Air Force (RAAF) Base located 14 km to the east of the land use study area
Strategic ports	The operation of strategic ports and priority ports is protected, and their growth and development are supported This State interest recognises Queensland ports as a major component of both the natural and state supply chain, and defence system	N/A	Whilst Inland Rail proposes to utilise the existing freight line from Acacia Ridge to the Port of Brisbane, this Project (Helion to Calvert) is located over 60 km from the Port. As the Project is not located within proximity, impacts on the safety or efficient operation of any strategic ports are not expected

ShapingSEQ (August 2017)

ShapingSEQ is the statutory regional plan for the SEQ region. Relevant to the Project, *ShapingSEQ* identifies the Melbourne to Brisbane Inland Rail as a region-shaping infrastructure priority for the State.

ShapingSEQ also identifies Agricultural Land (Class A and Class B) and IAAs[1] (including the Lockyer Valley IAA) as regionally significant natural resources to be protected from loss and fragmentation.

The Project is located within the western sub-region of the SEQ region. The Western sub-region encompasses Ipswich, Somerset, Toowoomba, Lockyer Valley and Scenic Rim LGAs and contains SEQ's major rural production and regional landscape areas. The sub-region is identified to be characterised by a predominantly regional and rural lifestyle. *ShapingSEQ* outlines this region as having a role as the western gateway, connecting SEQ to the rural areas of Darling Downs and South Burnett and providing critical freight connections with northern New South Wales and the southern states.

Other land uses outlined in *ShapingSEQ* within the land use study area includes the Helidon Hazardous Industry Precinct (which includes the Helidon Magazine Explosives Reserve) identified as a special use to be protected in the long-term from encroachment by sensitive and incompatible activities. The highly specialised land use has significant buffering requirements from incompatible land uses (i.e. residential land uses) and is identified as integral to supporting the extractive and construction industries. Opportunities to grow the capacity of the precinct for regionally significant specialised industry operations are planned to be investigated for the longer term.

Within *ShapingSEQ*, Gatton is identified as a principal rural activity centre. Principal rural activity centres are identified to be important service and community hubs in rural areas. These centres support a sub-regional rural catchment and contain concentrated rural services, as well as commercial, retail, government and community activities.

Ipswich is identified as an emerging Regional Economic Cluster that has the potential to develop into a major economic hub featuring a diverse mix of economic activities. The area is identified to be within close proximity to major transport infrastructure that is able to provide for long-term opportunities for a transport and logistics hub associated with both Inland Rail and the Project.

Local Government Planning Schemes

The Project is located within Lockyer Valley and Ipswich LGAs.

As part of the 2008 Queensland local government reform, the former Gatton and Laidley Shires were amalgamated to form the LVRC. Under the transitional agreements for amalgamated councils, the planning schemes operating in each former shire remains applicable in the development assessment process until a consolidated regional planning scheme is prepared by the regional council. As of August 2019, the Lockyer Valley Planning Scheme is in draft and has not yet been released for public consultation. Once the Lockyer Valley Planning Scheme is in effect, this planning scheme will supersede the current Gatton and Laidley Shire Planning Schemes.

Consequently, the current planning schemes relevant to the Project include:

- Gatton Shire Planning Scheme 2007 (Gatton Shire Council, 2007)
- Laidley Shire Planning Scheme 2003 (LVRC, 2003)
- Ipswich Planning Scheme 2006 (ICC, 2006).

Gatton Shire Planning Scheme 2007

The Gatton Shire Planning Scheme sets out the purpose and intent for each zone and identifies the preferred development to be achieved. The zones traversed by the land use study area and their relevance to the Project are outlined in Table 8.19.

1. The State Planning Policy identifies Agricultural Land (Class A and Class B) and IAAs as identified in the *Queensland Agricultural Land Audit*, or as identified by a local government in a local planning instrument based on a localised study.

TABLE 8.19: GATTON SHIRE PLANNING SCHEME ZONES TRAVERSED BY THE LAND USE STUDY AREA

Zone	Purpose/intent	Relevance to Project
Rural General	The purpose of the Rural General zone is to provide for agricultural production, other rural activities and the maintenance of the Shire's landscape quality that is important to the overall character of the Shire.	The land use study area traverses parcels within the Rural General zone between Helidon and Grantham.
Rural Agriculture	The purpose of the Rural Agriculture zone is to provide for good quality agricultural land to be preserved for sustainable agricultural purposes, and not prevented or constrained by other land uses, fragmentation of holdings, and land degradation resulting from development.	The land use study area traverses parcels within the Rural Agricultural zone when deviating from the existing West Moreton System rail corridor at Helidon and when traversing near Grantham.
Community Facilities	The purpose of the Community Facilities zone is to protect the continued operation of the Shire's community facilities and infrastructure as well as ensuring Gatton town and particularly its town centre remains the focus of the Shire's community activities.	The land use study area traverses the Community Facilities zone when using the existing West Moreton System rail corridor when within the former Gatton Shire area.

Source: Gatton Shire Council, 2007

Laidley Shire Planning Scheme 2003

The Laidley Shire Planning Scheme sets out the purpose and intent for each area and identifies the preferred development to be achieved. The areas traversed by the land use study area and their relevance to the Project are outlined in Table 8.20.

TABLE 8.20: LAIDLEY SHIRE PLANNING SCHEME AREA CLASSIFICATIONS WITHIN THE LAND USE STUDY AREA

Area	Purpose/Intent	Relevance to Project
Rural Landscape	The purpose of the Rural Landscape zone is to allow for rural industry uses, or those uses considered to be complementary to the rural setting. Within the Rural Landscape area, rural production on good quality agricultural land is free from intrusion by incompatible uses. Land uses within the Rural Landscape zone provide a buffer between the Rural Upland Area and the sensitive cropping practices of Good Quality Agricultural Land.	The land use study area traverses land within the Rural Landscape zone at Laidley.
Rural Agricultural Land	The purpose of the Rural Agricultural Land zone is to provide for development that is complementary to good quality agricultural land. Development that is located on or adjacent to good quality agricultural land, includes measures to ameliorate potential conflicts. The Rural Agricultural Land zone provides for rural production on good quality agricultural land to be free from intrusion by incompatible uses.	The land use study area traverses land within the Rural Agricultural area north of Laidley
Community Purpose	The purpose of the Community Purpose zone is to protect social and community infrastructure to ensure a high-quality lifestyle.	The land use study area is within the Community Purpose area where using the existing West Moreton System rail corridor at Lawes and Forest Hill.
Rural Upland	The purpose of the Rural Upland zone is to ensure development within the zone is compatible with the topographical and access constraints and does not cause significant adverse effects (landslip and erosion) on areas characterised by elevated and steep escarpments. Within the Rural Upland zone, the scenic values of the natural landscape are protected from development, or the effects of development, that may significantly reduce the scenic value, amenity and rural character.	The land use study area traverses the Rural Upland area when entering the proposed western tunnel portal at Laidley and when passing beneath the Little Liverpool Range.
Open Space and Reserves	The purpose of the Open Space and Reserves zone is to provide for a range of passive and active recreational activities and protect areas of social and ecological value.	The land use study area traverses parcels within the Open Space and Reserves zone at Laidley North.

Source: LVRC, 2003

Ipswich Planning Scheme 2006

The Ipswich Planning Scheme sets out the purpose and intent for each area and identifies the preferred development to be achieved. The zones traversed by the land use study area and their relevance to the Project are outlined in Table 8.21.

TABLE 8.21: IPSWICH PLANNING SCHEME AREA CLASSIFICATIONS WITHIN THE LAND USE STUDY AREA

Zone	Purpose/intent	Relevance to Project
Special Uses	The purpose of the Special Uses zone is to cater primarily for specified uses that include land owned, or operated by Commonwealth, State or local government for purposes such as municipal services, public utilities, schools, transport networks and community services.	The land use study area traverses land within the Special Uses zone when using the existing West Moreton System rail corridor.
Rural A—(Agricultural)	The purpose of the Rural A (Agricultural) zone is to protect good quality agricultural land and caters for both traditional and new and emerging agricultural activities.	The land use study area traverses land within the Rural A (Agricultural) area when traversing to the south of Grandchester.
Rural B—(Pastoral)	The purpose of the Rural B (Pastoral) zone is to primarily cater for commercial pastoral activities, forestry or other sustainable rural activities and also catering for rural-based tourism and recreational activities.	The land use study area traverses one parcel of land within the Rural B (Pastoral) area west of Grandchester.

Source: ICC, 2006

Grantham Reconstruction Area Development Scheme 2011

The Grantham Reconstruction Area Development Scheme identifies the location of the proposed Gowrie to Grandchester future State transport corridor adjacent to the Warrego Highway, within the northern portion of the Reconstruction Area. The permanent operational disturbance footprint is generally located within the Gowrie to Grandchester future State transport corridor, passing through the Grantham Reconstruction Area.

The land use study area traverses the Community Purposes zone within the Showgrounds precinct. The purpose of the Community Purposes zone is to provide for community-related activities and facilities whether under public or private ownership. The Showgrounds precinct is intended to house a significant showground site for the Lockyer Valley that can cater for a broad range of events.

8.6.3.2 Development activity

An assessment of planned future development activity has been undertaken to identify recently[2] granted development approvals or lodged applications for development of note to the Project, as well as a desktop investigation of the status of several major projects within the region. The assessment of projects has included a review of the following:

- Local Council Planning and Development Online databases for applications assessed under the Laidley Shire Planning Scheme, Gatton Shire Planning Scheme, Ipswich Planning Scheme and Grantham Reconstruction Area Development Scheme
- Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) (former Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP)) Coordinated Projects
- Minister of Economic Development Queensland current and approved development applications
- DTMR featured projects
- DSDILGP (former DSDMIP) current and approved Private Infrastructure Facilities
- Infrastructure Australia Infrastructure Priority List
- Queensland State Infrastructure Plan
- Queensland 'Building our Regions' funded projects
- Community Infrastructure Designations
- DTMR Investment Program
- Local Government Infrastructure Plans (LGIP) as per the Gatton Shire Planning Scheme 2007, Laidley Shire Planning Scheme 2003 and Ipswich Planning Scheme 2006.

A summary of development activity is provided in Table 8.22.

2. Development approvals were reviewed dating back to 2014. This accounts for developments approved under the repealed *Sustainable Planning Act 2009* (Qld) with a currency period of four years (plus one additional year). This period also captures recent development approvals under the new *Planning Act 2016* (Qld), which have currency periods of up to six years.

TABLE 8.22: DEVELOPMENT ACTIVITY WITHIN THE LAND USE STUDY AREA

Project name and Proponent	Locality (approx. chainage)	Description	Development stage	Relationship to Project
Lockyer Valley Regional Planning and Development Online (including developments located within the Grantham Reconstruction Area)				
Gatton West Industrial Area (GWIZ)—LVRC	Warrego Highway, Gatton (Ch 39.0 km)	The GWIZ is 120 ha of land located on the Warrego Highway, three kilometres to the west of Gatton. The GWIZ Project was declared by LVRC to provide opportunities for industrial development in the region without comprising agricultural land in the region. The GWIZ Master Plan has staged the development in two stages. Stage 1 involves the subdivision of Lot 8 RP 189116 and Lot 3 SP154274. Stage 2 is located on three adjoining land parcels located directly to the east of Stage 1 (Lot 4 RP196089, approximately half of Lot 5 RP196089 and a small portion of Lot 60 CA3120).	A development approval has been issued for Stage 1 of the GWIZ. As of December 2018, no development approval has been issued for the proposed Stage 2 of the GWIZ.	The GWIZ is located within the land use study area at Grantham. The Project uses the existing West Moreton System rail corridor when traversing along the southern boundary of the GWIZ.
Gatton Bowls Club	Corner Old College Road and Hickey Street, Gatton (Ch 43.4 km)	The Gatton Bowls Club received development approval for Reconfiguration of a Lot (1 into 2) and Material Change of Use for Accommodation Units (9 units).	Approved	The property is located within both the permanent operational and temporary construction disturbance footprints.
Gatton Caravan Park—ML Gatton Operations Pty Ltd	291 Eastern Drive, Gatton (Ch 44.5 km)	Development approval was obtained for Phases 1 and 3 of an extension to the existing Gatton Caravan Park, consisting of Backpacker's Accommodation (six dorms with capacity for 120 backpackers) (Phase 1), Outdoor Entertainment Water Park (Phase 2) and additional 33 caravan sites (Phase 3). Preliminary approval was also obtained for an Outdoor Entertainment Water Park (Phase 2).	Approved—Commenced	The land use study area traverses the property along the northern, western and southern boundaries.
Gatton Bunnings—Bunnings Group Limited	289 Eastern Drive, Gatton (Ch 44.6 km)	Development approval has been obtained for a new Bunnings in Gatton, with a total site area of 21,370.86 square metres (m2) and provision for 194 car parks.	Approved	The land use study area traverses through the southern portion of the property. There is a laydown area also proposed within the property.

Project name and Proponent	Locality (approx. chainage)	Description	Development stage	Relationship to Project
Valley Vista—Nichols Construction Pty Ltd	Laidley Plainlands Road, Laidley North (Ch 57.8 km)	Valley Vista Estate is a residential estate consisting of 179 residential lots, parkland and open space.	Approved and under construction	The land use study area traverses through the Valley Vista Estate.
ICC Planning and Development Online				
National Broadband Network—NBN Co.	Hiddenvale Road, Calvert (Ch 70.6 km)	NBN Co. received development approval for a Major Utility (Telecommunications Facility) within the south-west corner of the property.	Approved and constructed	The telecommunications facility is located within the south-west corner of the property, outside the land use study area.
DSDILGP (former DSDMIP)—Coordinated Projects				
Gowrie to Helidon—Inland Rail (ARTC)	Toowoomba and Lockyer Valley LGAs (adjoins the Project at Helidon)	ARTC are seeking approval to construct and operate the Gowrie to Helidon section of Inland Rail.	ToR for EIS were issued in August 2017. Draft EIS is being prepared by ARTC.	The Gowrie to Helidon Inland Rail Project connects to the Helidon to Calvert Project.
Calvert to Kagaru—Inland Rail (ARTC)	Scenic Rim and Ipswich LGAs (adjoins the Project at Calvert)	ARTC are seeking approval to construct and operate the Calvert to Kagaru section of Inland Rail.	ToR for EIS were issued in December 2017. Draft EIS is being prepared by ARTC.	The Helidon to Calvert Inland Rail Project connects to the Calvert to Kagaru Project.
Economic Development Queensland current and approved development applications				
There are no Economic Development Queensland current or approved development applications located within the land use study area.				
DTMR featured projects				
Warrego Highway Upgrade Program supported by Warrego Highway Upgrade Strategy—DTMR	Warrego Highway, between Toowoomba and west of Miles (Ch 30.0 km to Ch 48.0 km)	The Queensland State Government identified 41 short-, medium- and long-term investment priorities over the next 20 years to ensure the vital piece of transport infrastructure continues to serve regional Queensland for decades.	Initially, 15 approved projects as part of the Program were identified, funded and completed. An additional three projects have been identified to be funded. The wider Warrego Highway Upgrade Strategy also identifies 20 years of planned and proposed investments.	Within the land use study area, the strategy identifies the Blacksoil to Helidon Spa highway upgrade as a long-term proposal, which is planned over an 11- to 20-year timeframe. The Warrego Highway is located within the land use study area at Helidon.

Project name and Proponent	Locality (approx. chainage)	Description	Development stage	Relationship to Project
Infrastructure Facilities of Significance				
There are no approved Infrastructure Facilities of Significance within the land use study area.				
Infrastructure Australia Infrastructure Priority List				
There are no projects on the Infrastructure Priority List located within the land use study area.				
Queensland State Infrastructure Plan				
Train control system implementation on ARTC network	Nationwide	Train control system is designed to support ARTC's objectives of improving rail network capacity, operational flexibility, train service availability, transit times, rail safety and system reliability.	Continual	Train control system signalling will be implemented as part of the construction of the Project.
Queensland 'Building our Regions' funded Projects				
There are no completed or shortlisted Building our Regions-funded projects within the land use study area.				
Infrastructure Designations under the repealed *Integrated Planning Act 1997* and *Sustainable Planning Act 2009* and/or *Planning Act 2016*				
The land use study area traverses one Infrastructure Designation made under the repealed *Integrated Planning Act 1997*, for the Springdale to Greenbank 500 kilovolt transmission line.				
Queensland Transport and Roads Investment Program (QTRIP)				
No significant commitments within QTRIPs were identified to be within the land use study area. It is noted that network planning for Inland Rail is identified as a 'State Network' commitment.				
Lockyer Valley LGIP				
There is no significant schedule of works within the Lockyer Valley LGIP identified within the land use study area.				
Ipswich LGIP				
There is no significant schedule of works within the Ipswich LGIP identified within the land use study area.				

8.7 Potential impacts

The construction and operation of the Project has the potential to result in direct and permanent impacts to land use and tenure within the land use study area, with the majority of impacts occurring immediately on commencement of land acquisition and construction of the Project.

Potential impacts to land use and tenure associated with the Project in both the construction and operation phase are related to:

- Change in tenure and loss of property:
  - Freehold
  - Tenure under the Land Act
  - Impacts to native title.
- Change in land use:
  - Impacts on agricultural uses and activities:
    - Loss of agricultural land
    - Land fragmentation and disruption to access and infrastructure
    - Alterations to stock routes (informal or otherwise)
    - Other indirect impacts on agricultural land
    - Opportunities to support the agricultural industry.
  - Notable land uses
  - Sterilisation of mineral and petroleum resources/interests
  - Development activity (current, proposed or planned).
- Accessibility:
  - Impacts on road network
  - Impacts to existing property access
- Impacts on current services and utilities
- Opportunities to support future agricultural and industry development.

8.7.1 Change in tenure and loss of property

8.7.1.1 Permanent change in tenure and loss of property

The permanent operational disturbance footprint will directly impact approximately 488.44 ha of land across 193 properties, of which approximately 60 per cent are freehold, 18 per cent are lands lease, 18 per cent are roads, 2 per cent are reserve land and less than 1 per cent is State land or a watercourse. Where data was missing, the tenure of land was identified as an 'unlinked' parcel (1 per cent of the area impacted).

The Project was designed to use the existing West Moreton System rail corridor and the protected Gowrie to Grandchester future State transport corridor where possible, minimising the extent of 'new' properties to be acquired. Of the 193 properties within the permanent operational disturbance footprint, 23 are within the existing West Moreton System rail corridor and 57 properties within the Gowrie to Grandchester future State transport corridor.

These numbers include up to five properties required for volumetric acquisition, where the Project passes beneath a property at the proposed Little Liverpool Range tunnel.

Additional properties may also be acquired in other situations, such as where certain impacts cannot be avoided or appropriately mitigated and/or acquisition is agreed on in consultation with affected landowners.

A summary of land acquisitions within the permanent operational disturbance footprint is provided in Table 8.23. These are indicative and to be confirmed following detailed design.

TABLE 8.23: LAND ACQUISITIONS WITHIN THE PERMANENT OPERATIONAL DISTURBANCE FOOTPRINT

Tenure and ownership	No. of properties within permanent operational disturbance footprint
Also within the existing West Moreton System rail corridor	
Lands lease	23
Also within protected Gowrie to Grandchester future State transport corridor	
Freehold	54
Reserve	1
State land	2
Also outside protected Gowrie to Grandchester future State transport corridor and outside existing West Moreton System rail corridor	
Freehold	104
Lands lease	1
Reserve	3
State land	5

Potential impacts as a result of land acquisitions include:

- Loss of property
- Relocation of residents
- Severance of land parcels, and potential fragmentation of agricultural land, infrastructure and services
- Disruption to access and use of property where temporarily acquired.

Land acquisition for the Project will be approached in accordance with the requirements of the AL Act. Land only required for construction will also be acquired in accordance with the requirements of the AL Act, or leased from landowners, subject to individual agreements.

Consultation with affected landowners and communities has been key to obtaining an understanding of operational arrangements of individual properties in proximity to the Project. The rail alignment has been positioned to align with roads and property boundaries where possible to reduce the severance of land parcels, and reduce potential property impacts particularly in relation to private access, services or farm operational arrangements. Consultation with the affected landowners is ongoing, details of which are provided in Chapter 16: Social and Appendix C: Consultation Report.

Obtaining tenure for the Project

At the point where the future rail corridor is confirmed and protected, properties that have not already been acquired for the Gowrie to Grandchester future State transport corridor will be acquired to facilitate the Project.

A Constructing Authority that has compulsory acquisition powers under the AL Act will undertake the remaining land acquisitions required for the rail corridor in accordance with the process under the AL Act. Once land has been acquired, it is expected that ARTC will be granted tenure for construction, and a sub-lease for the rail corridor in accordance with the TI Act.

The acquisition of interests in land will be undertaken in consultation with interest holders and in accordance with the AL Act compulsory acquisition process. Partial or full parcel acquisition of a property and/or acquisitions for easements and licences will be determined on a case-by-case basis before construction and will consider factors such as parcel size, alignment effect, land use and operability following construction.

ARTC may also acquire land by negotiation in some cases and this may occur ahead of or in parallel with the compulsory acquisition process. These acquisitions will be voluntary, private treaty transactions between ARTC and the landholder. Scenarios where this may occur include where there is strong certainty about the location of the alignment

Further information on the approach to change in land tenure and loss or property is provided in Section 8.8.1.

Where the permanent operational disturbance footprint traverses State land, the following tenure dealings will likely occur in accordance with the Land Act:

- Land with a term lease (Lot 165 on CC1892) may be temporarily impacted as the temporary construction disturbance footprint traverses the northern and eastern boundary of the land parcel—the existing front access to the property will also be permanently impacted as the permanent operational disturbance footprint is adjacent to the northern boundary of the land parcel
- Land with a road licence parcel (Strata parcel A on AP3298) will be amended due to the reduction in size of the road licence area required for the permanent operational disturbance footprint
- Reserve parcel for the University and College (Lot 184 on CC3374) will be permanently impacted with the reserve amended as partial acquisition of the property along the southern boundary and a strip through the middle of the southern portion of the land parcel is required for the permanent operational disturbance footprint
- Reserve parcel for Grandchester Recreational Park (Lot 19 on SP161916) will be permanently impacted as the permanent operational disturbance footprint traverses through the middle of the land parcel (including the existing cricket oval), with the reserve either being amended or revoked
- Reserve parcel for open space and drainage (Lot 499 on SP197170) will be permanently impacted as the permanent operational disturbance footprint traverses the south western corner—it is likely the reserve will be amended
- Reserve parcel for drainage (Lot 5 on SP219946) will be permanently impacted as the permanent operational disturbance footprint partially traverses the detention basin along the southern boundary of the land parcel. It is likely the reserve will be amended
- Reserve parcel for an educational institution (Lot 169 on CC2193) will be permanently impacted as the front access to the property will be traversed by the permanent operational disturbance footprint.

Where the permanent operational disturbance footprint traverses local roads, acquisitions will likely be undertaken in accordance with the Land Act.

The Project will also require volumetric acquisition of properties to facilitate the construction and operation of the alignment through the proposed Little Liverpool Range tunnel and several bridges/viaducts. Volumetric acquisitions require the resumption of land below the surface of the property or airspace above the property, with no change of ownership or relocation of the land occupier required. Volumetric acquisitions will be undertaken in accordance with the AL Act.

Tenure arrangements will be formally progressed following completion of the Project EIS process.

8.7.1.2 Temporary loss of property

In addition to permanent land acquisitions, properties may be required to be temporarily used during construction. These properties are predominantly freehold and are identified in Table 8.24.

TABLE 8.24: PROPOSED LAYDOWN AREAS AND THEIR EXISTING UTILISATION

Location	Approximate chainage	Size (m^2)	Lot/plan	Tenure	Existing land use
Airforce Road	Ch 27.3 km	5,000	1RP180055	Freehold	Residential
Connors Road (North)	Ch 30.7 km	83,000	10RP805706	Freehold	Residential
Connors Road (South)	Ch 32.8 km	60,000	1RP172842	Freehold	Grazing native vegetation
Crescent Street	Ch 44.1 km	3,000	12SP109849	Freehold	Services
Doonans Road	Ch 65.3 km	13,000	93CH31278	Freehold	Grazing native vegetation
Gatton Station North	Ch 43.4 km	7,000	384SP121744	Lands lease	Services
Gatton Station North	Ch 43.5 km	3,000	386SP121744	Lands lease	Services
Gatton Station South	Ch 43.6 km	3,000	382SP121744	Lands lease	Services
Gatton–Laidley Road	Ch 48.5 km	19,000	184CC3374	Reserve	Grazing native vegetation
Grandchester Mount Mort Road	Ch 65.8 km	4,000	12SP298447	Freehold	Grazing native vegetation
Grandchester Station	Ch 66.8 km	160,000	22CC3471	Freehold	Grazing native vegetation
Greyfriars Road	Ch 49.5 km	3,000	202CC3101	Freehold	Grazing native vegetation
Greyfriars Road	Ch 50.2 km	3,000	2RP55658	Freehold	Grazing native vegetation
Hall Road	Ch 54.6 km	37,000	1RP166549	Freehold	Grazing native vegetation
Hiddenvale Road	Ch 71.2 km	3,000	Road parcel	Road	Grazing native vegetation
Laidley-Plainlands Road	Ch 57.4 km	29,000	1RP188490	Freehold	Grazing native vegetation
Neumann Road	Ch 69.8 km	18,000	151CH31726	Freehold	Grazing native vegetation
Neumann Road	Ch 70.4 km	11,000	144CH31664	Freehold	Grazing native vegetation
Off Boundary Road	Ch 58.0 km	24,000	805SP300510	Freehold	Grazing native vegetation
Old Laidley-Forrest Hill Road	Ch 56.1 km	21,000	165CH3161	Freehold	Grazing native vegetation
Old Laidley-Forrest Hill Road	Ch 56.7 km	4,000	1RP25635	Freehold	Irrigated seasonal horticulture
Paroz Road	Ch 59.2 km	55,000	2RP25669	Freehold	Grazing native vegetation
Railway Street	Ch 51.4 km	6,000	6SP285416	Freehold	Grazing native vegetation
Rosewood Laidley Road	Ch 64.0 km	15,000	112CH31344	Freehold	Grazing native vegetation
Rosewood Laidley Road	Ch 67.8 km	3,000	98CH31284	Freehold	Grazing native vegetation
Rosewood Laidley Road	Ch 69.2 km	6,000	98CH31284	Freehold	Grazing native vegetation
Seventeen Mile Road	Ch 28.8 km	19,000	82RP843414	Freehold	Grazing native vegetation
Smithfield Road	Ch 43.0 km	7,000	382SP117134	Lands lease	Grazing native vegetation
Tunnel Portal EAST	Ch 32.8 km	30,000	162SP156728	Freehold	Residential
Tunnel Portal WEST	Ch 61.2 km	31,000	2SP156727	Freehold	Grazing native vegetation
Warrego Highway (North)	Ch 33.9 km	41,000	1RP175514	Freehold	Grazing native vegetation
Warrego Highway (South)	Ch 35.4 km	264,000	117CA3121	Freehold	Grazing native vegetation
Total	-	**990,000**	-	-	-

Where the Project proposes to use land temporarily for construction, there is potential to disrupt existing operations on and surrounding these properties for the duration of construction and rehabilitation. In identifying the properties to be used for activities associated with the construction of the Project, consideration was given to several factors, including:

- Properties already acquired by DTMR
- Use of properties that will already be severed or alienated within the permanent operational disturbance footprint
- Alignment with property boundaries
- Access to main roads
- Avoidance of intensive livestock or cropping land uses
- Avoidance of environmentally sensitive areas.

Impacts resulting from the relocation of residents are considered to include loss of community cohesion as well as potential impacts to community identity and values. These impacts relate to social impacts of the Project and are detailed in Chapter 16: Social.

As impacts to tenure relate to the direct acquisition or use of land, there is unlikely to be any impacts outside the permanent operational and temporary construction disturbance footprints.

8.7.1.3 Native title

The land use study area traverses four parcels identified as Reserve tenure and seven parcels identified as State land tenure, as well as several watercourses and unlinked parcels, on which native title may continue to exist.

Sections 24KA and 24MD of the NT Act may be relevant to the land parcels within the land use study area with Reserve tenure. Under Sections 24KA and 24MD, if an act such as granting statutory approval or land tenure for land subject to native title was dedicated as a reserve before 23 December 1996, the Act will be valid from a native title perspective provided it fits within the purpose of the reserve (or would have no greater impact on native title than Acts that fit within the purpose of the reserve).

If an act for the Project is to be undertaken on a Reserve and is valid under Section 24MD of the NT Act, the Act itself will extinguish native title if it consists of the construction or establishment of a public work (which includes a road, railway or bridge that is constructed by or on behalf of the Crown, or a local government body or other statutory authority of the Crown, in any of its capacities).

Before any such public works are undertaken, the Constructing Authority, on behalf of the Australia Government Minister, would need to notify all affected representative bodies and registered native title claimants of the proposed works and give them an opportunity to comment.

The parties to be notified for the Project are the relevant representative body and the registered native title claimant for the Yuggera Ugarapul People (registered claim) and Jagera Yagara Gurrangnam People (claim not accepted for registration).

Where it is determined native title has not been extinguished within the land use study area, ARTC will seek the extinguishment of the native title rights and interests before construction of the Project by compulsory process to enable the necessary interests in Crown lands required to construct the Project to be granted.

8.7.2 Change in land use

The permanent operational disturbance footprint follows the existing West Moreton System rail corridor for approximately 50 per cent of the length of the Project. The Project is located within the existing rail corridor for approximately 18 per cent of the area required for the permanent operational disturbance footprint. Where the Project is located outside the existing rail corridor, the permanent operational disturbance footprint predominantly follows the Gowrie to Grandchester future State transport corridor. The permanent operational disturbance footprint is located within the Gowrie to Grandchester future State transport corridor for approximately 16 per cent of the area required. The Project uses these corridors where possible, minimising the change in land use as railway infrastructure is existing or is intended for the area.

The predominant land use within the land use study area is grazing land. Other notable land uses within the land use study area were identified and described in Section 8.6.2.

8.7.2.1 Impacts on agricultural uses and activities

Loss of agricultural land

The Project will sterilise productive agricultural land located within the permanent operational disturbance footprint. When determining potential sterilisation of productive agricultural land within the permanent operational disturbance footprint, it is understood that mapped productive land within existing road corridors and the West Moreton System rail corridor has already been sterilised. In addition, as the Gowrie to Grandchester future State transport corridor was protected as future railway land in 2005 under the TPC Act and gazetted under the TI Act, the future intent to construct a rail corridor through the area is consistent with State land use planning expectations for the area. On this basis, this assessment only considers the areas within the permanent operational disturbance footprint that are located outside the existing road corridors, West Moreton System rail corridor and Gowrie to Grandchester future State transport.

In accordance with the audit, approximately 27 per cent of land within the permanent operational disturbance footprint is classified as Class A agricultural land, with a further 15 per cent classified as Class B agricultural land. This equates to a total of 42 per cent of land within the permanent operational disturbance footprint (outside the West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor) as being classified as Class A or Class B agricultural land and that may be sterilised as a result of the Project. Of these areas, land is primarily used for grazing, with some parcels used for irrigated seasonal horticulture, cropping and irrigated perennial horticulture.

At a local government level, where the permanent operational disturbance footprint is within the Lockyer Valley LGA, the permanent operational disturbance footprint traverses approximately 56.67 ha of Class A land, 7.25 ha of Class B land and 85.81 ha of land identified to be within the Lockyer Valley IAA.

Where the permanent operational disturbance footprint is within the Ipswich LGA, the permanent operational disturbance footprint traverses approximately 6.95 ha of Class A land and 28.25 ha of Class B land. The permanent operational disturbance footprint does not traverse any land within an IAA where within the Ipswich LGA (refer Table 8.25).

TABLE 8.25: LAND TYPE WITHIN THE PERMANENT OPERATIONAL DISTURBANCE FOOTPRINT* BY LGA

	Lockyer Valley LGA		Ipswich City LGA	
Land classification	**Area (ha)**	**% of 283.34 ha**	**Area (ha)**	**% of 238.34 ha**
Class A	56.67	23.8	6.95	2.9
Class B	7.25	3.0	28.25	11.9
IAA	85.81	36.0	0.00	0.0

Table note:
* outside existing road corridors, West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor.

To assist in identifying the significance of this impact on agricultural land within the region, Table 8.26 and Table 8.27 identify the percentage of Class A and Class B agricultural land and IAA that the permanent operational disturbance footprint traverses relative to the total area of these land classes within each of the LGAs.

TABLE 8.26: PERCENTAGE OF LAND TYPE WITHIN LOCKYER VALLEY LOCAL GOVERNMENT AREA TRAVERSED BY THE PERMANENT OPERATIONAL DISTURBANCE FOOTPRINT*

	Lockyer Valley LGA		
Land classification	**Area within permanent operational disturbance footprint (ha)**	**Total area within LGA (ha)**	**% of land traversed by permanent operational disturbance footprint within LGA**
Class A	56.67	38,672.92	0.1
Class B	7.25	7,484.62	0.1
IAA	85.81	77,567.02	0.1

Table note:
* outside existing road corridors, West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor.

TABLE 8.27: PERCENTAGE OF LAND TYPE WITHIN IPSWICH LOCAL GOVERNMENT AREA TRAVERSED BY THE PERMANENT OPERATIONAL DISTURBANCE FOOTPRINT*

	Ipswich LGA		
Land classification	Area within permanent operational disturbance footprint (ha)	Total area within LGA (ha)	% of land traversed by permanent operational disturbance footprint within LGA
Class A	6.95	10,432.54	0.1
Class B	28.25	5,065.08	0.6
IAA	0.00	3,484.78	0.0

Table note:
* outside existing road corridors. West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor.

As identified in Table 8.26 and Table 8.27, the permanent operational disturbance footprint will traverse less than one percent of land within the region classified by the audit as Class A, Class B or IAA in both the Lockyer Valley and Ipswich LGAs.

As identified in Table 8.26, the permanent operational disturbance footprint will traverse approximately 0.1 per cent of Class A agricultural land and Class B agricultural land within the Lockyer Valley LGA. The permanent operational disturbance footprint will traverse approximately 0.1 per cent of the Lockyer Valley IAA.

Table 8.27 identifies that the permanent operational disturbance footprint will traverse 0.1 per cent of Class A and approximately 0.6 per cent of Class B agricultural land within the Ipswich LGA. The permanent operational disturbance footprint will not traverse land within an IAA when within Ipswich LGA.

Land fragmentation and disruption to access and infrastructure

The Project may also result in indirect adverse impacts to agricultural land outside the permanent operational disturbance footprint. The Project may sever or isolate parcels of agricultural land that may prohibit or limit internal movements, leading to a potential reduction and loss of access to agricultural land.

The fragmentation or severance of properties may cause a disruption in farm operations due to impacts to essential farming infrastructure, services or access routes. In particular, the Project may impede on essential access to water through impacts to drainage lines, diversions, disrupting water input to and from dams. This potential fragmentation and alienation of properties may impact the economic viability of farming operations associated with agricultural land directly impacted by the permanent operational disturbance footprint.

Alterations to stock route reserves

As the permanent operational disturbance footprint is likely to be fenced or constructed in a way that prevents stock moving onto the rail line, the Project has the potential to alienate and isolate parcels used for travelling stock.

While the land use study area does not traverse any known or mapped traveling stock routes, there may be informal stock routes throughout the land use study area used to transfer stock to various grazing paddocks and holding yards. Consultation is ongoing with landowners to identify impacts, if any, to informal stock routes.

Other indirect impacts on agricultural land

The Project may also indirectly impact productive agricultural land within the wider land use study area through:

- Land contamination
- Biosecurity risks
- Changes in surface water and groundwater
- Erosion and sedimentation.

Project activities, particularly during construction, have the potential to disturb existing contaminated soil or groundwater, or to cause further land contamination via leaks or spills or by the transport and movement of existing contaminated soil or groundwater. Project activities, including the transport and movement of people, vehicles and machinery during construction, or the transport and movement of goods during operation, also have the potential to increase biosecurity risks (spread of weeds and/or fire ants, for examples).

The Project may also result in changes to water surface hydrology, including potential increases in water levels and associated areas of inundation, concentration of flows, redirection of flows and/or changes to flood flow patterns, increased velocities leading to localised scour and erosion, and changes to duration of inundation.

Land contamination, biosecurity risks, changes to water surface hydrology, erosion and sedimentation all have the potential to impact agricultural land, with potential effects including reduced soil quality, reduced productivity, and increase in costs to agricultural operations. These impacts are further discussed in their respective chapters:

- Chapter 9: Land resources
- Chapter 11: Flora and fauna
- Chapter 12: Air quality
- Chapter 13: Surface water and hydrology
- Chapter 20: Hazard and risk.

Opportunities to support the agricultural industry

While it is acknowledged that the Project may impact current agricultural land and land that has the potential for agriculture, it is also noted that the audit identified a number of opportunities for the SEQ region, including:

- Limiting traffic congestion and preserving road infrastructure can reduce delays when accessing markets and processors
- Due to the proximity to agricultural production to areas of urban growth, there is an opportunity to expand manufacturing, processing, transport, logistics and knowledge industries (including biotech industries). ICC, for example, promotes Ipswich as a base for major food processing facilities. With close agricultural economies in Lockyer, Somerset and Scenic Rim LGAs, this will greatly enhance regional agricultural profitability.

The audit identified the transportation of goods and services as being vital to the region's economic development and growth. The freight task in Queensland has accelerated with expected demand driven by strong population growth and economic activity, placing increasing pressure on key road and rail corridors. Specific to the land use study area, the audit identified the Warrego Highway as being over-capacity. Inland Rail will increase the capacity for freight services by reducing congestion on existing road and rail passages, including the Warrego Highway.

Therefore, in addition to the potential adverse impacts on agricultural land, the Project has the potential to create beneficial impacts to the agriculture sector within the area, better connecting the region to domestic and international markets and supporting associated future industries. Further, the CSIRO Parkes to Narromine Inland Rail Supply Chain Mapping Pilot Project, undertaken in March 2019, applied the capability of CSIRO's Transport Network Strategic Investment Tool to the underlying data to identify and assess any competitiveness improvements in certain supply chains due to Inland Rail. The pilot study found a potential average transport cost saving of $76 per tonne could be achieved for horticulture and post-processed food supply chains by shifting from road to Inland Rail.

Further discussion on the beneficial impacts of the Project is provided in Chapter 6: Project description, Chapter 16: Social and Chapter 17: Economics.

8.7.2.2 Notable land uses

Potential direct impacts to notable land uses

Potential direct land use impacts to notable land uses within the land use study area, including protected and sensitive land uses, are discussed Table 8.28.

TABLE 8.28: POTENTIAL IMPACTS TO NOTABLE LAND USE WITHIN THE LAND USE STUDY AREA

Notable existing land uses	Potential impacts
Helidon Magazine Explosives Reserve	It is unlikely that the Project will impact land use of the Helidon Magazine Reserve as the permanent operational disturbance footprint uses the existing West Moreton System rail corridor at this location and does not traverse facilities within the Reserve. Due to potential road diversions and the implementation of grade separations or level crossings on local roads surrounding the reserve, such as Airforce Road, the Project may potentially impact the Reserve's accessibility. Potential permanent and temporary impacts to Airforce Road have been considered for the Project as the road is used by haulage vehicles in transporting explosive goods. Grade separation is proposed at this road–rail interface point to alleviate: - Security risks associated with queued explosives vehicles at rail crossings - Public risk of emergency situations involving explosives transport vehicles.

Notable existing land uses	Potential impacts
Sandstone mines	It is unlikely that the Project will impact land use of the sandstone mines at Helidon as the permanent operational disturbance footprint does not traverse the mining leases. The Project may potentially impact the accessibility to the mines due to potential road diversions and the implementation of grade separations or level crossings on local roads surrounding the mining leases. The permanent operational disturbance footprint traverses the following access roads to the sandstone mines: ▸ Warrigal Road ▸ Andersons Road ▸ Seventeen Mile Road ▸ Connors Road. Where grade separation is proposed at the Seventeen Mile Road road–rail interface point, impacts on the surrounding road network are minimised. Where grade separation is not proposed, accessibility impacts such as disruption to local traffic and increased travel time due to road diversions and waiting time at level crossings may occur. Accessibility impacts are further detailed in Section 8.7.3.
Grantham township	The permanent operational disturbance footprint is located adjacent to the Warrego Highway, along the northern boundary of the Grantham Reconstruction Area, and does not traverse residential properties or community facilities located within the Grantham township. The Project will not have a direct impact the land use of properties within the Grantham township. Further details on the Project's compliance with the Grantham Reconstruction Area Development Scheme is provided in Section 8.9.3.
Placid Hills locality	The permanent operational disturbance footprint uses the existing West Moreton System rail corridor when traversing through Placid Hills. The Project will not have a direct impact the land use of properties within the Placid Hills locality.
Gatton township	The Project is located within the existing West Moreton System rail corridor, reducing the number of properties impacted by the permanent operational disturbance footprint. However, laydown areas within the temporary construction disturbance footprint are proposed within the Gatton township to accommodate bridges required for level crossings. Where the Project requires land temporarily for construction, the Project has the potential to disrupt existing operations on and surrounding these properties for the duration of construction and rehabilitation. The impacts from the temporary change in land use are further discussed in Section 8.7.1. The permanent operational disturbance footprint traverses the following roads within the Gatton township: ▸ Burgess Road ▸ Smithfield Road ▸ Old College Road ▸ Gaul Street ▸ Eastern Drive. Where grade separation is proposed at the Smithfield Road and Eastern Drive road–rail interface points, impacts on the surrounding road network are minimised. Road closures/diversions are proposed at the Burgess Road, Old College Road and Gaul Street road–rail interface points. Where road closures, diversions and level crossing are proposed, accessibility impacts such as disruption to local traffic and increased travel time and waiting times may occur. Accessibility impacts are further discussed in Section 8.7.3.
UQ Gatton Campus	It is unlikely that the Project will impact the land use of the UQ Gatton Campus as the permanent operational disturbance footprint is located within the existing West Moreton System rail corridor in vicinity of the University.
Forest Hill township	As the Project is located within the existing West Moreton System rail corridor, the number of properties required for the permanent operational disturbance footprint are minimised. Laydown areas within the temporary construction disturbance footprint are proposed within the Forest Hill township adjacent to residential land uses. Where the Project requires this land temporarily for construction, the Project has the potential to directly impact the land uses due to the disruption of existing operations on and surrounding these properties for the duration of construction and rehabilitation. The impacts from the temporary change in land use are further discussed in Section 8.7.1. The permanent operational disturbance footprint traverses Dodt Road and Hunt street when within the Forest Hill township. Level crossings are proposed at both of these road–rail interface points. Accessibility impacts to local traffic and increased travel time due to waiting time may occur. Accessibility impacts are further discussed in Section 8.7.3.

Notable existing land uses	Potential impacts
Valley Vista Estate	The permanent operational disturbance footprint is predominantly within the Gowrie to Grandchester future State transport corridor when traversing the Valley Vista Estate. As the permanent operational disturbance footprint extends wider than the Gowrie to Grandchester future State transport corridor in this location, residential land within Valley Vista Estate will be traversed by the permanent operational and temporary construction disturbance footprints. Where additional properties outside the Gowrie to Grandchester future State transport corridor are required for the Project, potential impacts as a result of land acquisitions include the loss of property, relocation of residents, severance of land parcels, and potential fragmentation of infrastructure and services and disruption to access and use of property where temporarily acquired. These impacts are outlined in Section 8.7.1.
Poultry farming (Darwalla Milling Company)	It is unlikely the Project will directly impact land use of the Darwalla Milling Company Poultry farm as the permanent operational disturbance footprint will not traverse this land use. As access to Darwalla Milling Company is located on Laidley Plainland Road where grade separation is proposed, no impacts to access or operations of the poultry farm will occur.
Laidley township	It is unlikely that the Project will directly impact land uses within the Laidley township as the permanent operational disturbance footprint traverses to the north of Laidley, avoiding land uses located in the town centre. The permanent operational disturbance footprint traverses Laidley Plainland Road. As grade separation is proposed at this road–rail interface point, no impacts to accessibility into the Laidley township are anticipated.
Little Liverpool Range	The Project will traverse through a tunnel when passing through the Little Liverpool Range. As a tunnel avoids disrupting land uses located on the Little Liverpool Range, no land use impacts will occur other than the change in land use where the tunnel portals are proposed. Volumetric acquisitions of properties within the Liverpool Range will be required. The impact of property acquisition is detailed within Section 8.7.1.
Grandchester township	The permanent operational and temporary construction disturbance footprints traverse land located to the south of the Grandchester township and West Moreton System rail corridor. The Project has been deliberately designed to traverse to the south of the township to reduce the severance of high-value grazing and cropping land, improve water flow to mitigate and manage flooding impacts and removing the need for a high embarkment through the township. With the permanent operational disturbance footprint located to the south of Grandchester, potential noise, vibration, visual and air quality amenity impacts are reduced. As the permanent operational disturbance footprint is not located within the existing rail corridor, it is likely the entire land parcels to the south of Grandchester will be required for the Project and that the current land uses will be unable to continue. The permanent operational disturbance footprint also traverses Mount Mort Road south of the Grandchester township. A level crossing is proposed at the Mount Mort Road road–rail interface point, as such accessibility impacts to local traffic and increased travel time due to waiting time at the level crossing may occur. Accessibility impacts are further discussed in Section 8.7.3.
Bowman Park Koala Nature Refuge	The Project will not impact the land use of the Bowman Park Koala Refuge as the permanent operational disturbance footprint uses the existing West Moreton System rail corridor at this location. The Refuge is located approximately 20 m north of the land use study area and is not traversed by the permanent operational disturbance footprint.
Calvert township	The permanent operational disturbance footprint is located within the existing West Moreton System rail corridor as it traverses land to the north of Calvert township. As the Project uses the existing rail corridor, direct impacts to land use is minimised. The permanent operational disturbance footprint traverses Gipps Street when traversing within the Calvert township. Accessibility impacts to local traffic and increased travel time due to waiting time at the proposed level crossing at this road–rail interface point may occur. Accessibility impacts are further discussed in Section 8.7.3

Potential indirect impacts to land uses

As stated in Section 8.7.2.1, the Project may directly or indirectly impact existing land uses through:

- Land contamination
- Biosecurity risks
- Changes in water surface hydrology
- Erosion and sedimentation.

Indirect impacts on surrounding land uses have not been considered in this assessment.

The Project may also have the potential to indirectly impact the notable land uses due to the loss of amenity and potential intrusiveness. Such indirect impacts and appropriate mitigation measures associated with amenity on land uses, including from noise, vibration, dust, light and scenic amenity are further discussed in their respective chapters:

- Chapter 10: Landscape and visual amenity
- Chapter 12: Air quality
- Chapter 15: Noise and vibration
- Chapter 16: Social.

8.7.2.3 Sterilisation of mineral and petroleum resources

The permanent operational disturbance footprint is located at least 450 m from the mining leases located at Helidon. Due to the distance between the permanent operational disturbance footprint and the mining leases, the existing mining leases are not anticipated to influence the design, stability or constructability of the Project. It is also considered that no resources identified, inferred or implied, related to the activities currently carried out within the existing mining leases are expected to be affected by the Project.

8.7.2.4 Impacts on current environmental authorities for prescribed environmentally relevant activities

Potential impacts to land with EAs for prescribed ERAs located within the land use study area as identified in Section 8.6.2.4, are outlined in Table 8.29.

TABLE 8.29: IMPACT OF PROJECT ON EXISTING ENVIRONMENTAL AUTHORITIES FOR PRESCRIBED ENVIRONMENTALLY RELEVANT ACTIVITIES

Permit number and primary holder	Relationship to project	Impact to project
Prescribed ERA (Permit number: EPPR00412413)—primary holder is Department of Resources (former DNRME)	The land use study area is located along the southern boundary of land subject to this ERA	The permanent operational and temporary construction disturbance footprints do not impact land subject to this ERA. It is unlikely the Project will adversely impact the development.
Prescribed ERA (Permit numbers: EPPR02546814)—primary holder is Brooks Earthmoving & Quarries Pty Ltd	The land use study area traverses the southern portion of land subject to this ERA	The permanent operational disturbance footprint traverses land subject to this ERA. It is likely partial or full acquisition of the land parcel will be required for the Project. Impacts from this loss in property will likely subsequent economic loss.
Prescribed ERA (Permit Number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Located adjacent to the land use study area at East Street, Gatton	The permanent operational disturbance footprint is located adjacent to the north-eastern boundary of land subject to this ERA. Although the permanent operational disturbance footprint traverses the land parcel identified with the ERA, the rail corridor does not appear to traverse the main operations associated with the sewage treatment plant.
Prescribed ERA (Permit Number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	Located adjacent to the land use study area at East Street, Gatton	As the permanent operational and temporary construction disturbance footprints are located within the existing West Moreton System rail corridor when traversing land subject to this ERA, the Project does not appear to traverse facilities associated with the operations of the sewage treatment plant.

Permit number and primary holder	Relationship to project	Impact to project
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The land use study area traverses this ERA while within the existing West Moreton System rail corridor at Gatton	The permanent operational and temporary construction disturbance footprints do not traverse land subject to this ERA. It is unlikely the Project will adversely impact the development.
Prescribed ERA (Permit number: EPPR00547913)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The land use study area is located adjacent to the south western boundary of land subject to this ERA at Forest Hill	The permanent operational and temporary construction disturbance footprints do not traverse land subject to this ERA. It is unlikely the Project will adversely impact the development.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The land use study area is located adjacent to the north eastern boundary of land subject to this ERA at Forest Hill	The permanent operational and temporary construction disturbance footprints do not traverse land subject to this ERA. It is unlikely the Project will adversely impact the development.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The land use study area traverses the north-eastern corner of land subject to this ERA	The land parcel associated with this ERA is traversed by the permanent operational disturbance footprint in the north-eastern corner. It is likely partial or full acquisition of the land parcel will be required for the Project. Impacts of loss in property may affect the operations of the sewage treatment plant.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The land use study area traverses land subject to this ERA at Laidley North	The permanent operational disturbance footprint is located within the western boundary of land subject to this ERA. It is likely partial or full acquisition of the land parcel will be required for the Project. Impacts of loss in property may affect the operations of the sewage treatment plant.

8.7.2.5 Development activity

Potential impacts to development activity located within the land use study area, as identified in Section 8.6.2.4, are outlined in Table 8.30.

TABLE 8.30: IMPACT OF PROJECT ON DEVELOPMENT ACTIVITY WITHIN LAND USE STUDY AREA

Project name and Proponent	Relationship to Project	Impact to Project
LVRC Planning and Development Online		
Gatton West Industrial Zone—LVRC	The Project is located to the south of the GWIZ	The Project uses the existing West Moreton System rail corridor when traversing along the southern boundary of the GWIZ. The permanent operational disturbance footprint was deliberately located to the south of the GWIZ to allow for the potential development of the area. The construction of the Project will likely have a positive impact on increased development in the area and will likely be a catalyst for the construction and industrial uses and development in the GWIZ.
Gatton Bowls Club	The property is located within both the permanent operational and temporary construction disturbance footprints	Approval has been obtained to reconfigure this lot and develop the western portion into nine accommodation units. As both the permanent operational and temporary construction disturbance footprints traverse the western portion of this property, the Project will impact the ability to develop this area for nine accommodation units. Further, the Project will impact existing facilities of the Gatton Bowls Club.

Project name and Proponent	Relationship to Project	Impact to Project
Gatton Caravan Park—ML Gatton Operations Pty Ltd	The Project traverses the property along the northern, western and southern boundaries	Both the permanent operational and temporary construction disturbance footprints traverse the property and may impact on existing and future planned infrastructure and caravan sites, as well as the proposed Phase 2 water park and Phase 3 additional caravan sites.
Gatton Bunnings—Bunnings Group Limited	The Project traverses through the southern portion of the property. There is a temporary laydown area proposed within the property	The Project will traverse through the southern portion of this property, impacting on the ability to develop this area for the approved Bunnings warehouse.
Valley Vista Estate—Nichols Construction Pty Ltd	The land use study area traverses through the Valley Vista Estate	Impacts on the Valley Vista Estate are described in Table 8.28.
ICC Planning and Development Online		
National Broadband Network— NBN Co.	The telecommunications facility is located within the southwest corner of the property, outside the land use study area	The telecommunications facility is located to the south of the permanent operational and temporary construction disturbance footprints. It is unlikely the Project will adversely impact the facility.
DSDILGP (former DSDMIP)—Coordinated Projects		
Gowrie to Helidon—Inland Rail (ARTC)	The Gowrie to Helidon Inland Rail Project connects to the Calvert to Helidon to Calvert Project	The Project will connect with the Gowrie to Helidon Inland Rail Project to the West Moreton System rail corridor at Helidon.
Calvert to Kagaru—Inland Rail (ARTC)	The Helidon to Calvert Inland Rail Project connects to the Calvert to Calvert to Kagaru Project	The Project will connect with the Calvert to Kagaru Inland Rail Project at Calvert.
DTMR featured projects		
Warrego Highway Upgrade Program supported by Warrego Highway Upgrade Strategy—DTMR	Within the land use study area, the strategy identifies the Blacksoil to Helidon Spa highway upgrade as a long-term proposal that is planned over an 11 to 20-year timeframe The Warrego Highway is located within the land use study area at Grantham	The permanent operational disturbance footprint will traverse the Warrego Highway at Grantham. As grade separation is proposed at this road–rail interface point, no adverse impacts to the proposed upgrades are anticipated.
Queensland State Infrastructure Plan		
Train control system implementation on ARTC network	Train control system signalling will be implemented as part of the construction of the Project	The construction and operation of the Project will support this initiative as the Train control system will be implemented as part of the Project.

8.7.3 Accessibility

8.7.3.1 Impacts on road network

The permanent operational disturbance footprint impacts on 36 public roads, 31 of which are local roads managed by local governments (28 in LVRC and three in ICC), and five of which are State-controlled roads managed by DTMR. Where the Project traverses these roads, potential impacts include a disruption to traffic, an increase in travel time, and a decrease in accessibility to community services, facilities and key destinations within the land use study area through changes to access road arrangements.

Careful consideration to the type of crossing at each of the road–rail interfaces has been given to avoid where possible, or minimise, impacts to the surrounding road network. The type of crossing proposed at each of these interfaces has been determined based on several factors, including existing road–rail interface points, access to properties, potential traffic levels, land use, nearby crossings, adjoining properties, the vertical geometry of the rail alignment, and safety.

Where the Project crosses main roads and highways, grade separations (overpass or underpass) have been proposed to ensure the Project will not result in a permanent disruption to traffic on these roads. Grade separations at road–rail interface points are based on ARTC's Grade Separation policy, which includes implementing grade separations due to the topography and other engineering requirements and where the rail traverses freeways and highways of four or more lanes or limited access roads. In total, the Project will adopt 14 grade-separated intersections.

Where the Project crosses lower order roads, some level crossings have been proposed. In total, the Project proposes seven active level crossings and one passive level crossing along the permanent operational disturbance footprint. Several factors were considered in determining the establishment of either an active or passive level crossing, including the volume of traffic, sighting distances and safety.

Where level crossings are proposed, disruption to traffic can be expected with each passing train movement. The Project estimates up to 47 train movements per day in total (both directions, northbound and southbound) in the year 2040. Surrounding land uses, including farming operations, will likely be impacted from the associated vehicle delay times at level crossings. This will potentially disrupt the commercial operations of agricultural activities due to the potential regular delay in the transportation of water, feed and stock to and from these land uses.

Further to the above, disruption to traffic can be expected during construction as equipment, materials and people are transported to and along the permanent operational disturbance footprint.

In addition to level crossings, alternative road diversions have also been provided where appropriate.

Further details are provided in Chapter 19: Traffic, transport and access.

8.7.3.2 Impacts to property access

The Project will result in the temporary or permanent severance of driveways and informal private access roads to individual properties. Private access arrangements to properties have been considered when determining the location and type of road–rail interface. Consideration included ensuring that legal access to properties is retained through the provision of alternative access roads, grade separation or a level crossing where appropriate. Consultation with affected landowners is ongoing to identify where impacts to private property access occurs and to determine appropriate agreements and measures to mitigate potential impacts.

During construction, private access to individual properties may be temporarily disrupted and restricted where land is required temporarily for the construction footprint along the permanent operational disturbance footprint.

Further details are provided in Chapter 19: Traffic, transport and access.

8.7.4 Impacts on services and utilities

The Project impacts a total of 662 known utilities located within the permanent operational disturbance footprint. Consultation with the various utility providers has commenced and will continue throughout detailed design to determine requirements for relocation or protection of the services impacted by the Project.

Clashes with utilities were identified and then risk assessed to identify potential high-risk utilities. A conflict resolution strategy, based on the reference design, was then assigned to each clash and reviewed by the relevant utility owner. This allowed delivery requirements to be planned by the utility owner for all non-contestable utility authorities.

Consultation undertaken for the Project is detailed within Chapter 5: Stakeholder engagement and Appendix C: Consultation Report.

Consultation with APA and Santos has been undertaken and will continue throughout detailed design.

Santos has provided an 'Agreement in principle' letter for clashes and associated concept resolutions. APA has provided 'Interaction Reports' containing details for risk management in designs and construction working around the identified clashes between their transmission gas mains and reference design.

Investigations will be undertaken during detailed design of the Project to further define risks to the Santos Moonie to Brisbane underground oil pipeline and APA Roma to Brisbane underground gas pipeline. Construction planning will include design for robust protection.

During construction, surrounding residences and businesses may experience temporary disruption to services from time-to-time as these services are relocated or upgraded. Relocation and upgrades of utilities and services will be undertaken in accordance with the relevant regulatory provisions.

Once operational, the Project will not impact services and utilities within the area.

8.7.5 Opportunities to support future industry development

In addition to the potential adverse impacts identified above, the Project has the potential to create several beneficial impacts. Inland Rail is a nationally significant transport initiative and will provide a high-capacity freight link between Melbourne and Brisbane through regional Australia to better connect cities, farms and mines via ports to domestic and international markets. It is anticipated that the Project will act as an enabler for regional economic development along the Inland Rail corridor.

Of relevance to this assessment, the Project may support future industries, such as the GWIZ Project at Gatton. Construction of the Project will likely be a catalyst for the construction of industrial uses and development in the GWIZ (among other areas).

The Project will also improve access to and from regional markets and may act as a significant catalyst for development within the area, particularly in relation to rail dependent industries and support industries associated with transport, freight handling, warehousing and logistics.

Further discussion on the beneficial impacts of the Project on the facilitation of industrial development and resulting social and economic impacts associated with this is provided in Chapter 2: Project rationale and Chapter 16: Social.

8.8 Potential mitigation measures

This section outlines both the land use and tenure mitigation measures included as part of the Project design and the mitigation measures that are proposed for the Project to manage potential land use and tenure impacts.

The mitigation measures and controls presented in Table 8.31 have been factored into the design for the Project, to minimise the impacts of the Project on land use and tenure.

TABLE 8.31: INITIAL MITIGATION MEASURES OF RELEVANCE TO LAND USE AND TENURE

Aspect	Initial mitigation measures
Land use and tenure	▸ The Project is generally located within the existing West Moreton System rail corridor, as well as the protected Gowrie to Grandchester future State transport corridor, and has been aligned to be co-located with existing road infrastructure where possible, minimising the need to develop land that has not previously been subject to disturbance for transport infrastructure purposes ▸ Refinement of the horizontal alignment considered placement of the rail corridor so that it traverses around or is as close as possible to property boundaries to reduce potential fragmentation and sterilisation of Class A land, Class B land and land within an IAA ▸ The overall disturbance of construction areas has been limited where possible ▸ Intensive livestock operations, including feedlots and poultry farms, have been avoided where possible ▸ The planning of crossing loops at Helidon, Gatton, Laidley and Calvert took into consideration proximity to sensitive receptors ▸ Consideration was given to the movement of stock across the rail line ▸ Where the Project traverses high-order roads such as highway and main roads, grade separation is proposed. This will ensure the Project will not result in any impacts to traffic along these high-volume routes.

The alignment has been designed and refined to minimise impacts to land use and tenure. Where possible, the Project will use existing road and rail corridors, as well as the Gowrie to Grandchester future State transport corridor, a future rail corridor protected under the TPC Act. Where the Project is located within the proposed Little Liverpool Range tunnel, impacts to land uses above-ground are minimised. Where impacts cannot be avoided, the extent of impacts will be managed and mitigated. The following outlines the mitigation measures proposed to be applied to reduce and manage the remaining impacts.

8.8.1 Change in land tenure and loss of property

Where the Project intends to compulsorily acquire land, this will be undertaken in accordance with the requirements of the AL Act.

Where land is compulsorily acquired by the AL Act, compensation will be able to be claimed by every person with an estate or interest in the land after the 'Taking of Land Notice' is published in the Queensland Government Gazette. Interest holders will have three years from the Taking of Land Notice in which to claim compensation (this date can be extended by the constructing authority).

Compensation will be assessed as at the date of resumption by having regard to:

- The value of land taken
- Any damage caused by severance or injurious affection to the balance of land
- Disturbance costs (disturbance costs may include legal costs and valuation, or other professional fees reasonably incurred and costs relating to the purchase of a replacement property).

During construction, land will be required temporarily. Purchasing or leasing arrangements for these properties will be investigated in consultation with landowners. These mitigation measures will be employed during the pre-construction phase of the Project to ensure impacts can be minimised before construction starts.

8.8.1.1 State land

Where the Project requires the acquisition of State land, appropriate tenure or interest will be secured under the Land Act. The constructing authority (and ARTC) will consult with the relevant the Department of Resources (former DNRME) State Land Asset Management Team to discuss options for obtaining tenure or interest for the land required, and to begin proceedings under the Land Act.

Where State land is required for the Project that contains existing infrastructure used for public uses (i.e. the Grandchester Recreational Park (Lot 19 on SP161916)), land use impacts to these properties will be managed in accordance with the measures outlined in Section 8.8.2, with individual management measures to be developed with the trustees of the land.

8.8.1.2 Native title

The Project has been deliberately aligned to use the protected Gowrie to Grandchester future State transport corridor and the West Moreton System rail corridor where possible and is located on predominantly freehold land where native title has been extinguished, except in the instance where freehold tenure was invalidly granted.

Where it is determined native title has not been extinguished within the permanent operational disturbance footprint, ARTC will seek the extinguishment of the native title rights and interests in question prior to construction of the Project by the compulsory acquisition process, to enable the grant of the necessary interests in Crown lands required to construct the Project.

8.8.2 Change in land use

Land use impacts to individual properties, including properties requiring partial acquisition, properties adjacent to the permanent operational disturbance footprint or properties proposed to be temporarily used for construction, may be identified through consultation with landowners during detailed design and property acquisition process. If land use impacts are identified, property management agreements will be developed in consultation with the landowner to reduce impacts to an acceptable and agreeable level. Management measures will include:

- Individual property mitigation will be developed in consultation with landowners/occupants with respect to the management of construction on or immediately adjacent to private properties. The mitigation will detail any required adjustments to fencing, access, farm infrastructure, and relocation of any impacted structures.
- Consultation with property owners and occupants will be undertaken in accordance with the communication plan for the Project, to ensure that owners and occupiers 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. This consultation will be ongoing throughout detailed design and construction.
- Results of consultation will be incorporated in the individual mitigation as appropriate.

Where land is temporarily required outside the permanent operational disturbance footprint for access tracks and laydown areas, the land will be rehabilitated in accordance with a rehabilitation strategy following construction, by implementing a Reinstatement and Rehabilitation Plan. The Reinstatement and Rehabilitation Plan will include measures to reinstate and restore disturbed sites.

A community and stakeholder engagement action plan will also be developed to provide project updates and upcoming work activities to the identified property owners, occupants and operators for the duration of the Project.

The Project has the potential to impact the rural amenity of the area both during construction and operation. This impact will result from a loss of rural character by the introduction of a heavy freight rail corridor with potential impacts relating to scenic amenity, air quality, noise and vibration. These impacts are further discussed in their respective chapters; Chapter 10: Landscape and visual; Chapter 12: Air quality; and Chapter 15: Noise and vibration.

8.8.2.1 Impacts on agricultural land uses and activities

Loss of agricultural land

Where loss of agricultural land was unable to be avoided, the horizontal alignment considered placement of the rail corridor so that it traverses around or as close as possible to property boundaries to reduce potential fragmentation and sterilisation to Class A land, Class B land and land within an IAA. Intensive livestock operations, including feedlots and poultry farms, have also been avoided where possible.

Where the permanent operational disturbance footprint is unable to avoid the severance of agricultural land and enterprises due to the partial acquisition of a property, acquisition will be investigated in consultation with landowners. The consideration of partial or full acquisition of these properties will be determined on a case-by-case basis, and consultation with individual landowners will determine if the agricultural enterprise can remain viable.

As detailed within Section 8.8.1, compensation for the acquisition of land will be assessed by having regard to the value of the land taken, any damage caused by severance or injurious affection to the balance of land, and disturbance costs.

ARTC will continue to work with directly affected landholders to develop and implement property-specific measures to mitigate impacts on properties that could affect agricultural enterprises, including identifying:

- Landholders' need for access to the properties and the closure of private roads
- Property infrastructure such as fences and dams that would be affected and need to be addressed as part of compensation arrangements with the Acquiring Authority
- The potential for changes to groundwater access.

These considerations will inform development of the detailed design and Construction Environmental Management Plan.

Land fragmentation and disruption to access and infrastructure

Where land is fragmented or isolated, any impacts on operational farm requirements such as access, infrastructure and services will be managed and reinstated as soon as practicable. ARTC will work with individual landowners to develop suitable solutions based on individual farm management practices through the development of individual property management agreements. Solutions may include the provision of crossing points or underpasses for access to fragmented or isolated properties.

Where disruption to water supply occurs, crossing points will be provided or water supply or irrigation systems will be relocated in consultation with landowners.

The overall disturbance of construction areas will be limited, where possible. Where agricultural land is required to be used temporarily during construction, disturbed areas will be rehabilitated in accordance with the Reinstatement and Rehabilitation Plan. It is also noted that construction will occur progressively along the permanent operational disturbance footprint and the need (duration) for temporary laydown areas will be minimised at each location.

Further details on construction mitigation measures relating to land fragmentation and disruption to access and infrastructure is in Chapter 9: Land resources.

Alterations to stock routes

The land use study area does not traverse any known stock routes. Stock movements will be considered during detailed design in consultation with landowners and local government agencies to identify stock routes across grazing properties that may be affected during construction or operation of the Project. In the event that private stock routes are identified through consultation with landowners, appropriate mitigation measures will be developed in consultation with affected landowners. Mitigation measures may include the provision of alternative access arrangements developed in consultation with affected property owners/occupants.

Where stock fencing is required, fencing will be constructed in accordance with the *Inland Rail Fencing Standards Project Fencing Strategy*. This will occur before the removal of existing fencing and before any works being carried out on the subject land, unless otherwise agreed with the landowner.

Other indirect impacts on agricultural land

Further details and mitigation measures on other indirect impacts on agricultural land are within the following chapters:

- Land contamination risks provided in Chapter 9: Land resources
- Increased biodiversity risks are provided in Chapter 11: Flora and fauna
- Details on impacts to surface water drainage pathways are provided in Chapter 13: Surface water and hydrology
- Erosion and sedimentation will be appropriately managed through measures detailed in the Land Resources Sub-plan of the draft Outline Environmental Management Plan (draft Outline EMP) as discussed in Chapter 23: Draft Outline Environmental Management Plan.

8.8.2.2 Current environmental authorities for prescribed environmentally relevant activities

Mitigation measures for EAs for ERAs the Project may impact are provided in Table 8.32.

TABLE 8.32: MITIGATION MEASURES FOR IMPACTS ON CURRENT ENVIRONMENTAL AUTHORITIES FOR ENVIRONMENTALLY RELEVANT ACTIVITIES

Project name and Proponent	Impact to Project	Mitigation measures
Prescribed ERA (Permit numbers: EPPR02546814)—primary holder is Brooks Earthmoving & Quarries Pty Ltd	The permanent operational disturbance footprint traverses land subject to this ERA. It is likely partial or full acquisition of the land parcel will be required for the Project. Impacts from this loss in property will likely subsequent economic loss.	Consultation with the landowner and holder of the ERA (Brooks Earthmoving & Quarries Pty Ltd) will be undertaken. If full or partial land acquisition is required, acquisition will be undertaken in accordance with Section 8.7.1.
Prescribed ERA (Permit Number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The permanent operational disturbance footprint is located adjacent to the north-eastern boundary of land subject to this ERA. Although the permanent operational disturbance footprint traverses the land parcel identified with the ERA, the rail corridor does not appear to traverse the main operations associated with the sewage treatment plant.	Consultation with Queensland Urban Utilities will be undertaken to determine potential impacts of the Project to this ERA (if any). Where the Project may result in an impact to existing or future operations of the ERA, individual property management agreements will be developed and appropriate mitigation measures will be agreed with Queensland Urban Utilities.
Prescribed ERA (Permit Number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	As the permanent operational and temporary construction disturbance footprints are located within the existing West Moreton System rail corridor when traversing land subject to this ERA, the Project does not appear to traverse facilities associated with the operations of the sewage treatment plant.	Consultation with Queensland Urban Utilities will be undertaken will be undertaken to determine potential impacts of the Project to this ERA (if any). Where the Project may result in an impact to existing or future operations of the ERA, individual property management agreements will be developed, and appropriate mitigation measures will be agreed with Queensland Urban Utilities.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The land parcel associated with this ERA is traversed by the permanent operational disturbance footprint in the north-eastern corner. It is likely partial or full acquisition of the land parcel will be required for the Project. Impacts of loss in property may affect the operations of the sewage treatment plant.	Consultation with the landowner and holder of the ERA (Queensland Urban Utilities) will be undertaken. If full or partial land acquisition is required, acquisition will be undertaken in accordance with Section 8.7.1.
Prescribed ERA (Permit number: EPVX02148714)—primary holder is Central SEQ Distributor–Retailer Authority (Queensland Urban Utilities)	The permanent operational disturbance footprint is located within the western boundary of land subject to this ERA. It is likely partial or full acquisition of the land parcel will be required for the Project. Impacts of loss in property may affect the operations of the sewage treatment plant.	Consultation with the landowner and holder of the ERA (Queensland Urban Utilities) will be undertaken. If full or partial land acquisition is required, acquisition will be undertaken in accordance with Section 8.7.1.

8.8.2.3 Development activity

Mitigation measures for development on which the Project may impact is provided in Table 8.33.

TABLE 8.33: MITIGATION MEASURES FOR IMPACTS ON DEVELOPMENT ACTIVITY

Project name and Proponent	Impact to Project	Mitigation measures
LVRC		
Gatton Bowls Club	Approval has been obtained to reconfigure this lot and develop the western portion into nine accommodation units. As both the permanent operational and temporary construction disturbance footprints traverse the western portion of this property, the Project will impact the ability to develop this area for nine accommodation units. Further, the Project will impact existing facilities of the Gatton Bowls Club.	Consultation with the landowner will be undertaken. Appropriate acquisition and compensation measures will be undertaken in accordance with Section 8.7.1.
Gatton Caravan Park—ML Gatton Operations Pty Ltd	Both the permanent operational and temporary construction disturbance footprints traverse through the property and will impact on existing infrastructure and caravan sites, as well as Phases 1 and 3 of the approved redevelopment: ▸ Phase 1—Non-resident worker' accommodation for 120 persons (6 backpackers' dorms which sleep 20 persons each) ▸ Phase 3—Extension to Caravan Park (33 additional caravan sites).	Consultation with the landowner will be undertaken. Appropriate measures will be implemented in accordance with Section 8.7.1. If the need is identified, a Caravan Park Social Impact Assessment will be undertaken to identify reasonable and feasible options for mitigating the loss of accommodation. Further detail is provided in Chapter 16: Social and Appendix Q: Social Impact Assessment Technical Report.
Valley Vista Estate—Nichols Construction Pty Ltd	Impacts on the Valley Vista Estate are described in Table 8.28.	Where full or partial land acquisition is required, appropriate acquisition and compensation measures will be undertaken in accordance with Section 8.7.1. The Project may also have the potential to indirectly impact these residential properties due to the loss of amenity. Such indirect impacts and appropriate mitigation measures associated with amenity on land uses, including from noise, vibration, dust, light and visual intrusion are further discussed in their respective chapters.

8.8.3 Accessibility

8.8.3.1 Impacts on road network

Where the Project traverses high-order roads such as highways and main roads, grade separation is proposed. This will ensure the Project will not result in any impacts to traffic along these high-volume routes. Grade separation is also proposed at the Airforce Road road–rail interface point to reduce security and public risks associated with queued explosive vehicles at level crossings. ARTC will continue to consult with relevant agencies regarding this interface point (including the Department of Resources (former DNRME)).

Where level crossings and road diversions are proposed, these were determined based on a number of factors, including the nature of existing access to properties, potential traffic levels, existing land use, location of nearby interfaces, adjoining properties and the vertical geometry of the rail alignment. Vehicle wait time at level crossings, as well as the anticipated change travel time and distance from road diversions, have also been considered when determining appropriate crossings at road–rail interfaces. Further details on the mitigation measures for level crossings is provided in Chapter 19: Traffic, transport and access.

The Traffic Transport and Access Sub-plan of the draft Outline EMP (refer Chapter 23: Draft Outline Environmental Management Plan) identifies measures to address key safety and logistical issues that may arise during construction. Appropriate management measures will be implemented for each of the identified issues. Site-specific traffic management plans with key land uses and businesses adjoining or within proximity to the Project will be developed to minimise business operations disruptions. Furthermore, communication will be undertaken with surrounding affected landowners and businesses to notify of any changes to traffic and access prior to, and during, construction.

Further details are provided in Chapter 19: Traffic, transport and access and Chapter 23: Draft Outline Environmental Management Plan.

8.8.3.2 Impacts to existing property access

Legal access to properties has been retained, where possible, when determining appropriate solutions for the road rail interface point. ARTC will continue to work with landowners to find solutions that provide optimal access on a case-by-case basis. Consultation undertaken to date and plans for ongoing discussions to identify potential occupational crossing solutions is described in Appendix C: Consultation Report.

Further details on mitigation measures for impacts to property access are provided in Chapter 19: Traffic, transport and access.

8.8.4 Impacts on current services and utilities

Consultation has commenced with the various utility providers regarding their requirements for relocation or protection of the services impacted by the Project (refer Chapter 5: Stakeholder engagement and Appendix C: Consultation Report). This includes consultation undertaken with APT Petroleum Pipelines Pty Ltd regarding impacts to the Roma to Brisbane gas pipeline (PPL 2) and Santos Limited regarding impacts to their high-pressure oil pipeline licence (PPL 1). Consultation with the various utility owners will continue through to detailed design to confirm the impacted utilities with the highest degree of accuracy.

With respect to service disruptions during construction, procedures will be developed and implemented to minimise the potential for service interruptions. Affected businesses and residences will be notified in advance of any planned interruptions.

Permits, approvals and agreements, including access arrangements within utility easements for the purposes of construction, regarding utility interactions will be determined during detailed design of the Project.

8.8.5 Draft Outline Environmental Management Plan

To manage and mitigate Project risks, a number of mitigation measures have been proposed. These proposed mitigation measures incorporate ARTC's standard practices, as well as industry practice and legislative requirements.

Mitigation measures outlined for the detailed design, pre-construction and construction and commissioning phases of the Project are included in Table 8.34. These measures have been incorporated into the draft Outline EMP (refer Chapter 23: Draft Outline Environmental Management Plan).

TABLE 8.34: LAND USE AND TENURE PROPOSED MITIGATION MEASURES

Delivery phase	Aspect	Proposed mitigation measures
Detailed design	Property	▸ Detailed design to further refine the project disturbance footprint identified and assessed in the EIS, to that which is required to safely construct, operate and maintain the Project ▸ Minimise property acquisition requirements, property severance and disruption to land use and transport networks ▸ Project clearing extents are to be surveyed and clearly defined, physically and digitally, prior to Project activities commencing ▸ Property management agreements with directly impacted landowners to be finalised prior to Project construction activities commencing on the specific property ▸ Interface arrangements with petroleum resource interest holders and public utility providers to be finalised prior to construction activities commencing. This includes further discussion with APT Petroleum Pipelines Pty Ltd regarding impacts to the Roma to Brisbane gas pipeline.

Delivery phase	Aspect	Proposed mitigation measures
Detailed design (continued)	Access	▸ Detailed design and construction planning to minimise alteration of the surrounding road and transport network and maintain legal property accesses—where this is not feasible or practical, alternative solutions will be developed ▸ Develop site-specific traffic management plans with key land uses and businesses adjoining or within proximity to the Project disturbance footprint to minimise business operations disruptions (e.g. the Department of Resources (former DNRME) Explosive Inspectorate during construction of the proposed grade separation at Airforce Road) ▸ Road–rail interface detailed design to be undertaken in consultation relevant with road–rail authority (QR, DTMR and local government).

	Reinstatement and/or rehabilitation	▸ A Reinstatement and Rehabilitation Plan will be developed for areas within the disturbance footprint that do not form part of the permanent works (e.g. construction compounds, laydown areas, temporary access and some temporary erosion and sediment controls)
		▸ The Plan will include and clearly specify:
		  ▸ Location of areas subject to reinstatement and/or rehabilitation
		  ▸ Rail safety operational requirements and constraints
		  ▸ Details of the actions and responsibilities performance criteria and monitoring framework to progressively rehabilitate, regenerate, and/or revegetate areas no longer active
		▸ A Landscape and Rehabilitation Management Plan must be developed to define progressive and post construction installation of the Project landscape design, its establishment and ongoing maintenance and monitoring requirements in addition to specific construction contract completion criteria for areas defined in the landscape design and/or identified in the Reinstatement and Rehabilitation Plan (refer to the Land Resources Sub-plan and Flora and Fauna Sub-plan detailed in the draft Outline EMP (Chapter 23: Draft Outline Environmental Management Plan).

	Utilities	▸ The location of utilities, services and other infrastructure will be identified and documented during detailed design to confirm requirements for access to, diversion/relocation, protection and/or support ▸ Interface arrangements with impacted public utility providers will be finalised prior to construction activities commencing.
	Stakeholder engagement	▸ A Community and Stakeholder Engagement Action Plan will be developed under the Social Impact Management Plan (SIMP) (refer Chapter 16: Social and Chapter 23: Draft Outline Environmental Management Plan) to provide project updates and upcoming work activities to the identified property owners, occupants and operators for the duration of the Project.
Pre-construction/ construction	Fencing	▸ Where practicable, permanent Project boundaries to be fenced in accordance with Inland Rail fencing standards.
	Reinstatement and/or rehabilitation	▸ Progressively reinstate and rehabilitate disturbed sites that do not form part of the permanent works (e.g. construction compounds) in accordance with the draft Outline EMP.
	Stakeholder engagement	▸ The Community and Stakeholder Engagement Action Plan will be progressively revised to provide project updates and upcoming work activities to the identified property owners, occupants and operators for the duration of the Project.

8.9 Consistency with planning frameworks

The consistency assessment focuses on assessing the extent of consistency with the land use and planning instruments relevant to the land use study area and Project activities, including:

- *State Planning Policy* (DILGP, 2017b)
- *ShapingSEQ* (DILGP, 2017a)
- Grantham Reconstruction Area Development Scheme 2011 (QRA, 2011).

In accordance with Schedule 6 of the Planning Regulation 2017, local government planning schemes cannot categorise development for government-supported transport infrastructure as 'assessable development'. Consequently, the provisions of the local government planning schemes do not apply to the Project and assessment of the Project's consistency with the planning schemes is not required.

8.9.1 State Planning Policy

As part of the impact assessment, Table 8.35 details an assessment of the Project's consistency with each relevant State interest. Where these State interests relate to aspects considered in other sections of this EIS, reference has been made to the relevant chapter for further detail.

TABLE 8.35: PROJECT'S CONSISTENCY WITH THE RELEVANT STATE PLANNING POLICY STATE INTERESTS

State interest	Project compliance	EIS reference
Liveable communities and housing		
Housing supply and diversity	The proposed alignment and locations of ancillary infrastructure have been investigated and are the result of several iterations of option assessment and consultation with the Queensland State Government. The Project has committed to a range of measures to mitigate and manage impacts on the supply and diversity of housing through the implementation of relevant management plans including the SIMP, which includes a house and Accommodation Action Plan.	Chapter 16: Social
Liveable communities	The Project has committed to a range of measures to mitigate and manage impacts on those community and urban infrastructure that make a community 'liveable', through the implementation of relevant management plans including the SIMP, which includes the Health and Community Wellbeing Action Plan.	Chapter 16: Social
Economic growth		
Agriculture	Consistent with the agricultural State interest, the Project has considered and assessed potential impacts and risks to agricultural land and resources. The proposed alignment and locations of ancillary infrastructure have been investigated and are the result of several iterations of option assessment, including consideration of the impact on agricultural land uses, and consultation with the Queensland State Government. The Project will use the West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor where possible to minimise adverse impacts to agricultural land uses including the loss of agricultural land (including land mapped to be within IAA, Class A land and Class B land), land fragmentation and disruption to access and infrastructure. By predominantly using these rail corridors, the Project is consistent with existing and future land use expectations, including agricultural land use planning, for the area. Where agricultural land cannot be avoided for the permanent operational disturbance footprint or temporary construction disturbance footprint, impacts from this change in land use will be carefully managed and mitigated.	Sections 8.6.2.1, 8.7.2.1, and 8.8.2.1 and Chapter 5: Stakeholder engagement
Development and construction	The Project will generate significant employment and economic growth, and support for the construction sector. The Project is part of the larger Inland Rail works. It is anticipated that 16,000 jobs will be required program-wide at the peak of construction, with an average of 800 jobs per annum over the 10-year construction period. A preliminary estimate of workforce required to undertake the Project works is estimated to peak at 410 full-time equivalents. Throughout the course of the construction period, the average number of workers required is approximately 190 full-time equivalents.	Chapter 2: Project rationale and Chapter 17: Economics

State interest	Project compliance	EIS reference
Mining and extractive resources	Consistent with the mining and extractive resources State interest, the Project has considered and assessed potential impacts to extractive resources. As the Project does not traverse or adversely impact activities currently carried out within existing mining leases or any key resource areas identified within the SPP, the intent of the SPP is supported (DILGP, 2016a).	Sections 8.6.1.3, 8.6.1.4 and 8.7.2.3
Tourism	The Project has considered and assessed potential impacts to the region's natural values. These areas would support tourism. The Project's permanent operational disturbance footprint does not traverse areas identified as environmentally sensitive areas (national parks, conservation parks, forest reserve or State forests), which contribute to the State's natural values. In this way, the intent of the SPP is supported.	Section 8.7.2 and Chapter 17: Economics
Environment and heritage		
Biodiversity	Consistent with the provisions of the biodiversity state interest, the Project has considered and assessed potential impacts and risks to biodiversity, including matters of national environmental significance, matters of state environmental significance and matters of local environmental significance.	Chapter 11: Flora and fauna Appendix J: Matters of National Environmental Significance Technical Report
Cultural heritage	Consistent with the requirements of this State interest, the Project has considered and assessed potential impacts to cultural heritage, including international, national, state and local heritage, Aboriginal and Torres Strait Islander cultural heritage.	Chapter 18: Cultural heritage
Water quality	Consistent with the requirements of this State interest, the Project has considered and assessed potential impacts to water quality. The Project will be constructed and operated in accordance with the *Seqwater Development Guidelines—Water Quality Management in Drinking Water Catchments* (2017).	Chapter 13: Surface water and hydrology Chapter 14: Groundwater
Safety and resilience to hazards		
Emissions and hazardous activities	Consistent with the requirements of this State interest, the Project has considered and assessed potential impacts and risks associated with emissions and hazardous activities.	Chapter 12: Air quality Chapter 15: Noise Chapter 20: Hazard and risk
Natural hazards, risk and resilience	Consistent with the requirements of this State interest, the Project has considered and assessed potential impacts and risks associated with natural hazards, risk and resilience.	Chapter 20: Hazard and risk
Infrastructure		
Energy and water supply	The Project will include the provision of its energy and water supply requirements in a safe and reliable manner. With respect to power, opportunities to connect to existing sources will be explored with relevant service providers, and where connections are not available, power will be provided by generators. Water supply and storage will be needed for construction activities, dust suppression, vehicle wash down, and operations and maintenance activities. Sources of construction water will be investigated and may include: creeks and rivers crossing the alignment, ground water bores, local dams or reservoirs, and potential local town supplies.	Chapter 6: Project description
Infrastructure integration	The Project supports the expansion of existing infrastructure associated with the introduction of a heavy freight rail between Melbourne and Brisbane.	Section 8.7.5
Transport infrastructure	The Project supports this State interest by predominantly using the existing West Moreton System rail corridor and the already protected Gowrie to Grandchester future State transport corridor where possible. Furthermore, the Project has considered and assessed potential impacts to surrounding transport networks.	Chapter 19: Traffic, transport and access

8.9.2 *ShapingSEQ* (South East Queensland Regional Plan 2017)

The Project is consistent with the intent of *ShapingSEQ* (the Regional Plan) given the Melbourne to Brisbane Inland Rail is identified within the Regional Plan as key region-shaping infrastructure that supports the vision for SEQ.

The Regional Plan acknowledges the importance of infrastructure investments such Inland Rail to connect ports such as the Port of Brisbane and the Toowoomba Wellcamp Airport to an extensive freight network of major interstate rail and road connections, reinforcing SEQ as the apex of Australia's strategic freight network. These ports are significant economic assets that provide unrivalled access to a growing global market for our goods and services, in traditionally strong areas such as agriculture and tourism, and emerging sectors such as knowledge and service-based activities. This presents significant opportunities for our regional economy.

ShapingSEQ identifies special uses that are to be protected in the long-term from encroachment by sensitive and incompatible land uses. The Helidon Hazardous Industry Precinct is identified as a specialised use that requires significant buffering requirements. The Precinct is integral to supporting the extractive and construction industries. The Project does not propose a sensitive use and will not be adversely impacted by emissions generated from, or operations of, the precinct. The Project would support opportunities for the specialised industry to grow in capacity, providing improvement to major transport infrastructure that provide linkages to local, interstate and international markets.

The Regional Plan identifies Inland Rail as being able to support increased capacity to manage freight through SEQ and provides specific opportunities in major enterprise and industrial areas in the Lockyer Valley, Ipswich, and Toowoomba LGAs, such as the Toowoomba Enterprise Hub (Charlton Wellcamp). Inland Rail has potential to enhance the following existing regional economic clusters outside, but within proximity to, the land use study area:

- The **Western Gateway Regional Economic Cluster** supports significant agricultural and resource activities and priority sectors of manufacturing, transport and logistics, and health and knowledge. Long-term investments such as Inland Rail will further strengthen this regional hub as a significant inland port.
- The **Ipswich Emerging Regional Economic Cluster** at Ebenezer has the potential to develop into a major economic hub featuring a diverse mix of economic activities. Towards the west, there is an emerging industrial corridor anchored by clustering of transport, logistics and manufacturing (aviation and defence). There are also priority sectors around the RAAF Base Amberley and the Amberley Aerospace and Defence Support Centre. Opportunities exist for greater intensification and consolidation of activities within this Regional Economic Cluster. Proximity to major transport infrastructure provides long-term opportunities for a transport and logistics hubs and additional support/ancillary activities associated with Inland Rail.

8.9.3 Grantham Reconstruction Area Development Scheme 2011

As identified in Section 8.6.3.1, the permanent operational disturbance footprint is within the Community Purposes Zone—Showgrounds Precinct of the Grantham Reconstruction Area Development Scheme.

Table 8.36 provides an assessment of the Project's compliance with the relevant overall outcomes of the Community Purposes Zone.

TABLE 8.36: PROJECT'S COMPLIANCE WITH THE GRANTHAM RECONSTRUCTION AREA DEVELOPMENT SCHEME OVERALL OUTCOMES

Compliance with the Grantham Reconstruction Area Development Scheme
Overall suggested outcomes for the Community Purposes Zone—Showground Precinct
The Showgrounds Precinct is intended to house a significant showground site for the Lockyer Valley. The precinct will cater for a broad range of events, including large agricultural and industry shows that require a significant area of land. Functions within the Showgrounds precinct can include: ▸ Show arenas ▸ Spectator seating ▸ Large covered and enclosed pavilions ▸ Toilet facilities ▸ Catering and food ▸ Short-term accommodation ▸ Stables. The glossy black-cockatoo can be found foraging within the she-oaks in the south-western edge of the precinct. Their habitat should be protected in the development of the showground precinct. Low-impact industry uses ancillary to the principal showground use and function (i.e. veterinary, rural produce store) will also be permitted within the precinct when developed in accordance with a Master Plan prepared for the precinct.
Possible future links to Warrego Highway
The Master Plan illustrates two possible future links to the Warrego Highway (to be confirmed) through the Community Purposes Zone—Showground Precinct. The possible future links are located off Bowtells Road and Phillips Road and intersect the Gowrie to Grandchester future State transport corridor.
Response: The permanent operational disturbance footprint will be located along the northern boundary of the Showgrounds Precinct, adjacent to the Warrego Highway for approximately 2.5 km. Where the permanent operational disturbance footprint is proposed, the Gowrie to Grandchester future State transport corridor is included within the Grantham Reconstruction Area Development Scheme's land use plan as a proposed future rail corridor. Therefore, the future intent to construct a railway through the Showgrounds Precinct is consistent and compatible with the expectations for the area following the gazettal of the Gowrie to Grandchester future State transport corridor. Regarding the possible future links to the Warrego Highway, the possible future link off Bowtells Road is an existing road reserve parcel; however, the road is not constructed. The permanent operational disturbance footprint intersects this road reserve at Ch 35.2 km. The Project does not provide for a connection to the Warrego Highway at this point as the road is not existing. However, the Project does propose a grade separation at the Phillips Road interface point, supporting this potential future link to the Warrego Highway as per the intent of the Development Scheme.

8.10 Cumulative impacts

It is recognised that the Project may contribute to cumulative impact, as the removal of agricultural land for the purposed of a rail corridor cannot be fully mitigated. As identified within Section 8.7.2.1, the Project has potential to impact Class A land within an IAA. However, the Project is predominantly located within the West Moreton System rail corridor and Gowrie to Grandchester future State transport l corridor, land use impacts have been minimised. Furthermore, with the application of the identified mitigation measures, the residual land use and tenure impacts of the proposal are expected to be low.

The potential for the impacts of the Project to interact with those of other development projects in the region is primarily based on their proximity to Project activities, that is, the development projects which require land acquisition and change in land use.

Projects considered for the cumulative impact assessment are detailed in Table 8.37.

TABLE 8.37: PROJECTS CONSIDERED FOR THE CUMULATIVE IMPACT ASSESSMENT

Project and proponent	Location	Description	Project status
Gowrie to Helidon (G2H) (ARTC)	Immediately west of the Helidon to Calvert Project from Gowrie to Helidon	Comprised of approximately 26 km single-track, dual-gauge freight railway as part of ARTCs Inland Rail	Draft EIS being prepared by ARTC
Calvert to Kagaru (C2K) (ARTC)	Immediately east of the Helidon to Calvert Project from Calvert to Kagaru	Comprised of approximately 53 km single-track, dual-gauge freight railway as part of ARTCs Inland Rail	Draft EIS being prepared by ARTC
Bromelton State Development Area (Queensland Government)	Located southeast of the Project at Bromelton	Delivery of critical infrastructure within the Bromelton State Development Area will support future development and economic growth. This includes a trunk water main and the Beaudesert Town Centre Bypass. This infrastructure provides opportunities to build on the momentum of current development activities by major landowners in the State Development Area	Development Scheme approved by Governor in Council, December 2017
Ipswich Motorway Upgrade Rocklea to Darra (remaining sections) (Department of Transport and Main Roads)	Western Brisbane, QLD	Addressing of congestion and extensive delays in the Ipswich Motorway corridor by a range of road upgrades along 7km of Ipswich Motorway between Rocklea and Darra	Project listed on Queensland Infrastructure Initiative List— EIS not yet initiated
RAAF Base Amberley future works (Department of Defence)	RAAF Base Amberley	White paper dedicated future upgrades to RAAF Base Amberley at a cost of $1 billion	N/A
Gatton West Industrial Zone (Lockyer Valley Regional Council)	3 km north west Gatton	Industrial development including a transport and logistics hub on the Warrego Highway	N/A
InterLinkSQ (InterLinkSQ)	13 km west of Toowoomba	200 ha of new transport, logistics and business hubs. Located on the narrow gauge regional rail network and interstate network. Located at the junction of the Gore, Warrego and New England Highways	Project listed on Queensland Infrastructure Priority List—EIS not yet initiated

TABLE 8.38: CUMULATIVE IMPACT ASSESSMENT FOR LAND USE AND TENURE

Cumulative impact	Aspect	Relevant factor	Sum of relevant factors	Impact significance	Comments
▸ Loss of Class A and Class B agricultural and within an IAA ▸ Disruption to agricultural operations ▸ Potential sterilisation of mineral and petroleum resources ▸ Impacts on accessibility to the within the road network and to private properties ▸ Temporary disruptions to services and utilities.	Probability of the impact	1	6	Low	There is limited potential for cumulative impacts given the relatively limited land use and tenure impacts associated with the Project. The permanent operational disturbance footprint is predominantly located within the West Moreton System rail corridor and Gowrie to Grandchester future State transport corridor, consistent with existing and future State land use planning for the area. The G2H and C2K Projects immediately adjoin the Project and are expected to have similar land use and tenure impacts. Land use and tenure impacts from other Projects (including upgrades to existing infrastructure or large-scale major land development projects that could potentially generate a cumulative impact land use and tenure) are considered to be localised to the Project. Furthermore, the implementation of mitigation measures for all projects will further minimise land use and tenure impacts.
	Duration of the impact	3			
	Magnitude/ intensity of the impact	1			
	Sensitivity of the receiving environment	1			

The significance of the overall cumulative impact land use and tenure is assessed as low.

8.11 Conclusions

This chapter has identified the land use and tenure aspects relevant to the Project. This chapter has addressed the ToR requirements through the identification of existing and proposed land uses, including land characteristics, tenures, agricultural land, petroleum and gas pipeline licences and resource tenures. The chapter provides an impact assessment to identify potential impacts on existing and proposed land uses, providing management measures used to avoid or mitigate potential impacts.

Where possible, potential impacts have been avoided. Where impacts cannot be avoided, mitigation measures have been proposed to reduce and manage the potential impacts of the Project.

In addition to the potential adverse impacts identified, the proposal has the potential to generate several beneficial impacts. Beneficial impacts of Inland Rail include providing better connections to cities, farms, and mines via ports to domestic and international markets. Inland Rail will provide a link to intermodal terminals and to interstate markets, improving access to and from regional areas identified to be significant areas for outbound containerised freight. Further, Inland Rail will increase the capacity for freight services by reducing congestion on existing road and rail passages, including the Warrego Highway.

The Project is considered to comply with the land use intent within the relevant land use and planning instruments.