INLAND RAIL

Summary of findings

View of the Lockyer Valley, looking north-east from Prince Henry Heights.

Gowrie to Helidon

Draft Environmental Impact Statement

ARTC

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

ACKNOWLEDGEMENT OF COUNTRY

Inland Rail acknowledges the Traditional Custodians of the land on which we work and pay our respect to their Elders past, present and emerging.

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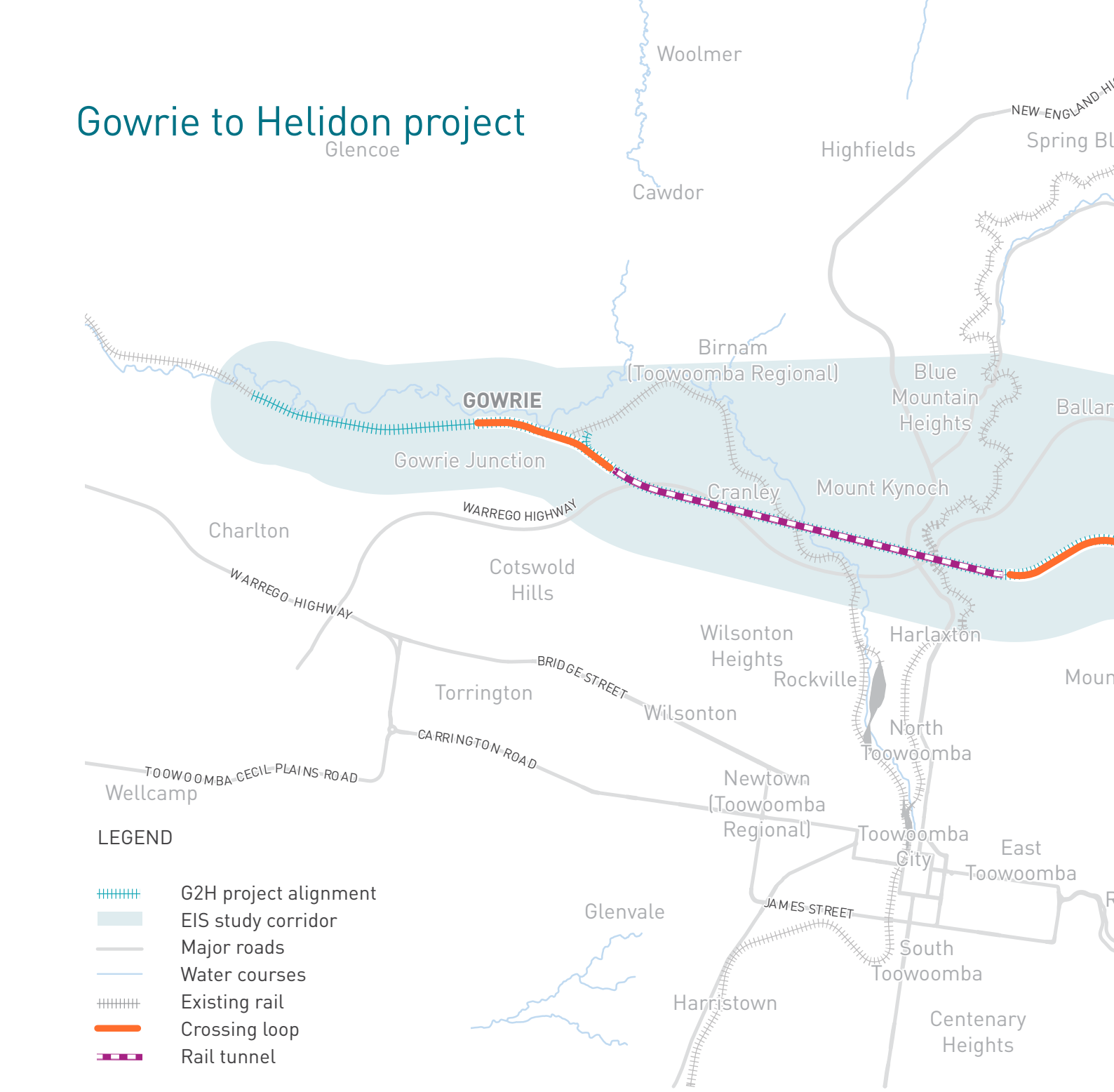
Gowrie to Helidon project



Gowrie to Helidon key elements

approximately **28km of single-track**, dual gauge rail line

6.24km tunnel through the Toowoomba Range

3 bridges and **10 viaducts**

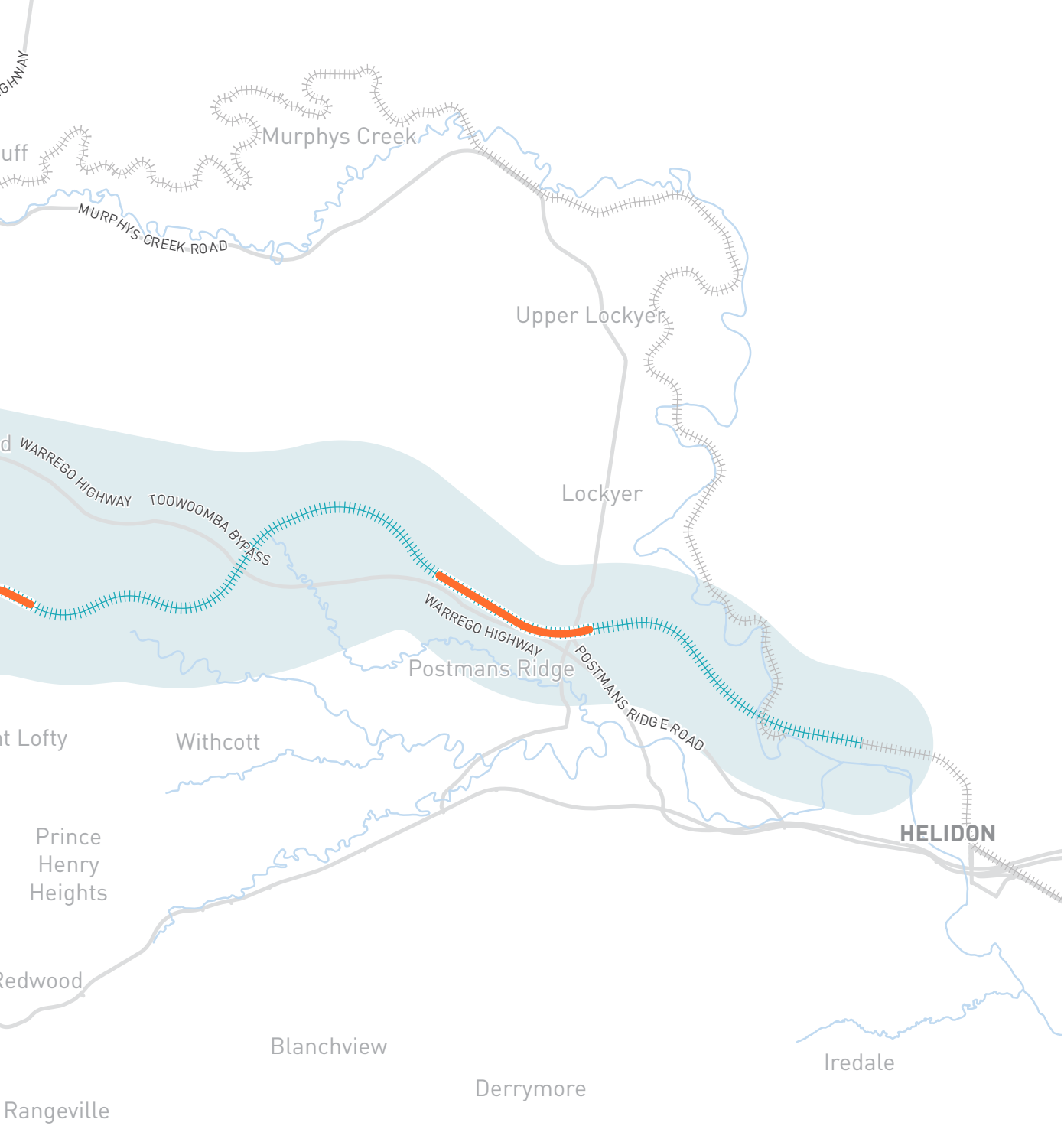
11 road-rail interfaces with no level crossings

three crossing loops

maintenance sidings and **signalling infrastructure**

initially accommodate **1,800m long double-stack freight trains**

project footprint future-proofed for **3,600m long double-stack freight trains**



Map not to scale

ancillary works
including road and public utility crossings and realignments, signage and fencing, and services

G2H links
G2H links with Border to Gowrie in the west, and Helidon to Calvert to the east

G2H links
into Queensland Rail West Moreton System and provides access into and out of Toowoomba

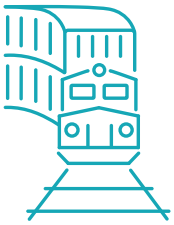
Spoil stockpile within the rail corridor at the western tunnel portal

Summary of findings

Australian Rail Track Corporation (ARTC) has developed a reference design and a draft Environmental Impact Statement (EIS) for the Gowrie to Helidon Project. This summary of findings provides a high-level overview of each chapter of the EIS.

Lockyer Valley, looking north-east from Prince Henry Heights

The Australian Government is committed to delivering Inland Rail, a national freight transport infrastructure project that spans 1,700 kilometres from Melbourne to Brisbane – connecting interstate rail lines, enhancing existing rail networks and serving the interstate freight market.



Want to know more?

See the following:

- **Appendix A: Terms of Reference (Binder 6)**
- **Appendix B: Terms of Reference compliance table (Binder 6)**

The Project

Gowrie to Helidon is one of 13 distinct projects, five of which are in Queensland, that make up the Inland Rail Program.

The G2H Project, a predominantly greenfield corridor, is a more efficient and direct route through the Toowoomba Range compared to the existing railway, which commenced operation in the 1870s. The Project is identified as a priority development within the Inland Rail Program and for future growth in the Darling Downs and South East Queensland regions.

Purpose of this 'Summary of findings'

A draft EIS has been prepared for the Project. The draft EIS describes the Project and the existing environment relevant to the Project and considers potential environmental, social and economic impacts of the Project, and identifies measures to minimise and avoid these impacts.

The draft EIS provides a thorough analysis of technical issues and has been based on sound environmental principles and practices.

This summary of findings is a high-level overview of the draft EIS. It summarises the major findings of the technical studies and shows where in the draft EIS further information can be found.

This summary of findings also explains how you can make a submission to the Office of the Coordinator-General about the draft EIS.

About the EIS

The draft EIS has followed the process established by the *State Development and Public Works Organisation Act 1971* (Qld) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Both levels of government will be involved in the draft EIS assessment process and will consider feedback from the community and other stakeholders during the public notification period before making a decision.

The draft EIS responds to the Terms of Reference for the Project issued by the Queensland Coordinator-General in August 2017.

The draft EIS describes:

- the current environment in the Project area
- potential environmental impacts of the Project
- proposals to avoid, minimise, mitigate and/or offset those potential impacts.

The draft EIS comprises two volumes:

- **Chapters** – describing the draft EIS process, the Project, identified environmental, social or economic aspects, environmental values, potential impacts and mitigation measures
- **Appendices** – supporting the chapters, including the Terms of Reference, design drawings and specialist technical reports on identified environmental, social and economic aspects, based on the current reference design.

The public notification process

The draft EIS is currently in a public consultation review period. This period is from 2 August 2021 – 25 October 2021, during which time the Office of the Coordinator-General for the Queensland Government invites comment on the Project. Written, emailed and online submissions can be received by the Office of the Coordinator-General, up to and including the last day of public notification.

Electronic copies are also available on request via email **inlandrailqld@artc.com.au** or phone **1800 732 761.**

Where to view a copy of the EIS

You can view printed and electronic copies of the draft EIS at one of the locations below:

- **Toowoomba Library**, 155 Herries Street, Toowoomba — E
- **Gatton Library**, 34 Lake Apex Drive, Gatton — P E
- **Goombungee Library**, 89 Mocatta St, Goombungee — P E
- **Highfields Library**, O'Brien Road, Highfields — P E
- **Laidley Library**, 9 Spicer Street, Laidley — E
- **State Library of Queensland**, Cultural Centre, Stanley Place, Southbank, Brisbane — E
- **National Library of Australia**, Parkes Place, Canberra — E
- **ARTC Inland Rail Toowoomba Office**, 143–145 Margaret Street, Toowoomba — P E
- **ARTC Inland Rail Gatton Office**, Suite 5, 47 North Street, Gatton — P E

You can request an electronic copy by calling us on **1800 732 761** or email **inlandrailqld@artc.com.au**

You can also view the draft EIS and make a submission via the Coordinator-General's website: **statedevelopment.qld.gov.au/inlandrail-g2h**

P **Printed copy** E **Electronic copy**

How to make a submission

Submissions can only be made to the Office of the Coordinator-General.

Each submission must:

- be made in writing
- be received on or before the last day of the submission period
- be signed by each person making the submission
- state the name and address of each person
- state the grounds of the submission, as well as the facts and circumstances relied on in support of those grounds.

A person wishing to make a submission about the EIS should also:

- clearly state the matters of concern or interest and list points to help with clarity
- reference the relevant sections of the EIS
- ensure the submission is legible.

What happens after public notification

At the end of the public notification period, the Coordinator-General will consider all properly made submissions to determine if additional information is required to address issues raised during the notification period.

For further information on the EIS process and the making of submissions, please call the Office of the Coordinator-General on **13 QGOV (13 74 68).**

Have your say

Submissions can be made

By post

Any submissions regarding this EIS should be addressed to:

The Coordinator-General

C/- EIS Project Manager
–Inland Rail, Gowrie to Helidon

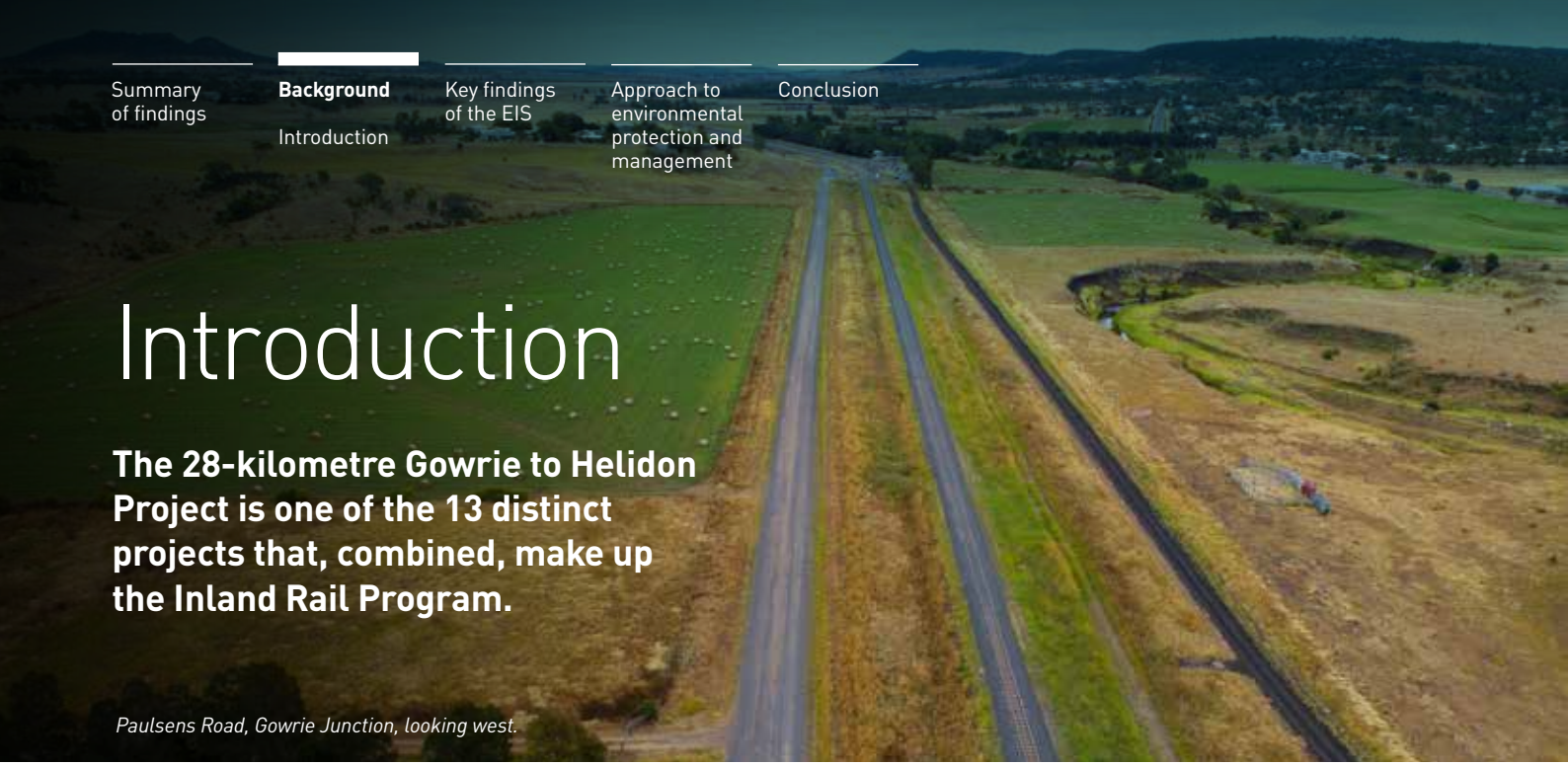
Coordinated Project Delivery
Office of the Coordinator-General
PO Box 15517
City East QLD 4002

Submissions can be made electronically at the following email address

By email
inlandrailg2h@coordinatorgeneral.QLD.gov.au

Online
Online submissions via the Office of the Coordinator-General website are preferred. To make a submission online, please visit: **haveyoursay.dsd.QLD.gov.au** or **statedevelopment.qld.gov.au/inlandrail-g2h**

Helidon, looking east near Airforce Road



Introduction

The 28-kilometre Gowrie to Helidon Project is one of the 13 distinct projects that, combined, make up the Inland Rail Program.

Paulsens Road, Gowrie Junction, looking west.

The Project

The Gowrie to Helidon Project consists of approximately 28 kilometres of new dual gauge track which generally follows the existing Queensland Rail West Moreton System rail corridor and the protected Gowrie to Grandchester future state transport corridor.

The Project includes:

- a 6.24 kilometre undrained tunnel through the Toowoomba Range
- 13 bridge and viaduct structures
- 3 crossing loops.

The Project reference design responds to key environmental features and has been developed in line with engineering constraints to produce a feasible rail design. The rail design is based on minimising environmental, social and economic impacts, limiting disturbance to existing infrastructure and meeting engineering design criteria.

Due to the requirements for significant infrastructure elements including bridge structures, earthworks and a tunnel, the Project is expected to represent a total investment of up to $1.35 billion, including all construction costs, design services and land requirements.

Want to know more?

See the following:

- **Chapter 1: Introduction (Binder 1)**
- **Chapter 2: Project rationale (Binder 1)**
- **Chapter 6: Project description (Binder 1)**

Funding the Project

The Project will be delivered as part of the Gowrie to Kagaru Public Private Partnership (PPP).

A PPP is when both the public and private sectors work together to deliver large-scale or technically complex infrastructure projects. Under a PPP delivery arrangement, the private sector will design, build, finance and maintain this section and allow Inland Rail to benefit from private sector innovation to deliver and maintain these complex project elements.

The location

The Project travels between Gowrie (north-west of Toowoomba) and Helidon (east of Toowoomba) and is located in the local government areas of Toowoomba and Lockyer Valley regional councils.

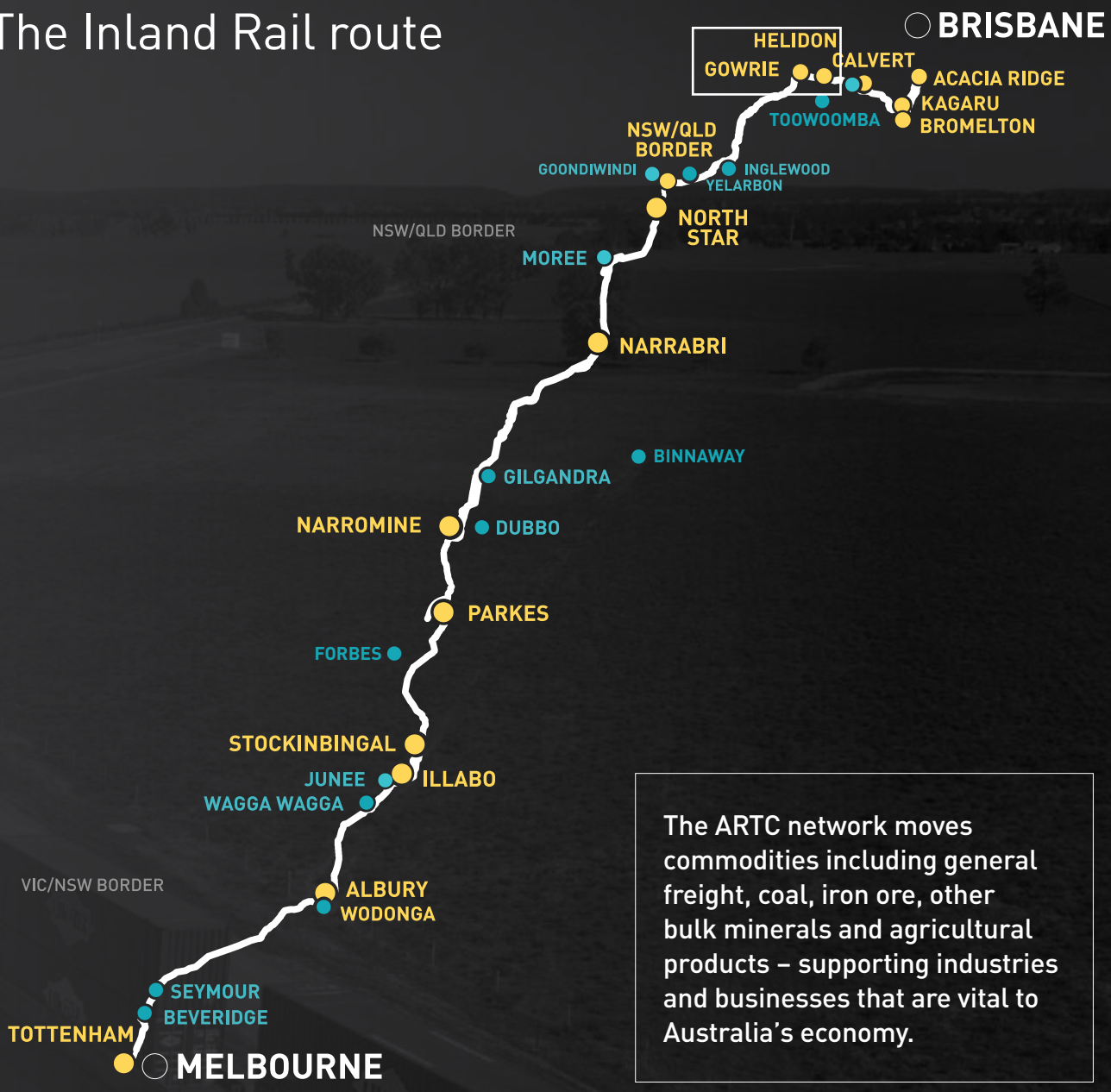
The Project is described as one of the 'missing links' in the Inland Rail Program by connecting two other Inland Rail projects:

- Border to Gowrie to the west, connecting to the West Moreton System rail corridor between Kingsthorpe and Gowrie
- Helidon to Calvert to the east, connecting to the West Moreton System rail corridor north-west of Helidon.

The Project also connects to Queensland Rail's Western Line at Gowrie and the Main Line at Helidon, providing interoperability between the two rail networks. A spur line is provided to allow access into and out of Toowoomba.

The route was developed after extensive analysis by the Australian Government in consultation with the state government, the national freight and logistics sectors and ARTC.

The Inland Rail route



The ARTC network moves commodities including general freight, coal, iron ore, other bulk minerals and agricultural products – supporting industries and businesses that are vital to Australia's economy.

The Proponent

The Australian Rail Track Corporation (ARTC) is the proponent for the Project. ARTC was created after the Australian Government and State Governments agreed in 1997 to form a 'one-stop-shop' for all operators seeking to access the national interstate rail network. Since its formation, ARTC has focused on infrastructure investment and modernising the interstate rail network. This work has extended to building and upgrading existing track to allow for the capacity that the market requires.

ARTC plays a critical role in the transport supply chain and in the overall economic development of Australia, managing and maintaining over 8,500 kilometres of rail network across five states, investing in building, extending and upgrading the rail network to get freight off the road and onto rail. The ARTC network supports industries and businesses that are vital to the nation's economy by facilitating the movement of a range of commodities including general freight, coal, iron ore, other bulk minerals and agricultural products.

As the operator and manager of Australia's national rail freight network, ARTC has successfully delivered more than $5 billion in capital upgrades to the national freight network. Having emerged from this period of significant investment and network upgrades, ARTC has now been tasked with delivering Inland Rail under the guidance of the Department of Infrastructure, Transport, Regional Development and Communications.

Project timeline

The Project will be operational when all 13 sections of the Inland Rail Program are complete.

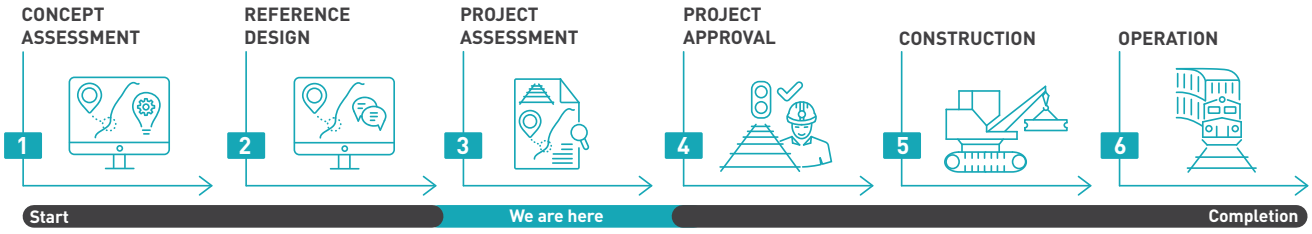
The anticipated timing of phases for the Project are shown in the table on the next page. Pre-construction and early works are scheduled for commencement in late 2021, following detailed design and subject to required post-EIS activities. Early works (pre-construction activities) include detailed design, land acquisition, surveys and geotechnical investigations, and some activities such as utility and service relocations.

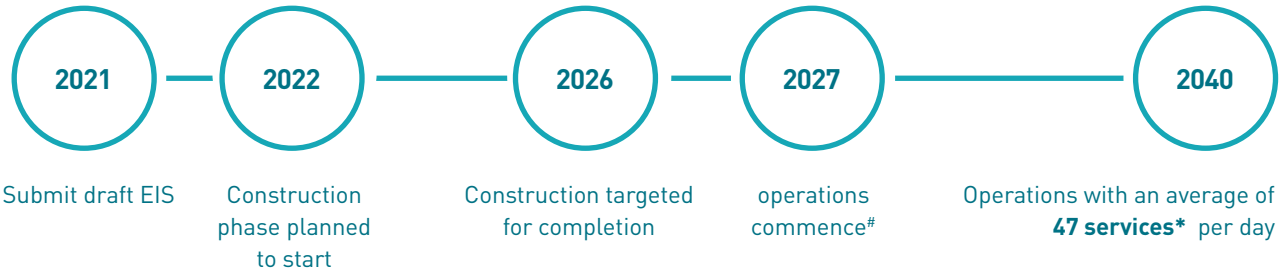
Construction is expected to commence in 2022; completion is targeted for 2026.

The construction completion date is influenced by a number of variables, including outcomes of ongoing engagement and stakeholder consultation, and ongoing design and development work.

Commissioning will be completed prior to the Project becoming operational in 2027.

> The Project will maximise economic growth opportunities for the region.





#Timelines are indicative only and subject to change

**The number of trains includes the services currently operating on the West Moreton System between Gowrie and Helidon*

Project timing

Project phase	2021				2022				2023				2024				2025				2026				2027	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Detailed design				■	■	■	■	■	■	■	■	■														
Pre-construction and early works					■	■	■	■	■	■	■	■														
Construction						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
Commissioning																						■	■	■		
Operation																									■	■

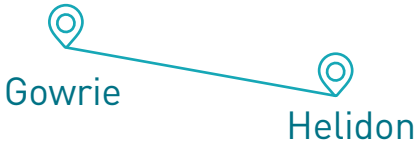
Visualisation of the Toowoomba Tunnel western portal

Project rationale

Inland Rail is a nationally significant transport initiative. It 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.

Helidon, Cattos Road, looking west

This chapter describes the rationale for the Gowrie to Helidon Project as part of the broader Inland Rail Program.



Connecting Australia

The Melbourne to Brisbane corridor is one of the most important general freight routes in Australia, supporting key population and employment precincts along the east coast and inland NSW. With the population of the eastern states forecast to increase by 60 per cent over the next 40 years, the need for efficient and effective freight transport will continue to increase.

Inland Rail will also be interoperable with train operations to Perth, Adelaide and other locations on the standard gauge rail network.

Inland Rail will:

- serve future rail freight demand by enabling freight to be delivered from Melbourne to Brisbane in less than 24 hours
- stimulate growth for inter-capital and regional/bulk rail freight
- provide an increase in productivity that will benefit consumers through lower freight transport costs
- improve rail service quality in the Melbourne to Brisbane corridor and deliver a freight rail service that is competitive in pricing and availability with road
- improve road safety, ease congestion, and reduce environmental impacts by moving freight from road to rail
- bypass bottlenecks within the existing metropolitan rail networks and free up train paths for other services along the coastal route
- act as an enabler for regional economic development along the Inland Rail corridor.

Inland Rail will connect regional Australia to markets more efficiently, drive substantial cost savings for producers and consumers and deliver significant economic benefits. The majority of freight transported via Inland Rail will be for domestic markets.

Want to know more?

See the following:

- **Chapter 2: Project rationale (Binder 1)**
- **Chapter 7: Sustainability (Binder 1)**
- **Chapter 17: Economics (Binder 4)**
- **Chapter 22: Cumulative impacts (Binder 5)**

Justification for Inland Rail

Currently, there is no continuous Inland Rail link between Melbourne and Brisbane. Existing road and rail networks do not have the capacity to meet the demand for future freight movements, which will have a negative impact on freight productivity, transport costs and existing passenger services that also use the line.

Trains running on Inland Rail may be double-stacked freight trains, potentially up to 1,800 metres long – as long as 18 football fields. This means fewer B-double trucks on already busy road networks and less congestion for road and rail users.

Consequences of not proceeding with Inland Rail

Not progressing with Inland Rail will potentially hinder the national economy. The continuing growth in freight demand requires urgent attention. Without making a step-change in rail efficiency and performance, pressure on the road networks will increase, freight costs will rise, consumers will pay more for products, and productivity in important sectors will decline.

Without Inland Rail, road will increasingly become the dominant mode, with rail becoming less relevant. A continued over-reliance on road transport to meet the future east coast freight task will increase the vulnerabilities to demographic changes that are, even today, driving shortages of long-distance truck drivers and increasing costs.

The Inland Rail service offering

Inland Rail presents a unique opportunity to establish a competitive freight system by providing trunk rail infrastructure that supports a network of intermodal terminals and local sidings to distribute goods at a national, regional and local level. The service offering reflects the priorities of freight customers and responds to both current and expected market conditions.

Key characteristics of the Inland Rail service offering include:

Transit time

24 hours or less from Melbourne to Brisbane

Reliability

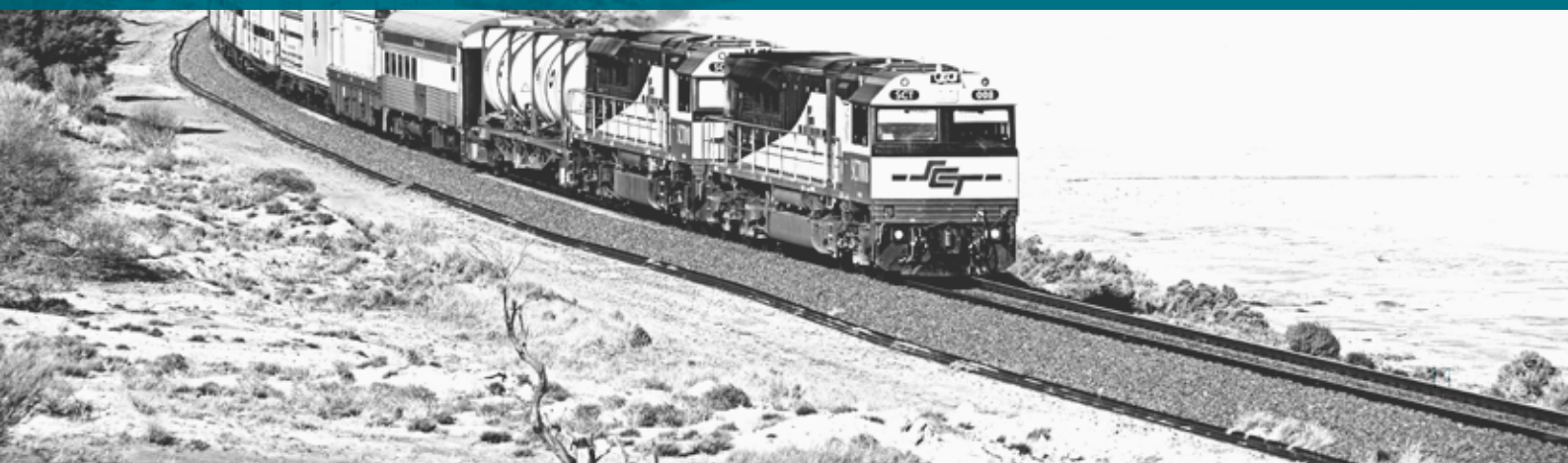
98 per cent of goods will be delivered on time by connecting road freight, or available to be picked up at the rail terminal or port when promised

Price

cheaper relative to road transport, as a combined cost of access to the rail network, rail haulage and pick-up and delivery

Availability

services available with departure and arrival times that are convenient for customers



Project benefits

As a component of Inland Rail, the Project will provide a more direct and efficient route across the Toowoomba Range compared to the existing West Moreton System. The Toowoomba Range section of the West Moreton System has been identified by stakeholders as a major constraint to shifting to rail:

- it takes 1.5 hours to traverse and has only two passing loops, which restricts rail capacity and efficiency
- there is a lack of passing loops at other points on either side of the range
- train lengths are limited to 650 metres by constricted sidings/passing loops and level crossing designs
- height restrictions in the tunnels restrict the use of 9' 6" high containers and some non-containerised break bulk cargo, e.g. railway lines or material for the coal seam gas industry.

Any existing rail traffic travelling on Inland Rail will avoid nine level crossings on the existing West Moreton Line through Toowoomba and Murphy's Creek, improving safety and congestion through these areas.

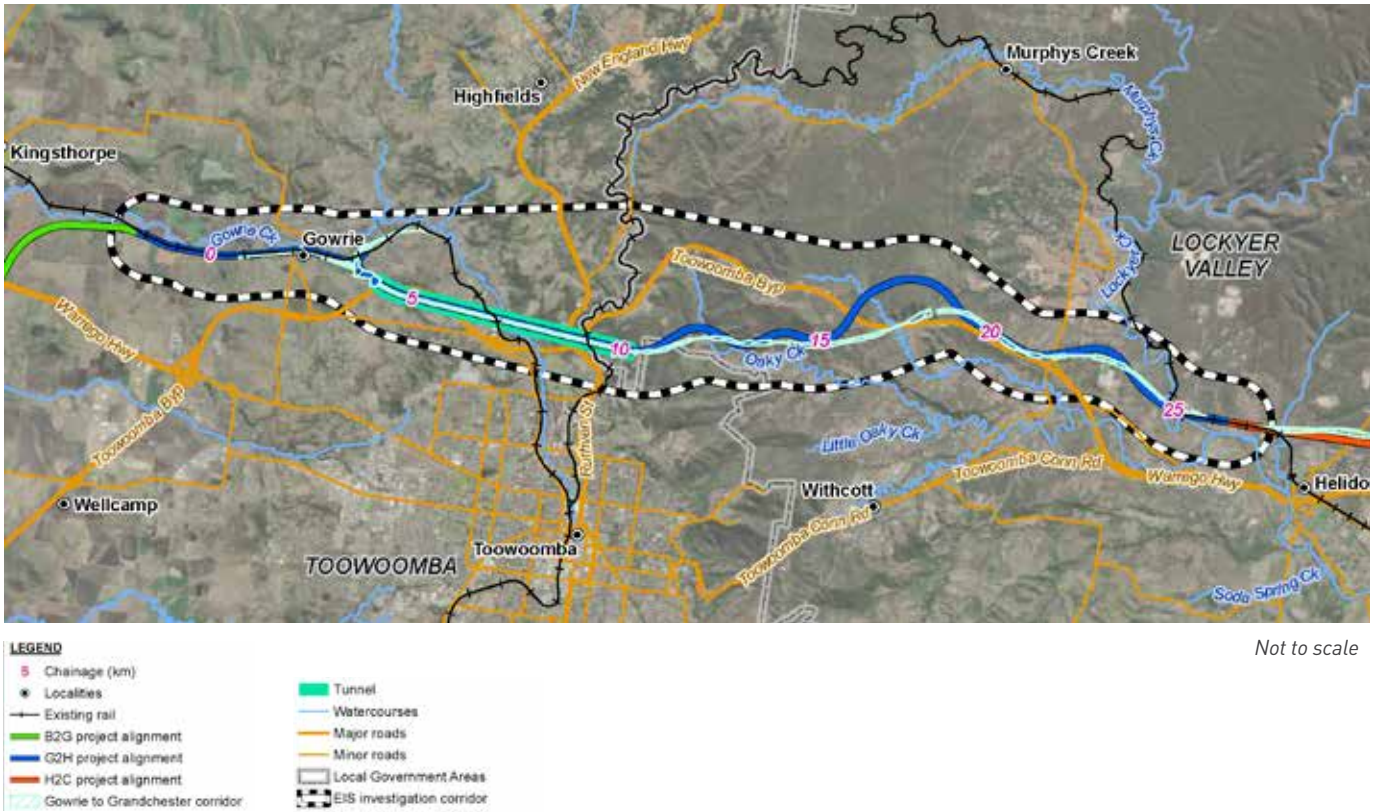
Gowrie to Grandchester future state transport corridor

This corridor was protected in 2005, following an extensive study by Queensland Transport and Queensland Rail published in 2003. The alignment was originally identified for a 200 km/hr passenger service.

This alignment was not originally the preferred alignment for Gowrie to Helidon, with a preference for an alignment via Murphys Creek. The Murphys Creek alignment was discounted in preference for the Gowrie to Grandchester future state transport corridor following community consultation and 2011 floods which had a significant impact on the West Moreton System in the area.

Multi-criteria analyses (MCAs) were undertaken as part of the EIS and design development process to refine the alignment. This resulted in the Project alignment deviating outside of the corridor. Key changes were in response to the western tunnel portal flood immunity, Withcott Seedlings and Wards Hill.

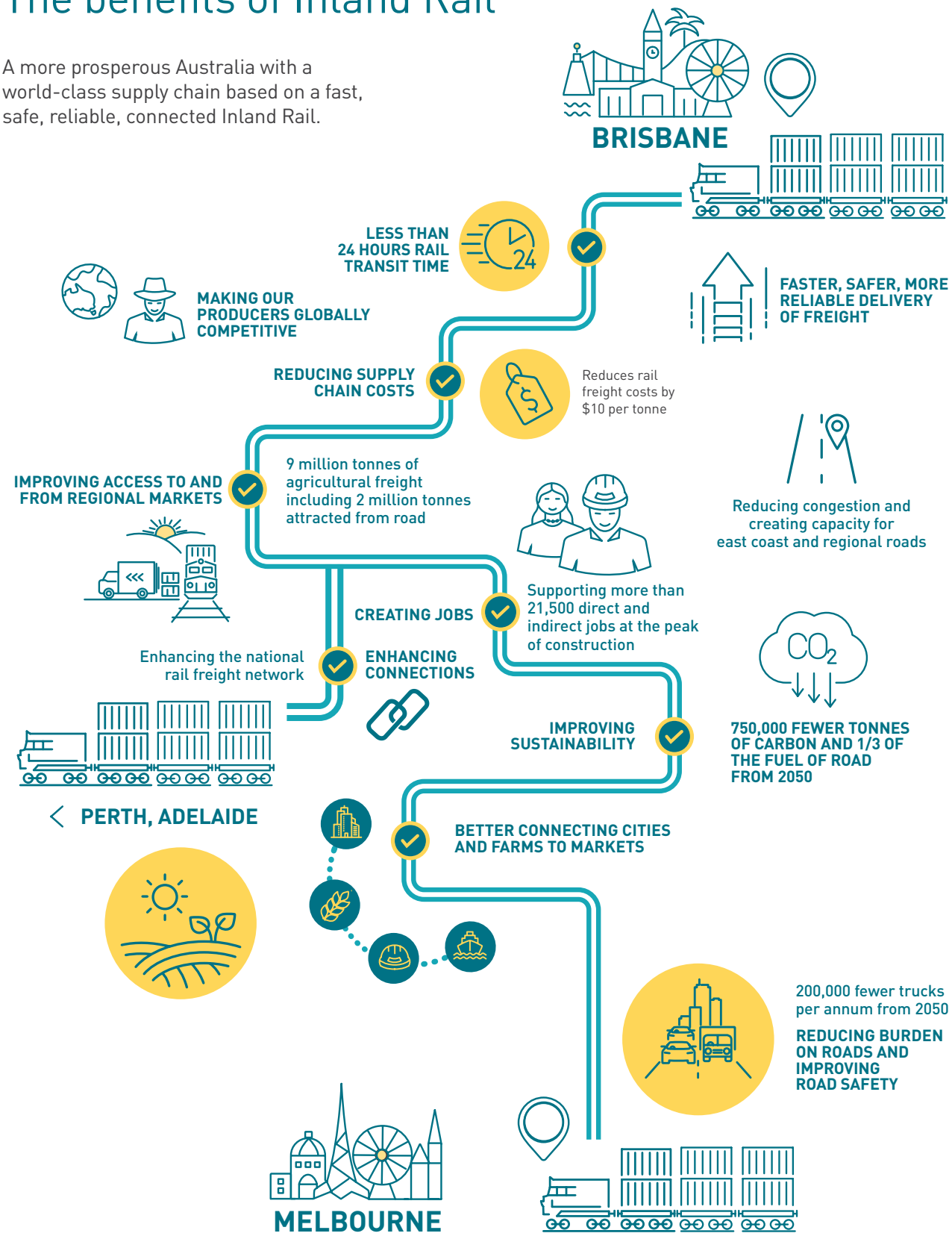
> Inland Rail provides a significant opportunity to change the fundamentals of the freight logistics supply chain in Australia.

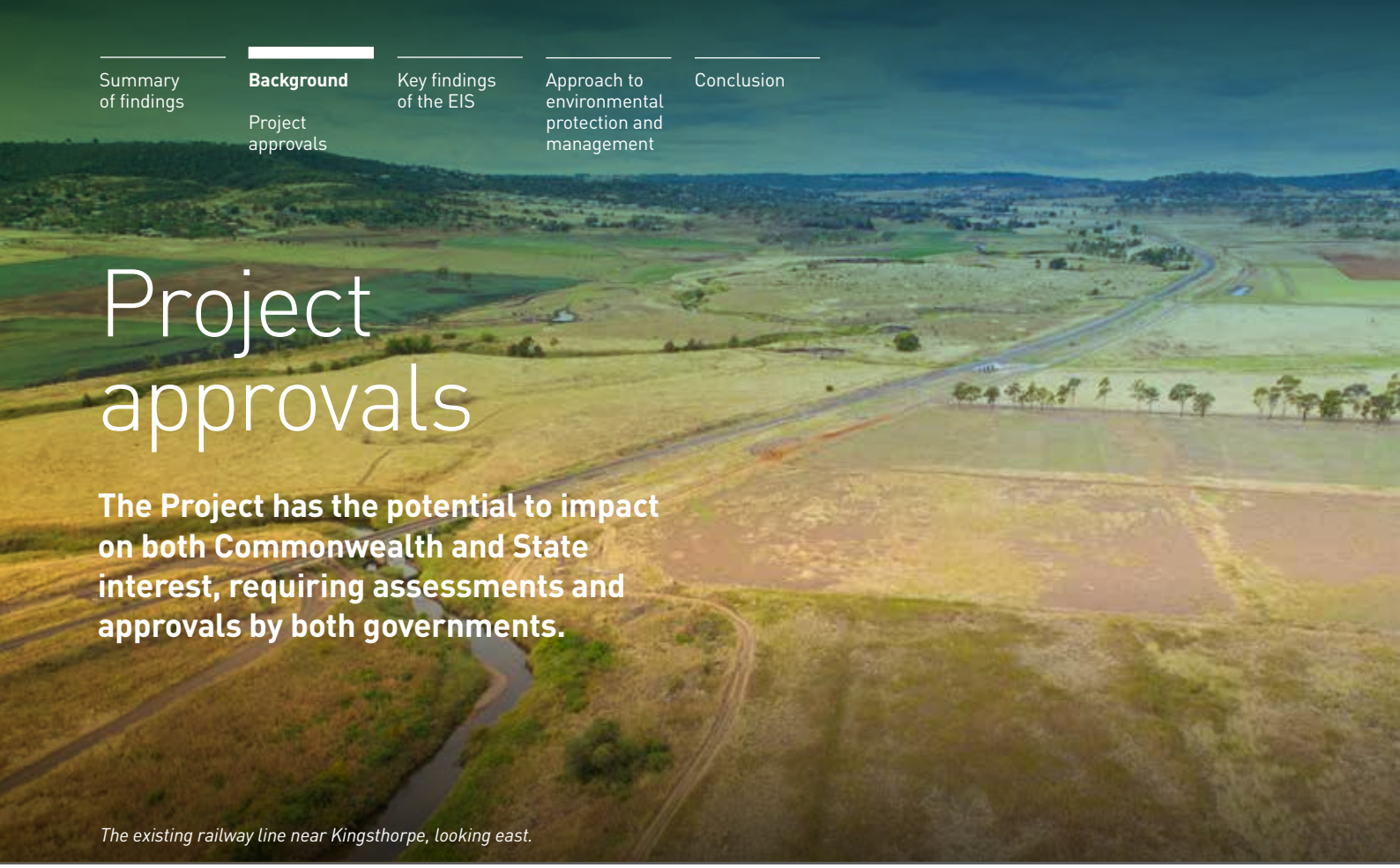


Not to scale

The benefits of Inland Rail

A more prosperous Australia with a world-class supply chain based on a fast, safe, reliable, connected Inland Rail.





Project approvals

The Project has the potential to impact on both Commonwealth and State interest, requiring assessments and approvals by both governments.

The existing railway line near Kingsthorpe, looking east.

Chapter 3 provides an overview of the legislation that applies to the Project and outlines approvals that are triggered under legislation.

A comprehensive approvals process

The development of infrastructure has the potential to trigger the need for approval under Commonwealth and State legislation and local government laws, plans and policies. Various approval pathways exist, and the appropriate pathway can depend on the significance of the impacts, the type of development, land tenure and the proponent of the application.

The Terms of Reference (ToR) requires the EIS to describe and list all legislation, policies and plans that are relevant to the Project, and identify approvals, licences, permits and other authorisations necessary for the planning, construction and operational phases of the Project.

Approvals for third-party works of councils and utility providers have not been assessed within the draft EIS. Any third-party works may rely on the provisions and powers of the relevant third party, and/or may require separate environmental assessment and associated approvals.

A number of Project approvals required prior to construction commencing will be the responsibility of the appointed Contractor – these will largely be dependent upon their construction methodology and requirements.

Want to know more?

See the following:

- **Chapter 3: Project approvals (Binder 1)**
- **Appendix B: Terms of Reference compliance table (Binder 6)**

A principal purpose of this EIS is to provide sufficient information to enable the Coordinator-General and Australian Government Minister for the Environment to evaluate and assess the Project under the SDPWO Act and EPBC Act respectively, and for recommendations to be made regarding approvals required by the Project under other legislation.

Queensland approval process

On 15 February 2017, ARTC submitted an Initial Advice Statement (IAS) to the Coordinator-General as part of an application for a 'coordinated project' declaration under the *State Development and Public Works Organisation Act 1971* (Qld) SDPWO Act. On 16 March 2017, the Coordinator-General declared the Project was a 'coordinated project for which an EIS is required'.

The final ToR for the Project was approved by the Coordinator-General under Section 30 of the SDPWO Act and was released on 9 August 2017. The ToR sets out the general and specific matters that ARTC must address in preparation of the EIS.

Following submission and public display of the EIS, the Coordinator-General will determine whether the draft EIS can be accepted as final or whether a request for additional information is required.

Once the EIS is accepted as final the Coordinator-General will prepare an Evaluation Report which may state conditions, or make recommendations, for subsequent approvals required for the Project to proceed and may also impose conditions to manage potential impacts.

Commonwealth approval process

The Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined as Matters of National Environmental Significance (MNES).

On 10 February 2017, ARTC submitted an EPBC Act referral to the Australian Minister for the Environment. On 17 March 2017, the Minister determined the Project to be a 'controlled action', requiring approval under the EPBC Act before it can proceed. The relevant controlling provision for the Project is listed threatened species and communities (sections 18 and 18A of the EPBC Act).

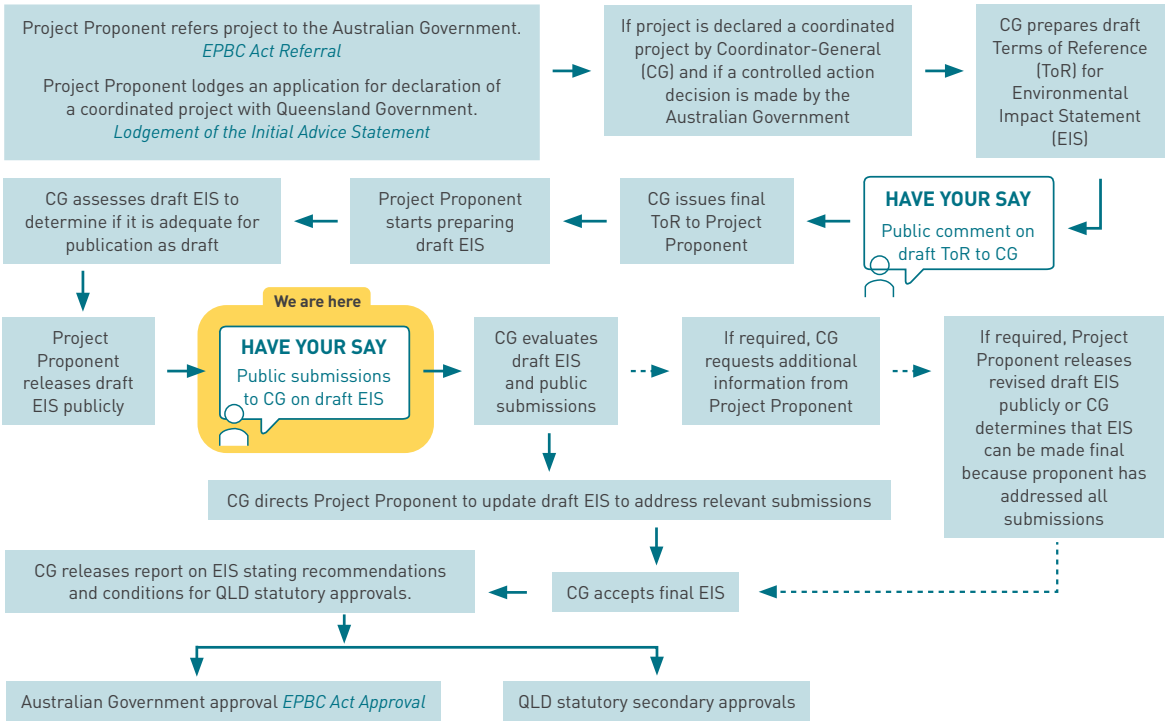
As the Project has the potential to impact on both Commonwealth and State environmental matters, the EIS will be assessed under the Bilateral Agreement between the Commonwealth and the State of Queensland under Section 45 of the EPBC Act relating to environmental assessment.

The Minister will receive a copy of the Coordinator-General's Evaluation Report to use when deciding whether to approve the Project, with or without conditions under the EPBC Act.

Other approvals

The Project will trigger the requirement to obtain a number of approvals, permits and authorities under Queensland Government legislation. In the event that the Project is recommended to proceed, under the EPBC Act and the SDWPO Act the Project will seek to obtain these approvals after completion of the EIS process when detailed design has sufficiently progressed to satisfy the information requirements for the relevant development application or other secondary approval.

Approvals process for Queensland major projects



Assessment methodology

An EIS is a systematic analysis of a proposed development in relation to existing environmental values. For each environmental value, an appropriate assessment method was selected.

Ashlands Drive, Postmans Ridge

Chapter 4 describes the methodology used to assess potential impacts and opportunities as a result of the Project in accordance with the ToR.

Assessing potential impacts

The draft EIS has been prepared to address the ToR and provide analysis and assessment of potential environmental and socio-economic impacts from the Project.

The draft EIS has taken a conservative approach to identifying the potential incremental and cumulative impacts of the Project.

Where potential environmental impacts have been identified, efforts have been made to avoid or minimise those impacts through design development. Where these attempts have a limited effect, further proposed mitigation and management measures have been recommended - these will be implemented during future Project phases.

The need to provide environmental offsets to address potential residual impacts has also been outlined.

Opportunities to maximise the economic and social benefits of the Project have been identified and include local employment, local industry participation, and opportunities for complementary investment with continued community benefits. These opportunities are further detailed in the Social Impact Management Plan (SIMP) and associated action plans.

Want to know more?

See the following:

- **Chapter 4: Assessment methodology (Binder 1)**
- **Chapter 22: Cumulative impacts (Binder 5)**

> The objective of an EIS is to ensure that all potential environmental, social and economic impacts of the Project are identified and assessed and demonstrate that the Project is based on sound environmental principles and practices.

Key terms used in the assessments include:

- **EIS investigation corridor:** An approximate 2 kilometre wide study area, generally 1 kilometre either side of the proposed rail alignment.
- **Permanent disturbance footprint:** The rail corridor includes the rail tracks and associated infrastructure as well as other permanent works (e.g. where changes to the road network are required).
- **Temporary disturbance footprint:** The permanent disturbance footprint and any temporary storage and laydown areas to be used during the construction phase.
- **Technical study areas:** Some technical assessments use a different study area depending on the requirements of the environmental aspect being assessed.

Approach

Three methods were used to assess potential impacts and opportunities:

- compliance assessment (quantitative)
- risk assessment (qualitative)
- significance assessment (qualitative).

For each environmental aspect, the appropriate impact assessment method was selected. In some cases, the assessment method was adapted to meet the needs of a particular environmental aspect. For example, flora and fauna and land resources were assessed using both compliance and significance assessment methods.

Existing level crossing at Gowrie Junction.

Significance classifications

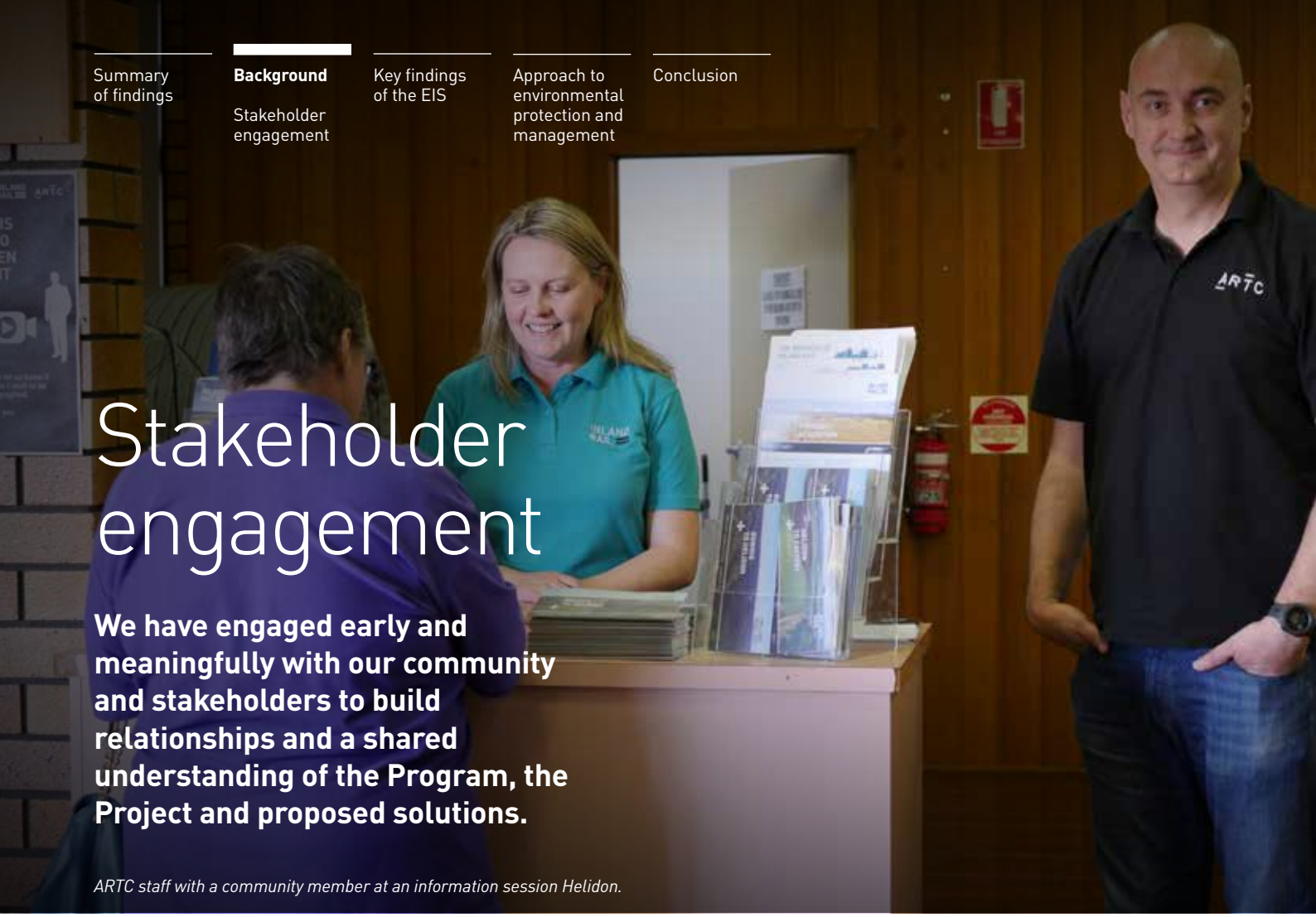
MAJOR: Arises when an impact will potentially cause irreversible or widespread harm to an environmental value that is irreplaceable because of its uniqueness or rarity. Avoidance through appropriate design responses is the only effective mitigation.

HIGH: Occurs when the proposed activities are likely to exacerbate threatening processes affecting the intrinsic characteristics and structural elements of the environmental value. While replacement of unavoidable losses is possible, avoidance through appropriate design responses is preferred to preserve its intactness or conservation status.

MODERATE: Results in degradation of the environmental value due to the scale of the impact or its susceptibility to further change even though it may be reasonably resilient to change. The abundance of the environmental value ensures it is adequately represented in the region and that replacement, if required, is achievable.

LOW: Occurs where an environmental value is of local importance and temporary or transient changes will not adversely affect its viability provided standard environmental management controls are implemented.

NEGLIGIBLE: Does not result in any noticeable change and hence the proposed activities will have negligible effect on environmental values. This typically occurs where the activities are located in already disturbed areas.



Stakeholder engagement

We have engaged early and meaningfully with our community and stakeholders to build relationships and a shared understanding of the Program, the Project and proposed solutions.

ARTC staff with a community member at an information session Helidon.

Chapter 5 outlines the consultation activities undertaken to date, key issues raised, and communication collateral used in the process.

Working with the community

The consultation program was structured to inform communities, individuals and groups directly and indirectly affected by the Project. The consultation process encouraged input from:

- community groups and landholders
- stakeholder groups with specific interests in the Project – such as Traditional Owners and industry associations
- Australian Government departments
- Queensland Government departments and agencies
- local governments.

Stakeholder and community feedback and comments have informed the preparation of the draft EIS including:

- identifying community values and local conditions in proximity to the Project
- assessing potential benefits and impacts of the Project's construction and operation
- identifying strategies to minimise or avoid potential impacts and maximise or enhance potential Project benefits.

Community consultation is an ongoing process to inform and involve the community throughout the life of the Project.

During draft EIS development, we undertook extensive consultation (phone calls in/out, meetings and property/site visits) with landholders. The purpose of the meetings was to provide an overview of the Project to the community, listen and understand their concerns and receive their valued feedback.

Permanent Project staff at our Gatton and Toowoomba offices continue to provide face-to-face discussions with community members. Questions or concerns can also be directed to **1800 732 761** or emailed to **inlandrailqld@artc.com.au**

Want to know more?

See the following:

- **Chapter 2: Project rationale (Binder 1)**
- **Chapter 5: Stakeholder engagement (Binder 1)**
- **Appendix D: Consultation report (Binder 6)**

Consultation

We have consulted widely with the community and stakeholders on the Project, including the design and EIS process.

Who we consult with

- Community
- Government *(Local, State and Commonwealth)*
- Emergency Services
- Impacted landholders
- Local services
- Indigenous stakeholders
- Local businesses

How we consult

- Face-to-face meetings
- Calls
- Emails
- E-news
- Printed newsletters *(letter box drops)*
- Workshops and info sessions
- Community Consultative Committee (CCC)
- Interactive map
- Website
- Social media

Please note the above lists are not exhaustive. Detailed lists can be found in Chapter 5 and Appendix D.

Stages of consultation

A phased approach was developed to engage key stakeholders and other potentially affected stakeholders about the Project. Consultation for the development of the EIS and Project design commenced in 2017.

STAGE ONE

Pre-2017

- Inland Rail concept design and options analysis

STAGE TWO

Early 2017 – October 2020

- one-on-one consultation, public forums relating to designs, engagement for property impacts and acquisition

STAGE THREE

October 2020 – early 2022

- formal consultation to support EIS assessment and approval; commence land acquisition discussions

STAGE FOUR

2022–2026

- engagement during construction

STAGE FIVE

2027

- completion and handover to operations

Themes

- Traffic
- Property impacts
- Noise and vibration
- Alignment / route
- Social
- Flooding and water management
- Consultation process
- Environmental approvals
- Economic
- Agricultural business
- Visual amenity
- Flora and fauna
- Air quality
- Project need
- Construction issues
- Land management
- Heritage
- Hazards
- Waste management

Visualisation of the proposed road over rail to replace the level crossing at Gowrie Junction.

Consultation process

Inland Rail maintains a secure stakeholder management database – Consultation Manager – to record all consultation undertaken as part of the Project.

The database was established in mid-2014 for the Inland Rail Program and will continue to be maintained throughout the EIS process and into Project construction and operation. This central database is used to record stakeholder consultation and monitor and report on enquiries, issues and team responses across all ARTC operations and Inland Rail projects. Consultation has allowed the Project to:

- identify community values and local conditions in proximity to the Project
- appropriately assess potential impacts and identify key benefits of the Project's construction and operation
- propose measures to minimise or avoid potential Project impacts
- recommend strategies to maximise or enhance potential Project benefits.

Community Consultative Committees

Two Community Consultative Committees (CCC) – the Inner Darling Downs and the Lockyer Valley provide input and feedback into the Project.

The Inner Darling Downs CCC has a total of 16 members and has held 15 meetings. The Lockyer Valley CCC has 15 members and has held 12 meetings.

The CCC ensures representation of diverse viewpoints and provides a platform to raise community concerns. The role of the committee is to gather and disseminate information regarding Inland Rail throughout the community and bring community views to the meetings.

> Community consultation is an ongoing process to inform the community about the Project and involve them throughout the life of the Project.

Project description

The Project is a 28 kilometre section of the Inland Rail corridor between Gowrie, north-west of Toowoomba and Helidon, east of Toowoomba.

A coal train on the existing railway line at Gowrie Junction.

Chapter 6 describes the Gowrie to Helidon Project (the Project), which is the subject of this draft EIS.

Project overview

The Project is a 28 kilometre section of the Inland Rail Program and comprises a single track, dual gauge railway with three crossing loops, 13 bridge and viaduct structures and a 6.24 kilometre tunnel under the Toowoomba Range.

It will be built predominantly within the existing rail corridor and the Gowrie to Grandchester future state transport corridor. The proposed corridor is classed as both greenfield and brownfield, as part of the alignment will utilise the existing Queensland Rail (QR) West Moreton System rail corridor.

The significant vertical difference (350m) between Gowrie at 500m relative level (RL) and the base of the Toowoomba Range, at 150m RL, created a significant challenge for the rail alignment design in producing a safe and efficient route for trains to traverse the range. The track will initially be constructed to accommodate 1,800 metre long double-stack freight trains but will ultimately accommodate trains up to 3,600 metres long, based on business needs.

The objectives of the Project design are to:

- provide rail infrastructure that meets Inland Rail specifications, enabling trains to travel between Gowrie and Helidon, connecting with other sections of Inland Rail to the west and east
- minimise the potential for adverse environmental and social impacts.

Want to know more?

See the following:

- **Chapter 1: Introduction (Binder 1)**
- **Chapter 6: Project description (Binder 1)**
- **Appendix C: Drawings (Binder 6)**

The co-location of the Project alignment with the existing rail corridor has been designed to minimise conflicts between local communities and the rail network, minimise visual intrusion in the area and allow coordination of service lines with existing rail networks.

Key project features

The most technically challenging section of Inland Rail

6.24km tunnel under the Toowoomba Range

28km of new track
5.6 km of brownfield and 22.4km of greenfield railway

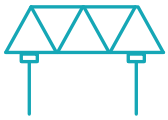
Key features:

- Tie-ins to the existing QR West Moreton System Rail corridor at the Project boundaries and a spur line allowing access to and from Toowoomba

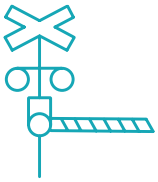
- Up to 1,800 metres in length, with potential to accommodate 3,600 metre-long trains subject to future business needs

- Intermediate ventilation shaft at Cranley

- 3 crossing loops located at Gowrie Junction, Ballard and Postmans Ridge



- 3 bridges and 10 viaducts



- There are 11 road-rail interfaces with no level crossings.

Reference design

To help achieve the Inland Rail service offering, ARTC has implemented a consistent set of design requirements and parameters to be applied across the Inland Rail Program. To achieve the required operational gradient while maintaining the relevant design requirements and speeds for mountainous terrain, significant structures and earthworks are required for the Project, in addition to the Toowoomba Range Tunnel. The Project design allows for interoperability between the existing Queensland Rail rail network and the ARTC rail network. That is connections, including a spur line into Toowoomba are provided at the western extent and the eastern extent to allow trains to move between the existing QR Network (narrow gauge) and Inland Rail (dual gauge). A connection is also proposed with the InterLinkSQ facility, while all other rail-rail interfaces are grade separated.

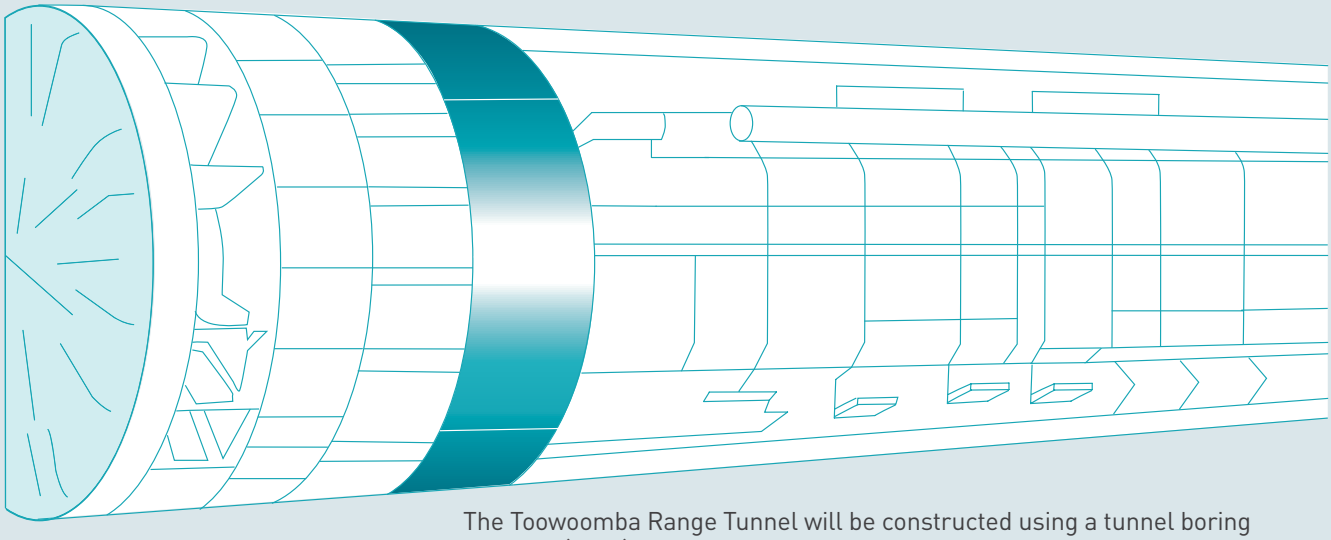
The design aligns with the existing QR West Moreton System rail corridor and the Gowrie to Grandchester future state transport corridor where applicable, complying with the Queensland Government State Planning Policy and state interests relevant to transport infrastructures.

The design does not preclude the construction of a high-speed passenger service within the Gowrie to Grandchester future state transport corridor at a future date.

To facilitate the Project, changes to the local road network are required with Morris Road to be closed. To maintain connectivity Gowrie Junction Road will be upgraded and a bridge provided over the proposed and existing rail alignment and Gowrie Creek, with the existing level crossing eliminated.

Potential impacts that have been avoided or mitigated through the development of the design are identified in the impact assessment discussions included in the assessment chapters of the draft EIS.

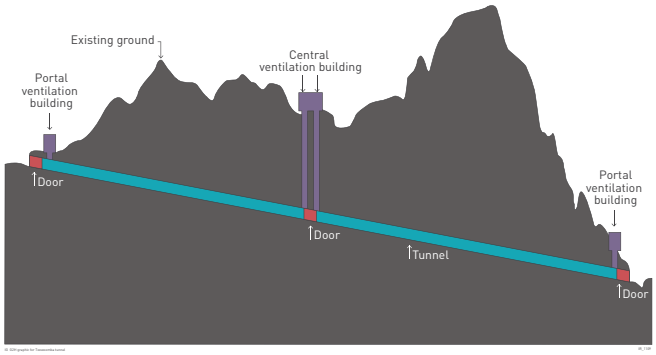
Toowoomba Range Tunnel

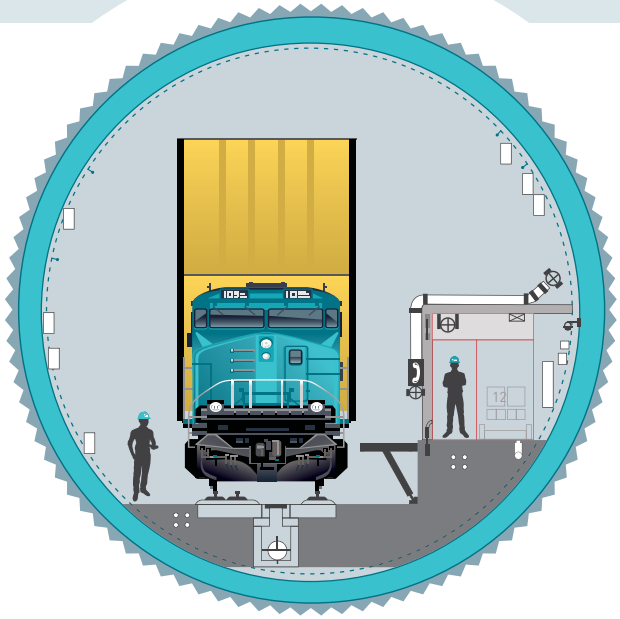


The Toowoomba Range Tunnel will be constructed using a tunnel boring machine (TBM). The TBM will commence at Gowrie, with the tunnel's construction expected to last 24 months.

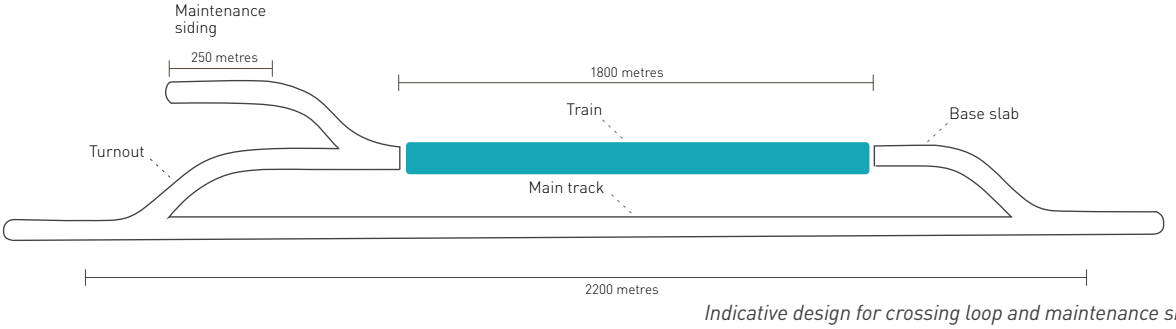
Proposed tunnel example

The tunnel has a bored diameter of approximately 12.2m and a finished internal diameter of approximately 10.8m. Tunnel depth varies between 50m and 220m (under the New England Highway) below ground level, with the ventilation shaft about 100m deep.

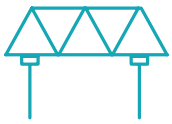




Crossing loops example



Indicative design for crossing loop and maintenance siding



Bridges

There are 13 new bridge and viaduct structures, totalling approximately 6.7 km in length, proposed for the Project, comprising:

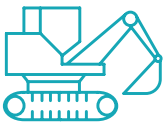
- two rail-over-waterway viaducts
- three rail-over-terrain-and-waterway viaducts
- four rail-over-terrain-road-and-waterway viaducts
- one rail-over-road-rail-and-waterway viaduct
- one rail-over-waterway bridge
- one road-over-rail-and-waterway bridge
- one road-over-rail bridge.

Drainage

Cross drainage has been incorporated where the alignment intercepts existing drainage line and water courses. Drainage structures will depend on the natural topography, rail formation levels, design and soil types.

Stockpile

Material excavated from the construction of the Toowoomba Range Tunnel which cannot be reused by the Project or other adjacent projects to be managed within the railway corridor, that is a stockpile at the Toowoomba Range Tunnel western portal.



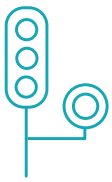
Construction

Construction is anticipated to commence in 2022 once the detail design is complete and all the necessary EIS approvals have been obtained. The target for construction completion is 2026. The construction completion date will be influenced by a number of variables, including the impacts of ongoing community consultation, ongoing design and development works.

Environmental treatments

Environmental matters which have been taken into consideration for the Project design include:

- fauna fencing and vegetative screening
- landscaping and habitat rehabilitation.



Ancillary works

Ancillary works are construction of associated rail infrastructure including:

- maintenance sidings
- signalling and communications
- signage and fencing
- services and utilities.

Construction hours

The construction Program will generally be based on the following worksite hours:

- tunnel construction activities are 24/7
- general construction activities
  - Monday to Friday – 6.30am to 6.00pm
  - Saturday – 6.30am to 1.00pm
  - no work planned on Sundays or public holidays.

Work may be required outside of the primary construction hours for key activities such as:

- the delivery of concrete, steel and other construction materials
- movements of heavy plant and materials
- spoil haulage
- arrival and departure of construction staff
- roadworks and works in rail corridors
- traffic control
- incident response including tow-trucks for light, medium and heavy vehicles.

There may be circumstances where work outside the above standard hours, including night works, will be required.

Construction water

Approximately 700 megalitres of water will be required for the Project. A water hierarchy has been developed with the majority of the water will be sourced from the existing water networks, including recycled water. Water seepage into the Toowoomba Range Tunnel will also be reused.

Construction workforce

A preliminary estimate of the workforce required to undertake the construction work, based on the nominated indicative program, for the Project is 596 full-time equivalents at peak (between weeks 56 and 57). The average number of full-time equivalent workforce onsite across the full construction period is anticipated to be approximately 264 personnel.

The size and composition of the construction workforce will vary depending on the construction activities being undertaken and the staging strategy adopted.

Construction and operation workforce will be partially locally sourced and accommodated in the region.

Commissioning

All construction works will be subject to Testing and Commissioning Plans. Inspection and Test Plans will be developed by the contractor and approved by ARTC.

Testing and commissioning (checking) of the rail line and communication/signalling systems will be undertaken to ensure that infrastructure is designed, installed and operating appropriately, this includes connections between the existing Queensland Rail and ARTC networks.

Commissioning of the trackworks will require completed Inspection and test plans, clearance reports, certification records, track geometry reports and as-built documentation.

The commissioning period will also be used for driver training and test trains.

Final testing and commissioning of the track and systems is programmed for approximately six months after completion of construction works.

Construction decommissioning

All construction sites, compounds and access routes will be returned to no worse than the existing condition, unless otherwise agreed with the relevant landholder.

Construction decommissioning will be undertaken progressively with the surface of all rehabilitated areas relieved of compaction (termed ripping or aeration) prior to rehabilitation.

Site reinstatement and rehabilitation will be undertaken progressively in accordance with the developed Environmental Management Plans (and relevant sub-plans) as sites become available.

Operation

The Project will be ready for operation once the adjoining Inland Rail Projects (Border to Gowrie and Helidon to Calvert) are complete. Depending on timing, this section of the Program may allow access for local traffic (i.e. access to the QR network) prior to full delivery of the Program.

The Project will be managed and maintained by the proponent; however, train services will be provided by a variety of operators. The hours of operation are anticipated to be 24-hours a day, seven days a week.

Operation activities will include:

- the use of the railway for freight purposes
- operation and maintenance of safety systems
- signalling
- general track and infrastructure maintenance.

Train control will be managed via ARTC's existing control centres. Train services will be provided by a variety of operators and will include a mix of grain, bulk freight and other general transport. The future use of the Project alignment by passenger trains would be dependent on the rail operators ensuring that the train configurations are suitable to use the alignment, including the current tunnel design, noting that the Project basis of the design is for freight services.

Train speeds will vary according to axle loads, track geometry, service type, train configuration and driver behaviour. The rail line has been designed for train design speeds ranging from 80 kilometres to a maximum of 115 kilometres per hour.

Once operational, about 33 train services per day are estimated. This may increase up to an average of 47 services per day in 2040.

Standard ARTC maintenance activities will be undertaken during operations. These activities will occur on a scheduled basis or in response to unplanned requirements, (e.g. maintenance following adverse weather events).

Decommissioning

The Project is expected to be operational for in excess of 100 years, so the decommissioning of the Project cannot be foreseen at this time and is therefore not considered as a Project phase in this EIS.

If the Project, or elements of it, were subject to plans for decommissioning, the works would be undertaken in accordance with a decommissioning plan, which would be developed in consultation with relevant stakeholders and regulatory authorities.

Sustainability

The Project provides opportunities to maximise resource efficiency, enhance local economic activity and mitigate potential environmental and social impacts.

Chapter 7 outlines ARTC's commitment to social, environmental and economic sustainability to deliver the best possible outcomes for communities and the natural environment.

Sustainability

ARTC developed the Inland Rail Environment and Sustainability Policy (ARTC, 2018), which outlines the sustainability objectives, targets and commitments for the Project. The commitments embedded in the Policy have guided our approach to sustainability and are supported by identified targets for Inland Rail projects as part of the program-wide Sustainability Strategy.

During the development of the design, sustainability initiatives were identified and incorporated into the Project. These opportunities and initiatives will contribute towards achieving an Infrastructure Sustainability (IS) rating for the Project against version 1.2 of the IS Rating Scheme, which is administered by the Infrastructure Sustainability Council of Australia (ISCA, 2018).

The Project's contribution will also form part of Inland Rail's target of achieving an 'Excellent' rating under the IS Rating Scheme. The sustainability initiatives that have been identified, documented and implemented include:

- advancing local, regional and national economies
- environmental protection
- maintaining respect for people, communities and valued places.

Want to know more?

See the following

- **Chapter 7: Sustainability (Binder 1)**
- **Appendix G: Corporate policies (Binder 6)**

> Inland Rail provides opportunities to maximise resource efficiency, enhance local economic activity and mitigate potential environmental and social impacts.

Land use and tenure

Land tenure within the Project is predominately freehold and Lands Lease, where using the existing West Moreton System rail corridor.

The Gowrie to Granchester future state transport corridor near Boundary Street, Gowrie Junction.

Chapter 8 assesses the Project's compatibility with, and potential impacts on, land use and tenure.

Land use

Land use in proximity to the Project predominantly comprises grazing land, together with other agricultural uses including cropping and irrigated seasonal horticulture. Other land uses include residential, minimal use areas (e.g. residual native vegetation) and services.

Notable land uses in proximity to the Project include recreational and commercial use areas as well as uses of State significance, such as:

- Wetalla Wastewater Treatment Plant
- Baillie Henderson Hospital
- Harlaxton Key Resource Area
- Withcott Quarry
- Withcott Seedlings
- Helidon Magazine Reserve.

The Project will potentially interact with 184 public and private utilities, including electrical, communication and water.

Between Gowrie and Helidon, excluding untenured land (such as waterways and road reserves), the Project traverses 151 land parcels, including 94 within the Toowoomba Regional Council Local Government Area (LGA) and 57 within Lockyer Valley Regional Council LGA. The Project also intersects 41 interests including easements, six strata parcels and two volumetric parcels associated with the Toowoomba Second Range Crossing pilot tunnel.

The Project traverses:

- 20 land parcels (13 per cent) associated with the existing West Moreton System rail corridor
- 82 land parcels (54 per cent) are located within the Gowrie to Grandchester future state transport corridor, including 10 land parcels associated with the West Moreton System
- 12 land parcels are required for construction purposes only
- 21 land parcels are entirely within the permanent disturbance footprint.

The proposed Toowoomba Range Tunnel passes approximately 120 metres beneath the Roma Brisbane Gas Pipeline.

The Project is located within one native title claim area. This claim, which is registered for the Yuggera Ugarapul People, is yet to be determined by the National Native Title Tribunal.

Want to know more?

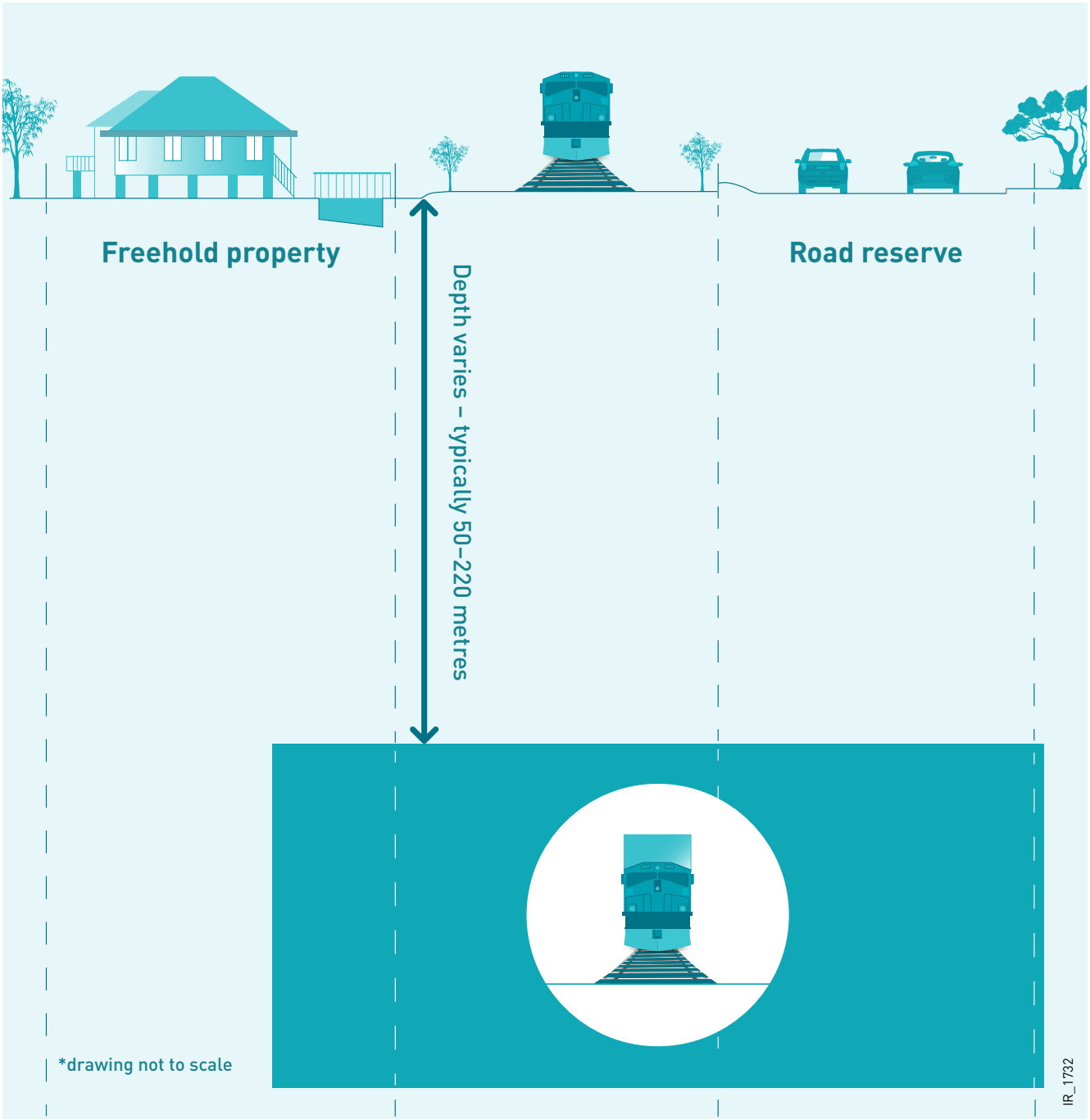
See the following:

- **Chapter 8: Land use and tenure (Binder 1)**
- **Appendix V: Impacted properties (Binder 18)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Volumetric resumption

There are no houses or buildings directly above the tunnel. 36 land parcels are subject to volumetric resumption, 28 of which are within the Gowrie to Grandchester future state transport corridor. Of these 28, 12 have been acquired.

The other 8 properties (7 freehold and 1 reserve) are subject to volumetric acquisition as a result of the provisional area around the tunnel (i.e. the tunnel is not directly below these properties).



Potential impacts

The construction and operation of the Project has the potential to result in adverse direct and permanent impacts to land use and tenure within the Project disturbance footprint, and indirect impacts on the landuse study area.

Key impacts

- Changes in tenure and loss of property.
- Disruption to land over which native title has not been extinguished or suppressed.
- Change in land use, including the sterilisation of land and disruption to existing practices.
- Impacts to accessibility within the land use study area, including impacts to the existing road network and to property access.
- Disruption to services and utilities.

Beneficial impacts

The Project is also likely to result in a number of benefits to land use, including:

- supporting future industries
- improving access to and from regional markets
- acting as a catalyst for development in the area.

Consultation with affected landholders, relevant stakeholders and communities has been key to obtaining an understanding of individual property operational arrangements in proximity to the Project.

Mitigation measures

Where possible, the Project has been positioned to align with existing road and rail corridors, property boundaries and the Gowrie to Grandchester future state transport corridor. This alignment will reduce the severance of land parcels and potential property impacts, particularly in relation to private access, services or agricultural operations.

Where impacts cannot be avoided, mitigation measures have been proposed. ARTC will undertake consultation with property owners and occupants, utility providers and resource holders to identify individual property mitigation measures and reduce the potential impacts to an acceptable and/or agreeable level.

Where land is temporarily required outside of the permanent disturbance footprint, the land will be rehabilitated in accordance with a rehabilitation strategy and the relevant landholder agreement.

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. This land will be dedicated as future railway land.

A Constructing Authority that has compulsory acquisition powers under the *Acquisition of Land Act 1967* QLD (AL Act) will undertake the remaining land acquisitions in accordance with the process under the AL Act.

The tenure activities will be undertaken in consultation with interest holders and in accordance with the AL Act processes. Partial or full parcel acquisition of a property and/or acquisitions for easements and licences will be determined on a case-by-case basis prior to 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.

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

Change in land tenure and loss of property

Where land is acquired by the AL Act, compensation will be able to be claimed by a person with an estate or interest in the land.

This occurs 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 at the time of resumption based on:

- 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).

Land resources

The existing environment, as well as potential risks arising from the disturbance and excavation of land and the disposal of soil, has been considered.

Lockyer Valley, from Katoomba Point lookout.

Chapter 9 identifies and assesses the risks to existing land resources and outlines appropriate mitigation measures.

Land resources assessment

The landscape from Gowrie approaching the Great Dividing Range (GDR) consists of a gentle incline before reaching a peak elevation of approximately 644.5m Australian Height Datum (AHD), as the alignment traverses under the New England Highway and Toowoomba Bypass at Mount Kynoch at a depth of approximately 200m. A steep drop (the Great Escarpment) in elevation occurs after the alignment passes the GDR to the east with periodic and isolated peaks featuring with reducing elevation as the alignment reaches Helidon. The lowest elevation for the rail alignment occurs at Lockyer Creek, 1km to the west of Helidon, with an approximate elevation of 148.5m AHD.

Eight geological layers underlie the Project, which reflect the history and topography of the area.

The eastern tunnel portal is located in area where colluvium is a common feature, which could be prone to future landslides. The cut and cover section of the eastern portal will include contiguous bored pile walls and a roof slab.

Want to know more?

See the following:

- **Chapter 9: Land resources (Binder 2)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix X: EMR Search certificates and laboratory certificates (Binder 20)**
- **Appendix W: Geotechnical (Binder 20)**
- **Appendix F: Proponent commitments (Binder 6)**

An assessment of contaminated land identified potential sources of contamination in the vicinity of the Project, including agricultural activities, quarries, landfilling and waste disposal, existing and former rail corridors, road crossings, housing/sheds and unknown fill material.

A number of properties within the Project disturbance footprint are listed on the Environmental Management Register (EMR). This includes the Toowoomba Waste Management Centre and a number of land parcels associated with the West Moreton System. Some of the land parcels associated with the existing and former rail corridor may not be listed on the EMR but have the potential for contamination due to similar historic land use.

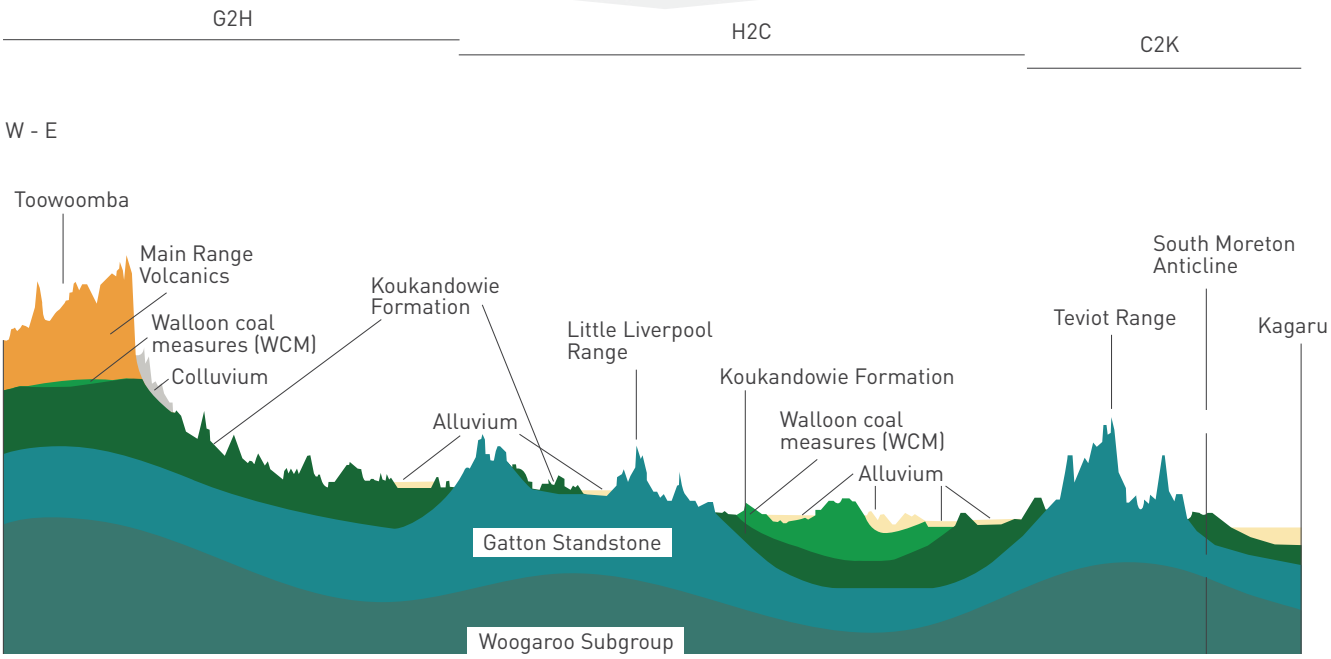
The Department of Defence online mapping for unexploded ordnances (UXOs) identified two areas where land has been used for military training but not confirmed as a site where live firing was undertaken. The Project also intersects a portion of the former Mount Lofty Rifle Range.

Potential impacts

- A permanent change in landform and topography in catchments, influencing their ability to retain and move water.
- Loss of natural soil resources including Class A and Class B agricultural land, and Important Agricultural Areas.
- Unexpected encounter of acid sulfate soil or acid rock.
- Periods of change to the physical and chemical properties of soil.
- Feral animal impedance.
- Increased salinity of the landscape causing water table salting, irrigation water salting and erosion scalding.
- Disturbance of contaminated land (soil and groundwater).
- Project activities leading to the generation of new contaminated land (soil and groundwater).

Mitigation measures

- Surveying of contaminated and hazardous materials prior to the demolition of structures.
- Implementing the Contaminated Land Management Strategy and Contaminated Site Management Plan.
- Preparing an Erosion and Sediment Control Plan to mitigate issues of soil and land conservation.
- Implementing salinity management principles and rehabilitation in accordance with the Reinstatement and Rehabilitation Plan.
- Avoiding fragmentation and sterilisation of land.



Landscape and visual amenity

Landscape and visual assessments explored the potential aesthetic impacts of removing vegetation, creating new bridge and viaduct structures and cuttings.

A coal train at the existing Gowrie Junction level crossing.

Chapter 10 assesses the existing environment and potential landscape and visual impacts of the Project, as well as proposed mitigation measures.

Landscape description and assessment

The landscape surrounding the Project is highly varied, comprising irrigated agriculture and dry croplands and pastures. The landscape is interspersed with a network of creeks through the Toowoomba Plateau and densely vegetated landscapes associated with the Great Dividing Range.

A Landscape and Visual Impact Assessment (LVIA) was undertaken in accordance with the Project's ToR and relevant standards and guidelines. The assessment describes the existing landscape, identifies key Project risks to the landscape and visual values, evaluates the significance of any impacts on landscape, views and visual receptors and outlines proposed mitigation and management measures.

Twenty representative viewpoints were selected and assessed for both the construction and operation phases of the Project.

The assessment also considered lighting, though there are no significant light sources associated with the Project. Light sources are associated with trains, the tunnel infrastructure and road lighting.

Want to know more?

See the following:

- **Chapter 10: Landscape and visual amenity (Binder 2)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix H: Landscape and impact assessment (Binder 7)**
- **Appendix F: Proponent commitments (Binder 6)**

The West Moreton System rail corridor and Toowoomba Bypass are significant linear features present in parts of the Project study area.

Potential landscape and visual impacts

The key landscape and visual impacts of the Project relate to the removal of vegetation, the raising of embankments and the creation of new rail bridges and viaducts up to 45 metres high.

- Eight landscape character types were identified throughout the study area. The most highly impacted is the Forested Uplands, due, in part, to the Project being primarily situated in this landscape and the landscape itself being the dominant type in the study area.
- Impacts of up to moderate significance relate to direct impacts of cuts and embankments on the rural landscape and the settling of landscape areas.
- For parts of the study area there are relatively few visual receptors with the landscape comprising isolated farmsteads set on large private farms. However, the landscape around Toowoomba has numerous settlements located within the potential viewshed of the Project.
- Visual impacts are typically contained by the presence of vegetation, including along creek lines, and localised undulations in landform. Visual impacts are also contained through the use of a tunnel for a significant length of the Project. Elevated and panoramic views over the Project are also available from the edge of Toowoomba and the Forested Uplands associated with the Toowoomba Range, including from lookouts and walking trails around Picnic Point and from parts of the Toowoomba Bypass.
- During construction, the greatest visual impact identified relates to the three viewpoints from Katoomba Point Lookout looking southeast, Prince Henry Heights looking north and Picnic Point Lookout looking northeast.
- Visual impacts during operation relate to elevated views from significant locations over the wider Project and/or viewpoints situated in close proximity to the Project. Other visual impacts during both construction and operation typically relate to views experienced by relatively small numbers of homesteads or with a lower magnitude of change to the existing view
- For lighting impacts, the most significant effect during construction is up to Moderate at the Boundary Street bridge, looking west over the Toowoomba Bypass. The greatest impact identified during operation is up to Low significance.

Mitigation measures

Landscaping and rehabilitation of disturbed areas will be undertaken in accordance with the Project's landscape design, Reinstatement and Rehabilitation Plan and the Landscape and Rehabilitation Management Plan, which will define performance criteria required from rehabilitation.

Visual representations – Before

Before

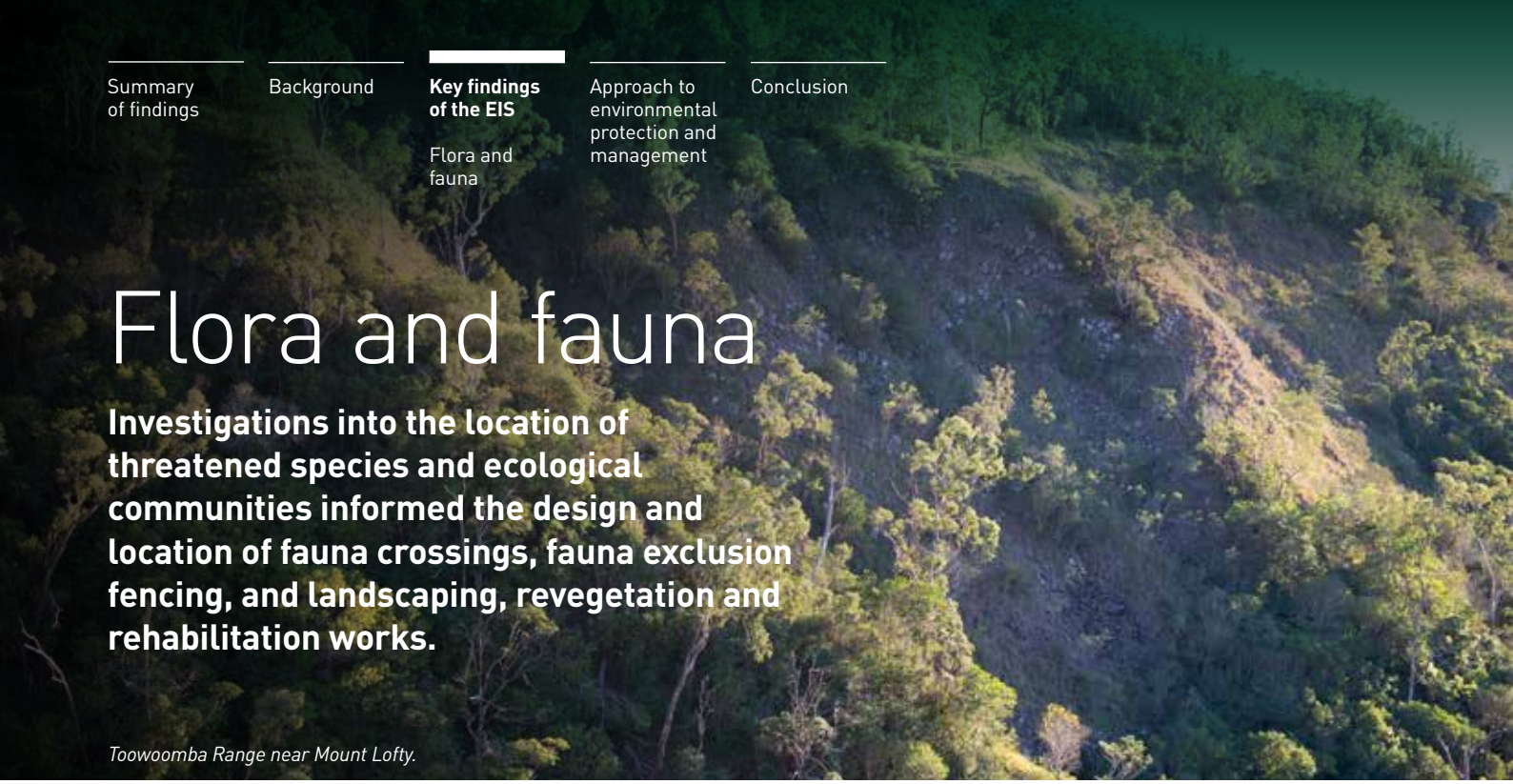
Viewpoint 5 – near 14 Junction Street, Gowrie, looking east towards western tunnel portal

Viewpoint 14 – looking north from Katoomba Point Lookout on Prince Henry Drive, Prince Henry Heights

Viewpoint 18 – Murphys Creek Road near Toowoomba Bypass, looking north

Visual representations – Proposed

Proposed



Flora and fauna

Investigations into the location of threatened species and ecological communities informed the design and location of fauna crossings, fauna exclusion fencing, and landscaping, revegetation and rehabilitation works.

Toowoomba Range near Mount Lofty.

Chapter 11 describes the impact of the Project on native flora and fauna and outlines the steps taken to assess, understand and mitigate impacts.

Want to know more?

See the following:

- **Chapter 11: Flora and fauna (Binder 2)**
- **Appendix I: Terrestrial and aquatic ecology technical report (Binder 7 and 8)**
- **Appendix J: Matters of national environmental significance technical report (Binders 9 and 10)**
- **Appendix Y: ARTC offset strategy (Binder 20)**
- **Appendix F: Proponent commitments (Binder 6)**

The Project disturbance footprint

The Project is situated within the South-East Queensland and Brigalow Belt bioregions, which have experienced a long history of human disturbance as a result of agricultural practices, urban development and resource development. The Project disturbance footprint intersects a variety of landscapes from the agricultural areas on top of the Toowoomba Plateau to the forested foothills of the Great Dividing Range.

During the surveys works, 274 plant species were identified within the ecology study area during Project EIS field assessments. This included a total of 202 (74 per cent) native species and 72 (26 per cent) non-native species. Of these species, one species is listed as threatened under the provisions of the EPBC Act and the N*ature Conservation Act 1992* (Qld) (NC Act), with three other threatened plant species listed under the NC Act.

During the surveys works, 102 fauna species were detected, including 99 (97 per cent) native species and three (3 per cent) non-native species, one of which is a restricted matter.

Only two threatened fauna species were detected during field surveys, although there was evidence of habitats for a number of other threatened fauna species found during the field surveys.

The landscapes and vegetation communities within the study area include areas of national and state significance.

These sensitive environmental receptors were grouped into high, moderate and low sensitivity categories based on the following factors:

- conservation status
- exposure to threatening processes
- resilience and representation in the broader landscape.

> The draft EIS determined the Project will have a potential significant residual impact on some flora and fauna species in the study area and outlined a series of mitigation measures and offsets to ensure these impacts are managed and minimised.

Potential impacts

The construction phase will have the greatest potential impact on ecological receptors due to:

- habitat loss and degradation from vegetation clearing and removal
- edge effects
- habitat fragmentation
- barrier effects
- aquatic habitat degradation
- tunnelling activities.

Assessment of sensitive environmental receptors against Commonwealth or State significant impact assessment criteria, indicates the following species will be subject to potential 'significant residual impacts as a result of the Project':

Matters of National Environmental Significance (MNES) include:

- Flora: Brush sophora *(Sophora fraseri)*
- Fauna: Collared delma *(Delma torquata)*; Koala *(Phascolarctos cinereus)*; Spotted-tail quoll *(Dasyurus maculatus maculatus)*; Red goshawk *(Erythrotriorchis radiatus)*; Swift parrot *(Lathamus discolor)*; Grey-headed flying-fox *(Pteropus poliocephalus)*; Australian painted snipe *(Rostratula australis)*; Black-breasted button-quail *(Turnix melanogaster)*.

An assessment of prescribed Matters of State Environmental Significance (MSES) was undertaken in accordance with the MSES significant impact criteria. The Project is likely to have a significant impact on remnant vegetation classified as endangered or of concern or within a defined distance of a watercourse, wildlife and essential habitat and connectivity.

A significant impact may also occur to protected wildlife habitat for the following species: Glossy-black cockatoo *(Calyptorhynchus lathami)*; Powerful owl *(Ninox strenua)*; Bailey's cypress pine *(Callitris baileyi)*; Finger panic grass *(Digitaria porrecta)*; Slender milkvine *(Marsdenia coronata)*.

> Ecological surveys to verify ecological values and the habitat mapping are ongoing and will continue until construction commences.

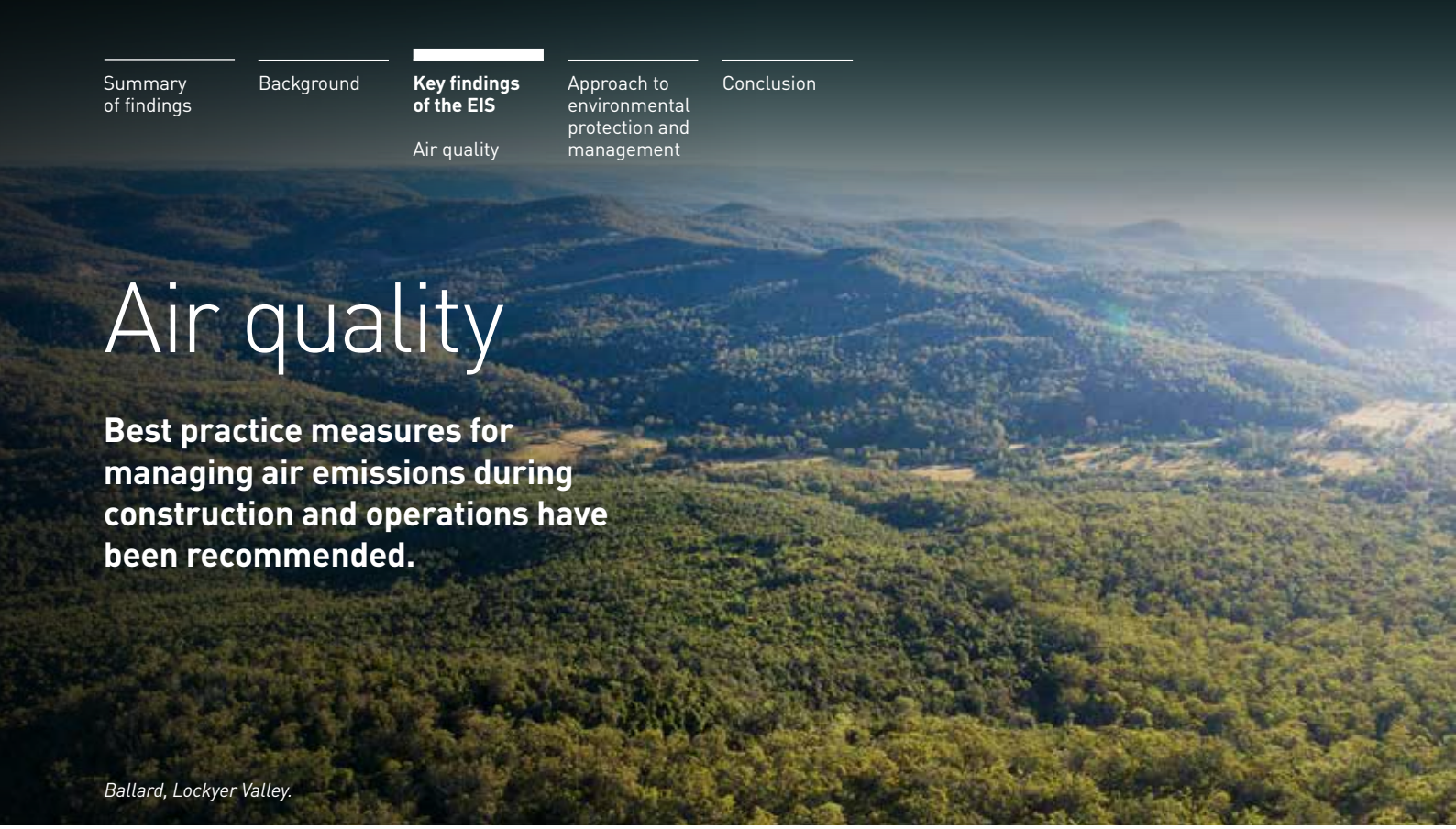
Mitigation measures

The design incorporates a tunnel and over 6 km of viaducts which will assist in maintaining connectivity during construction and operations.

- Developing and implementing the flora and fauna sub-plan within the Construction Environmental Management Plan.
- Developing and implementing the Reinstatement and Rehabilitation Plan and the Landscape and Rehabilitation Management Plan.
- Flora and fauna survey to verify previous surveys and assessments, refine potential offset calculations, inform micro-siting of infrastructure, support secondary approvals and establish baseline conditions against which relevant outcomes of the Reinstatement and Rehabilitation Plan can be compared.
- Establishing the requirements for rehabilitation of disturbed areas for habitat recreation, landscaping and stabilisation, including riparian zones, through landscape design. This design informs the development of the Reinstatement and Rehabilitation Plan and the Landscape Management Plan.
- Developing a post-construction MNES Monitoring Plan in consultation with stakeholders. For the threatened ecological community or other MNES, the post-construction MNES Monitoring Plan will define:
  - habitat location
  - reference condition
  - assessment framework
  - infrastructure elements (e.g. erosion and sediment control devices, fauna crossing structures)
  - corrective actions
  - completion criteria
  - monitoring timeframes.

Offsets

- **Provisions of offsets for the MNES with potential significant residual impacts** will be required under the EPBC Act Offsets policy. For MSES, impacts to prescribed matters that are considered to constitute significant residual impacts will need to be offset consistent with the *Environmental Offsets Act 2014* (QLD).
- **ARTC's Environmental Offset Delivery Strategy – QLD** will inform the development of offset delivery components. A Detailed Environmental Offset Delivery Plan and Offset Area Management Plan will be developed and implemented by ARTC prior to construction commencement.



Air quality

Best practice measures for managing air emissions during construction and operations have been recommended.

Ballard, Lockyer Valley.

Chapter 12 provides the air quality impact assessment for construction, commissioning and operational phases of the Project.

Want to know more?

See the following:

- **Chapter 12: Air quality (Binder 3)**
- **Appendix K: Air quality technical teport (Binder 11)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Air quality assessments

An air quality impact assessment was undertaken to assess air quality emissions from the Project during construction, commissioning, and operation.

As part of the assessment over 2,800 sensitive receptors were identified with the majority of these receptors residential dwellings.

Overall, the operation of the Project is not expected to adversely impact existing environmental values, including human health and wellbeing; the aesthetic environment; health and biodiversity of ecosystems; and agricultural uses.

Potential impact – construction

Emissions during construction were assessed qualitatively through a review of anticipated construction activities.

During construction, dust sources will be variable and transitory and the potential for impacts will depend on the proximity of sensitive receptors.

The results of the qualitative air quality risk assessment determined that, without mitigation, there is a potential 'high risk' of human health impacts from the construction of the Project and a 'medium risk' of impacts from potential dust deposits.

By implementing the proposed mitigation measures, the impacts to air quality from both dust deposits and human health are expected to be reduced to acceptable levels.

Potential impacts – operation

An assessment was undertaken for air quality impacts during the operational phase of the Project (2040, potential worst-case). The quantitative assessment considered existing air quality as well as dispersion modelling of emissions. The assessment considered trains travelling along the Project alignment, trains idling at crossing loops and emissions from the ventilation of the Toowoomba Range Tunnel, Toowoomba Bypass and Harlaxton Quarry.

The predicted air quality concentrations and dust deposition were compared to Project air quality goals adapted from national and state legislation, guidelines and policies.

The assessment of potential operational phase impacts determined that compliance is predicted for all pollutants at all sensitive receptors outside the Project disturbance footprint, with and without veneering for typical and peak operations.

Modelling indicates elevated concentrations of pollutants near the eastern and western portals of the Toowoomba Range Tunnel. Potential impacts are predicted to be localised in nature.

Investigations into the deposition of dust emissions at sensitive receptor locations showed that predicted pollutant water concentrations would be compliant with the Australian Drinking Water Guidelines and significantly lower than the adopted assessment criteria.

Predicted dust deposition levels are also well below the levels that have been shown to impact crops and livestock; therefore, the impact of dust deposition on agricultural uses within the air quality study area is not anticipated to be significant.

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Predicted dust deposition levels are also well below the levels that have been shown to impact crops and livestock; therefore, the impact of dust deposition on agricultural uses within the air quality study area is not anticipated to be significant.

Mitigation measures

Proposed mitigation measures for the Project's construction phase, incorporated into the Construction Environmental Management Plan, include:

- water sprays to reduce dust emissions from excavation and disturbance of soil and materials, vehicles travelling on unsealed roads, and loading and unloading materials
- timely rehabilitation of exposed areas, in accordance with the Reinstatement and Rehabilitation Plan
- separation distances for fuel storage tanks from sensitive receptors.

During the operations, compliance for all pollutants is predicted.

For coal trains, veneering involves the application of a biodegradable, non-toxic, binding agent onto the loaded wagon coal surface, which forms a crust over the coal load and minimises coal dust lift off when exposed to air passing over the surface in transit.

Veneering is a management measure currently applied to trains that use the Bowen Basin coal rail lines and the West Moreton System (South West Supply Chain).

> Construction sources and operational air emissions have considered impacts to health and wellbeing, the health and biodiversity of ecosystems, agriculture uses and the aesthetics of the environment.

Surface water and hydrology

Best practice flood risk management, including sensitivity testing, has been applied in developing the Project design.

The existing railway corridor, looking east near Draper Road, Kingsthorpe.

Chapter 13 outlines matters relating to surface water and hydrology as a result of the construction and operation of the Project.

Want to know more?

See the following:

- **Chapter 13: Surface water and hydrology (Binder 3)**
- **Appendix L: Surface water (Binder 12)**
- **Appendix M: Hydrology and flooding (Binder 12)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Affected areas

The Project traverses two sub-catchments of the Lockyer Creek catchment and one sub-catchment of the Condamine River Basin and is expected to cross the floodplain of four major watercourses: Gowrie Creek, Oaky Creek, Six Mile Creek and Lockyer Creek.

The Project design provides for bridges and viaducts across Gowrie Creek, Oaky Creek, Six Mile Creek and Lockyer Creek, reducing the extent of infrastructure within the associated floodplains, riparians zones and below the high-water banks.

Surface water

Existing surface water conditions and environmental values were assessed via a desktop study of publicly available data and supported by contemporary field water quality samples (with seasonal variation).

Hydrology

A hydrology and flooding assessment was undertaken by reviewing existing assessments, consultation with local landholders and councils, modelling the environment without the Project (base case), verifying and calibrating the base case model, and predicting the environment with the Project (developed case). The results were then compared to the adopted flood impact objectives, which were also used to guide the design.

Independent advisory body

The Australian and Queensland Governments have established an independent international panel of experts for flood studies to provide advice on the flood models and designs developed by ARTC in Queensland.

As an advisory body to government, the panel is independent of ARTC in respect of the development, public consultation and approvals for the Inland Rail EIS process. Relevant submissions received from public notification of the draft EIS will be provided to the Panel for consideration as part of its review.

Information on the Panel may be viewed at: **tmr.QLD.gov.au/projects/inland-rail/independent-panel-of-experts-for-flood-studies-in-queensland**

Potential impacts

The construction and operation of the Project has the potential to impact on water quality receptors and/or flood sensitive receptors through changes in or to:

- debris
- receiving water quality and hydrology
- salinity
- erosion and sedimentation
- contaminants
- existing hydrology (flood regime) including:
  - changes in peak water levels and associated areas of inundation
  - concentration of flows
  - redirection of flows or changes to flood flow patterns
  - increased velocities leading to localised scour and erosion
- changes to duration of inundation or increased depth of water.

Potential impacts may also be expected from inadequate rehabilitation processes.

Mitigation measures

- Water treatment plants are proposed to support construction and operation of the Project, with the water to be resued by the Protect or released to the surrounding environment.
- The design improves flood resilience of the local road network (i.e. Gowrie Junction Road road over rail bridge) and parts of rail network
- Developing and implementing the Construction Environmental Management Plan, an Erosion and Sediment Control Plan, a Reinstatement and Rehabilitation Plan and a construction water quality monitoring program.
- Developing a surface water monitoring framework to identify monitoring locations at discharge points and selected locations in watercourses close to where works are being undertaken. The surface water monitoring framework will outline water quality objectives, standards and parameters to measure any changes to water quality.
- Minimising the Project's temporary disturbance footprint, while still allowing for sufficient erosion and sediment control measures.
- Developing a tunnel-dewatering treatment strategy to prevent and minimise adverse discharge impacts to aquatic environment.

Measures associated with hydrology impacts:

- Designing the Project to achieve the hydraulic design criteria including 1% AEP flood immunity to rail formation level, while minimising unacceptable impacts on the existing flooding and drainage regime.
- Locating and sizing bridge and culvert structures to avoid increases in peak water levels, velocities or duration of inundation, and changes in flood flow distribution.
- Ensuring the predicted impacts on the flood regime generally comply with the Project's flood impact objectives.
- Determining acceptable localised impacts on a case-by-case basis during detailed design, in consultation with stakeholders and landholders using the project flood impact objectives as a guide.

In future stages, **ARTC will continue to work with:**

- **landholders concerned** with hydrology and flooding
- **directly impacted** landholders affected by the alignment
- **local governments,** State departments and local flood specialists.

Direct interaction and engagement will continue with all potentially impacted stakeholders and landholders.

The adopted project flood impact objectives will be used as guidance. This will take into account flood-sensitive receptors and land use within the floodplains.

Groundwater

The groundwater assessment for the Project included a desktop review, geotechnical and hydrogeological site investigations, assessment of potential short and long-term impacts and an assessment of the significance of these impacts.

Ballard, Lockyer Valley.

Chapter 14 explores the existing hydrogeological environment, the potential impacts and proposed mitigation measures.

Want to know more?

See the following:

- **Chapter 14: Groundwater (Binder 3)**
- **Appendix N: Groundwater technical report (Binder 13)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Groundwater assessment

The groundwater study area is located within the Clarence–Moreton bioregion assessment area. Strong evidence of interaction between groundwater and surface water has been reported based on an assessment of groundwater and surface water quality, streamflow time-series data, groundwater hydrographs and streambed elevation.

Three water plans provide a framework for the management of groundwater resources within this area.

The water table is typically a subdued version of topography, with the depth to groundwater increasing beneath topographic highs (for example the Great Dividing Range and Great Escarpment). Shallower groundwater occurs in lower lying reaches (such as close to surface water drainage lines). The presence of shallow aquitards, surface water features and groundwater extraction will affect depths to local groundwater.

The construction and operation of the Project has the potential to impact on groundwater and groundwater uses from:

- loss of, or damage to, registered and unregistered bores
- water licences on land acquired for the Project automatically expiring and needing to be reinstated
- changes to groundwater level and flowpaths from embankment loading
- reduced groundwater levels due to seepage into cuttings
- changes to groundwater quality from spills and uncontrolled releases, or from acid rock drainage.

Groundwater is water found in between rock, soil and sediment under the land's surface.

Potential impacts

Predictive groundwater modelling was undertaken for the Toowoomba Range Tunnel for the construction and operational phases. The model was used to estimate preliminary drawdown and inflows for the aquifer units associated with the Main Range Volcanics (MRV), Koukandowie Formation (Marburg Subgroup) and colluvium. The construction of the Toowoomba Range Tunnel will result in an estimated inflow of 1,700 mega litres (ML) and resultant groundwater drawdown. Water authorisations (e.g. water permit) under the relevant water plans will need to be soured for these groundwater inflows.

The Toowoomba Range Tunnel is an undrained design and once construction is complete, the extent of groundwater inflow will be significantly reduced, about 10 ML/year predominantly from the Koukandowie Formation aquifers. Groundwater modelling, however, predicted that that the long-term groundwater inflows at the western tunnel portal, which is a drained design, will be up to 84.5 ML/year. There are no bores within the Koukandowie Formation within the modelled drawdown extent for this aquifer type. The potential impacts of the Project on groundwater levels, flow and quality were identified and a significance assessment carried out.

Key findings include:

- a moderate residual significance risk for the potential of reduced groundwater levels to impact groundwater users, due to the Toowoomba Range Tunnel and associated cuts and portals
- a moderate residual significance risk during the construction phase for potential contamination or degradation of groundwater quality, including from spills and uncontrolled releases, water mixtures and emulsions from washdown areas, and wastewater from construction sites
- low residual significance risks for all other potential impacts, including loss of registered bores due to destruction or loss of access, changes to groundwater levels due to loading from embankments (i.e. upstream mounding and damming, and downstream groundwater level reductions), acid rock drainage from cuts and vegetation removal.

Mitigation measures

- Ground-truthing of Groundwater Dependent Ecosystems is required to confirm potential presence within predicted drawdown extents.
- Continued baseline groundwater level monitoring will confirm groundwater levels at the tunnel and inform additional investigations and modelling.
- Proposed additional geotechnical works, including investigation and monitoring of groundwater levels at deep cuttings, Toowoomba Range Tunnel and areas of foundation treatment in low lying floodplain areas.
- A groundwater management and monitoring program, including a landholder bore survey, will be developed to provide on-going assessment of the potential impacts. Groundwater monitoring will be conducted before, during and after the completion of proposed construction works.
- The program will set out groundwater sampling locations, frequency of sampling and the analytical program. Roles and responsibilities will be set out to clearly establish the review and approval process that will be used to evaluate the data collected as part of the monitoring program.

ARTC is committed to minimising potential impacts to existing water users and groundwater resources. ARTC has included specific measures to rectify any impairments to existing bores due to the Project.

Registered bores

Existing registered bores identified within the groundwater study area indicate there are 202 registered bores comprising 30 water supply bores with the remaining 172 bores having an undefined use. No bores are used for petroleum or gas exploration. The main purpose is irrigation (90%), although there is a large allocation (3,800 megalitres) for urban uses.

Noise and vibration

Studies have been undertaken to assess the potential impacts of noise and vibration during construction and operation within the Project area.

The existing level crossing at Gowrie Junction.

Chapter 15 addresses the impacts of noise and vibration from the construction and operation of the Project.

Noise and vibration assessment

Construction and operation of the Project has the potential to be a source of noise and vibration emissions within the local environment. We have undertaken substantial noise and vibration impact assessments and proposed measures to mitigate these impacts.

Long- and short-term ambient noise monitoring was conducted at 10 locations within the study area.

- Close to 4,000 existing sensitive receptors were included in the noise assessment.

Want to know more?

See the following:

- **Chapter 15: Noise and vibration (Binder 3)**
- **Appendix O: Construction noise and vibration (Binders 13 and 14)**
- **Appendix P: Operational railway noise and vibration (Binder 15)**
- **Chapter 23: Draft outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

> Triggers were established to determine acceptable levels of noise and vibration from construction and operational activities at existing 'sensitive receptors'.

Examples of sensitive noise receptors

- residential dwellings
- hospitals
- places of worship
- schools
- childcare centres
- open space – passive use (e.g. parkland, bush reserves)
- open space – active use (e.g. sports field, golf courses)

Potential impacts during construction

The construction noise and vibration assessment identified the potential for the established criteria to be exceeded at various sensitive receptors while construction activities are conducted nearby.

Baseline noise measurements were used to determine applicable construction noise criteria under the *Transport Noise Management Code of Practice Volume 2: Construction Noise and Vibration* (CoP Vol 2) (DTMR, 2015a).

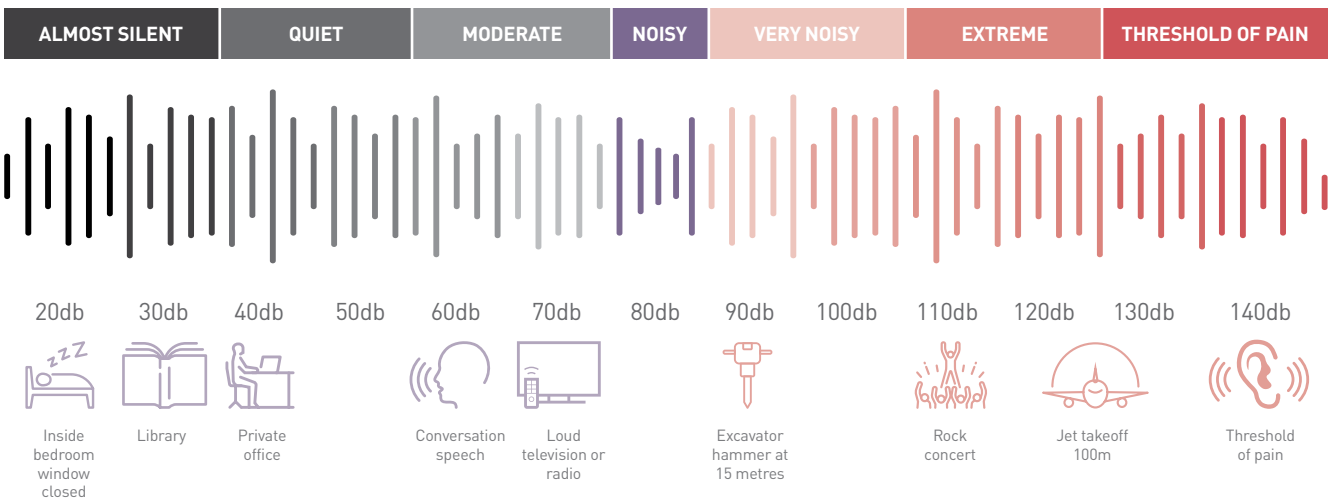
The number of sensitive receptors affected at any one time and the duration of the impact depends on the type of works and the progression of works along the alignment.

Reasonable worst-case construction scenarios that may result in potential noise impacts include:

- construction noise, such as earthworks, during non-standard work hours
- construction vibration during non-standard hours
- construction traffic
- ground-borne noise from the operation of the tunnel boring machine, which will operate 24/7, is predicted to exceed criteria at a number of receptors above and adjacent the tunnel.

People's perception of noise is strongly influenced by their environment. A noise level that is perceived as loud in one situation may appear quiet in another.

Noise level comparisons



Mitigation measures during construction

Limiting intensive construction to standard work hours would be expected to significantly reduce the number of sensitive receptors impacted by construction of the Project.

During standard hours, less stringent construction noise and vibration criteria apply. Restricting works to these hours, consistent with Proponent Commitments and the Draft Outline Environmental Management Plan, reduces the number of impacted receptors by approximately 40 per cent for drainage, rail and road civil works, up to 65 per cent for site setup, laydown and structures, and 20 per cent for earthworks.

Construction progress and planned activities will be regularly communicated to local residents and stakeholders, particularly when noisy or vibration-generating activities are scheduled, such as vibratory compaction and piling. If required, additional mitigation measures will be investigated and implemented in consultation with affected sensitive receptors.

Where further mitigation measures are not practical or reasonable, residual impacts will need to be managed. The management of residual impacts will be undertaken in consultation with the community and affected residents. Residual construction noise impacts present after the application of mitigation will be temporary and will cease once construction finishes. These residual impacts will be managed through:

- temporary relocation of affected occupants
- respite periods
- architectural treatments.

The bridges and viaducts are reinforced concrete structures with ballasted trackform. Potential vibration would be constrained to the immediate structure, which would be within the proposed rail corridor area. Regenerated noise issues beyond the rail corridor, identified an offset of 50m from the outer rail, are not expected to result in a cumulative increase to the dominant airborne noise component.

> Operational fixed infrastructure (tunnel ventilation system) noise is predicted to meet the *Environmental Protection (Noise) Policy 2019* acoustic quality objectives at all sensitive receptors.

Operational noise and vibration

During the Project operational phase, rail freight will be a potential source of noise and vibration that may impact existing sensitive receptors and the environment surrounding the alignment. The daily pass-by of trains idling at crossing loops were considered as sources of noise, along with the operation of fixed rail infrastructure associated with the operation of the Toowoomba Range Tunnel.

The predicted noise levels were assessed against railway noise management criteria adopted by ARTC for application on the Project and across Inland Rail – these trigger levels are generally more stringent than the railway noise assessment criteria from Queensland regulatory guidelines.

The assessment considered airborne noise and ground-borne noise and vibration, including from within the Toowoomba Range Tunnel and viaducts for typical daily train movements at the commencement of operations (2027) and future design year (2040).

- **Airborne noise**

  Analysis and modelling have determined railway noise criteria will be met at most of the identified sensitive receptors and on the adjacent West Moreton System. For year 2027 operations, 32 identified sensitive receptors (including the Gowrie State School), where predicted noise levels were above the adopted trigger levels, a review of measures to reduce noise levels was undertaken. Modeling predicts an additional receptor to be impacted in 2040. The reasonable and practical approach to noise mitigation for the Project is expected to be at-property treatments. The specifics of treatments will be determined by ARTC on a case-by-case basis and will consider received railway noise levels, pre-existing condition of buildings, property construction and design, engineering feasibility, cost, and consultation with affected landholders.

- **Ground-borne noise and vibration**

  Movement of trains through the Toowoomba Range Tunnel will induce vibration of the track system and tunnel structure. This can propagate into the surrounding soil and potentially cause noticeable vibration and noise. Predicted ground-borne noise and ground-borne vibration from railway operations within the Toowoomba Range Tunnel will not trigger the ground-borne noise and vibration assessment criteria at the nearest existing sensitive receptors (e.g. residential dwellings at Mount Kynoch). On this basis, the assessment did not identify a need for specific vibration treatments beyond the highly resilient trackform proposed for slab track and resilient matting for retention of ballast on bridge and elevated track sections.

  Noise and vibration from railway operations will continue to be assessed during future phases of the Project to verify the outcomes of this assessment.

Operational road traffic noise

Assessment of road traffic noise impacts from the eight road segments considered the increase in traffic flows and relative distance to the nearest sensitive receptors for each adopted road segment.

The proposed new roads: Morris Road, Gowrie Junction Road, Paulsens Road and Old Homebush Road, may result in potential exceedances at nearby existing sensitive receptors of the road traffic noise criteria for proposed new roads. Specific measures to mitigate operational road traffic noise include:

- realigning these road segments during detailed design to locate them further from noise sensitive receptors
- reducing speed limits along these road segments
- treating pavement surface
- acoustic façade treatments to affected sensitive receptors
- noise barrier (e.g. a landscaped earth mound and/or a noise fence).

Noise and vibration management

Noise and vibration from railway operations will continue to be assessed during the future phases of the Project to verify the outcomes of this assessment. During the initial commencement of railway operations on the Project, this will confirm noise and vibration levels at sensitive receptors and the requirements for reasonable and practicable mitigation measures.

Noise Mitigation

Mitigation measures may include a range of options such as at-property treatment to reduce the intrusion of railway noise, measures to reduce railway noise at its source, or measures to prevent the noise from travelling outside of the railway corridor. The specifics of treatments will be determined by ARTC on a case-by-case basis and will consider received railway noise levels, pre-existing condition of buildings, property construction and design, engineering feasibility, cost, and consultation with affected landholders.

1 Control of noise and vibration at source

Specific measures incorporated in the design of the rail infrastructure to control noise and vibration emissions.

2 Control the pathway for noise to reach the receptors

Includes options such as rail noise barriers and utilising the civic earthworks to screen noise emissions.

3 Control of noise impacts at the receptors

Includes architectural treatment for noise affected properties and upgrading existing property fencing.

Strategy based on reasonable and practicable approach (DTMR, 2019)

Reasonable:

- community preferences; cost factors; benefits provided; existing/future levels

Practicable:

- conventional; readily available; tested technology; build/maintenance
- considerations (environmental, safety, engineering)

- For operational railway noise, many of the sensitive receptors are isolated and the predicted noise levels trigger the assessment criteria by less than 5 dBA (decibels) at the majority of sensitive receptors.
- Operational noise and vibration verification works will be undertaken post-commissioning.

Works continue during detailed design:

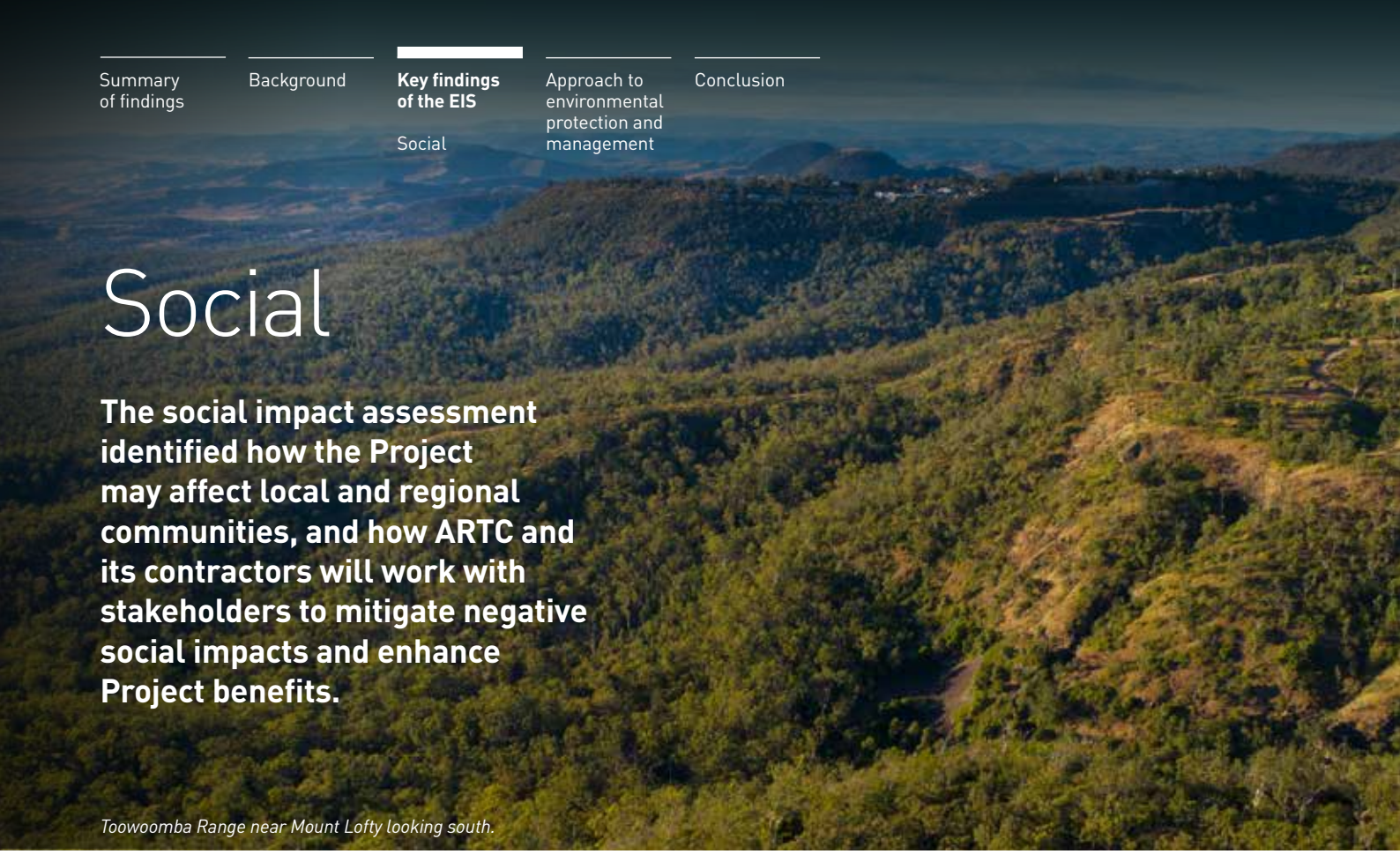
- refinement of predictions
- internal noise levels
- agreement on options/measures/approach.

Works continue beyond commissioning:

- verification, validation and compliance
- resolution of issues (current, emerging)
- addressing problems, managing legacy.

Social

The social impact assessment identified how the Project may affect local and regional communities, and how ARTC and its contractors will work with stakeholders to mitigate negative social impacts and enhance Project benefits.



Toowoomba Range near Mount Lofty looking south.

Chapter 16 explores the social benefits, opportunities and potential impacts throughout the Project life-cycle.

Want to know more?

See the following:

- **Chapter 16: Social (Binder 4)**
- **Appendix Q: Social Impact Assessment (Binder 16)**
- **Appendix F: Proponent commitments (Binder 6)**

Impact management

The social impact assessment drew on the results of ARTC's stakeholder engagement processes. Stakeholders included directly affected and nearby landholders, traditional custodians, government agencies, businesses, and community, environmental and economic groups.

Engagement undertaken for the SIA indicates that community members enjoy the following attributes that contribute to their quality of life:

- a rural or semi-rural lifestyle, with access to services in Toowoomba
- agriculture as a cornerstone of local communities, with tourism based in natural and rural community settings also important
- relationships to land and the natural elements of place, including flora and fauna
- the rural landscape, characterised by agricultural character and the topography of mountains and valleys
- close-knit communities, with strong social networks and mutual reliance between neighbours.

Consultation indicates that severe construction fatigue is evident, particularly in the communities of Gowrie Junction/Gowrie/Kingsthorpe and in the Postmans Ridge/Murphys Creek community, which is also still coping with legacy issues associated with the 2011 flood. Some residents are reported to be selling up and leaving the area as they don't feel able to cope with the construction impacts of another major project. A Social Impact Management Plan (SIMP) was developed to address social impacts, invest in local communities and offset impacts on distributional equity. There are five action plans under the SIMP for:

- community and stakeholder engagement
- workforce management
- housing and accommodation
- health and community wellbeing
- local business and industry content.

Each action plan includes objectives and desired outcomes, mitigation measures, and the timing for delivery of these mitigation measures.

Community benefits

The Project will generate employment for up to 596 people by the second year of the construction period. In turn, this boost is expected to contribute to financial and housing security, self and family care and social connections. Training opportunities will also be provided for people who are disadvantaged in the current labour market, including young people and Indigenous people.

Potential impacts

Locally:

- Property impacts (land use and tenure, severance)
- Community cohesion and conflict regarding the Project.
- Amenity impacts due to noise, vibration, dust, changes to the landscape and increased traffic.
- Traffic delays during construction of bridges, viaducts, the Toowoomba Range Tunnel and other Project infrastructure.
- Impacts to water resources
- Inconveniences to motorists as a result of the closure of public roads to accommodate the Project.

At a regional level:

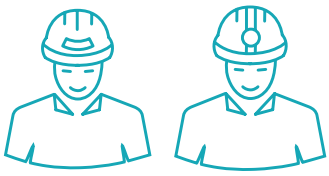
- Demand on trades and construction labour.
- Increase in non-local personnel to the area and consequent impact on rental housing availability.
- Potential changes to the settlement pattern in areas designated for rural living at Helidon Spa and Postmans Ridge Road where land is within 250 metres of the alignment.

> The Project facilitates the growth of industries associated with logistics and freight terminal hubs, supporting local and regional businesses which will be a source of long-term employment for the community.

Social impacts

Social impact action plans have been created for:

Community and stakeholder engagement



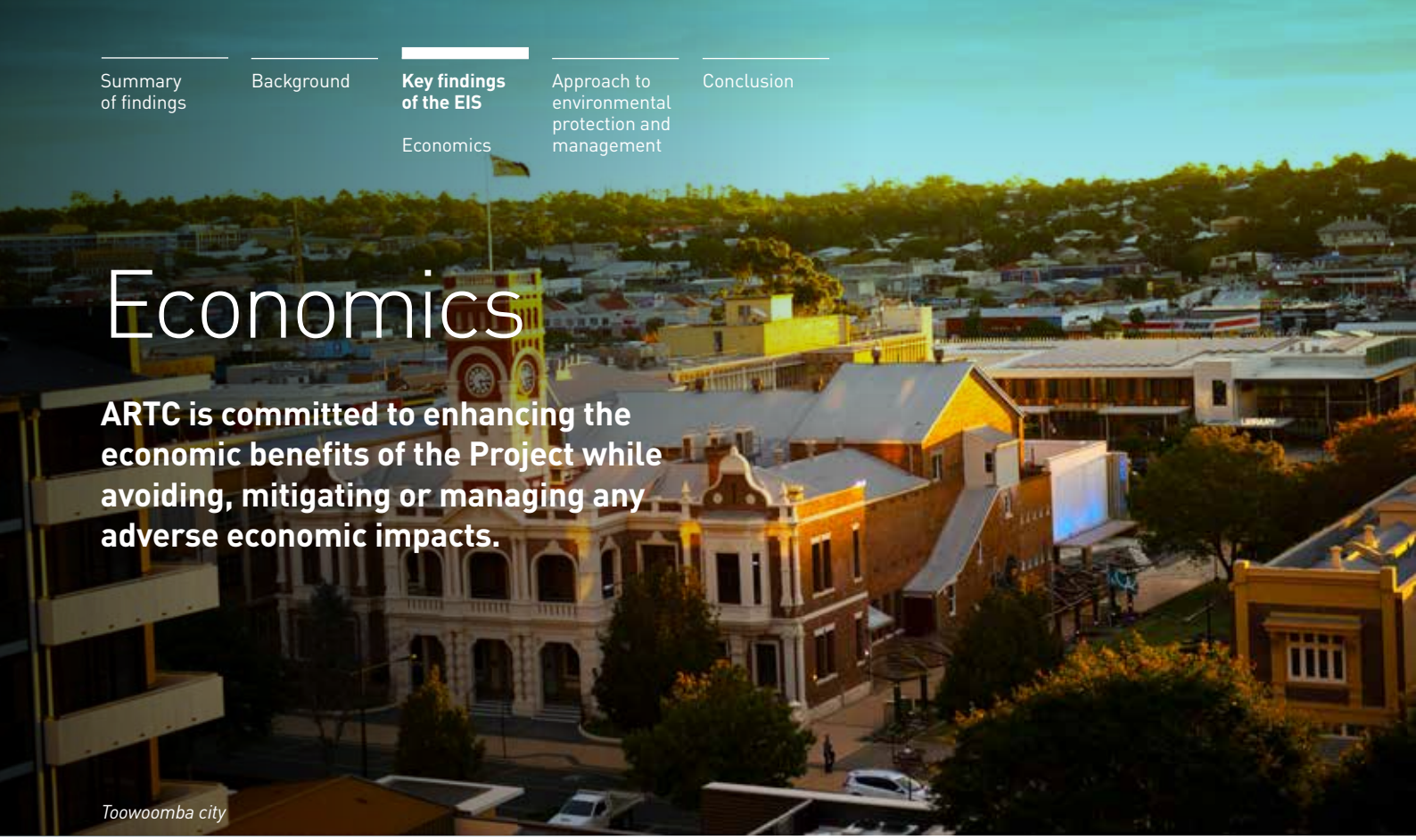
Workforce management

Housing and accommodation

Local business and industry

Health and community wellbeing

These action plans outline the objectives, desired outcomes and proposed mitigation measures for each area of impact.



Economics

ARTC is committed to enhancing the economic benefits of the Project while avoiding, mitigating or managing any adverse economic impacts.

Toowoomba city

Chapter 17 outlines the economic opportunities the Project will provide the Toowoomba and Lockyer Valley regions.

Economic opportunities

ARTC has developed a Sustainable Procurement Policy that will ensure local, regional and Indigenous businesses have opportunities to supply the Project, which, in turn, will promote economic development for the community.

Project supply opportunities during the construction phase will represent a substantial source of trade and potential local business growth. Local businesses will have the opportunity to supply the Project with fuels and oils, construction materials and services, including fencing, electrical installation, trades services, professional services, rehabilitation, and landscaping and earthworks.

Businesses located in Toowoomba, or near the Warrego Highway at Helidon or Withcott, include fuel stations, cafés and hotels that are likely to benefit from construction personnel's expenditure as they pass through the region. For the operational period, services will be required for truck maintenance, rehabilitation, maintenance of electrical and signalling infrastructure and access track maintenance.

Economic impact assessment

The results of a regional economic impact assessment indicated that the regional Toowoomba labour market (includes the former Gatton Shire Council local government area) will have the capacity to supply a portion of the workforce requirements of the Project. The expansion in construction activity and regional employment is also likely to increase demand for a range of local infrastructure and services.

Want to know more?

See the following:

- **Chapter 17: Economics (Binder 4)**
- **Chapter 16: Social (Binder 4)**
- **Appendix R: Economic impact assessment (Binder 16)**
- **Appendix F: Proponent commitments (Binder 6)**

> The economic benefits assessment estimated that the Project is expected to provide a total of $81.54 million (2019 value terms) in incremental benefits.

Potential impacts

At a local level, the economic impact of the Project will promote community development by supporting local and regional employment, businesses and industries, through:

- Potential growth in the Toowoomba labour market region – under a 'slack' labour market, the Project is likely to generate an additional 1,000+ direct and indirect jobs per year during construction.
- Opportunities to encourage, develop and grow local (including Indigenous) businesses through the supply of resources and materials for the construction and operation of the Project.
- Supporting temporary demand and additional spending by the construction workforce in the local community.
- Providing opportunities in secondary service and supply industries (such as retail, hospitality and other support services) for businesses in close proximity to the construction footprint.
- Unlocking the construction of ancillary and complementary infrastructure, industrial development and logistics operations within the local area.
- Supporting the local agricultural industry by driving savings in freight costs and improving market access, allowing local manufacturers and producers to be more competitive.

Mitigation measures

ARTC is committed to enhancing the economic benefits of the proposal while avoiding, mitigating or managing any adverse economic impacts. A SIM will be implemented to manage the social and socio-economic impacts of the Project while enhancing benefits and opportunities.

The SIMP outlines the objectives, outcomes, performance measures and actions that ARTC, or its contractor, are required to undertake.

> The Project may act as a significant catalyst for development in the planned and existing industrial areas at the Toowoomba Enterprise Hub and Gatton West Industrial Zone.

Economic benefits

Over the construction phase, real gross regional product for the **Toowoomba labour market region** is projected to be **$595 million** and increasing to **$821 million** when considering all five Queensland Inland Rail projects. (assuming slack labour markets)

Toowoomba region

$595 million

Queensland

$1,754 million

Increase in the average number of jobs over the construction period of **2,059** jobs

Cultural heritage

We understand the importance of cultural heritage and recognise Aboriginal people's inherent connection to the land and their historic and ongoing stewardship and care for country.

Wallens Road, Ballard, looking northwest.

Chapter 18 identifies potential Project impacts on cultural heritage, considering both Indigenous and non-Indigenous cultural heritage in the assessment.

Indigenous heritage

A Cultural Heritage Management Plan (CHMP) was developed between ARTC and each of the relevant Aboriginal Parties for the disturbance area. The CHMPs were approved by the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP).

This process was undertaken by ARTC in 2018 with both the Yuggera Ugarapul People and the Western Wakka Wakka People in accordance with the requirements of Part 7 of the *Aboriginal Cultural Heritage Act 2003* (Qld) and the *Cultural Heritage Management Plan Guidelines* (DATSIP, 2005).

The CHMP meets the requirements for identifying, assessing and managing of Indigenous heritage for the Project. The CHMP is confidential and will not be made available as part of the EIS process.

Want to know more?

See the following:

- **Chapter 18: Cultural heritage (Binder 4)**
- **Appendix S: Non-Indigenous cultural heritage (Binder 16)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: proponent commitments (Binder 6)**

Relevant Aboriginal parties are currently undertaking Project Activity Assessments of the Project disturbance footprint.

Non-Indigenous heritage

An assessment of non-Indigenous heritage values and impacts was undertaken by a team of heritage specialists, informed by the legislative and ToR requirements for the Project, as well as the guideline, *Assessing cultural heritage significance: Using the cultural heritage criteria* (Department of Environment and Heritage (DEHP), 2013).

The assessment targeted areas of potential cultural heritage that fall within the Project s disturbance footprint and designated cultural heritage study area, which is an approximately 50-metre buffer around the Project disturbance footprint.

Key findings include:

- The impact assessment found that, with appropriate mitigation and management measures (e.g. refinement of design to minimise impact during detailed design and digital archival recording where the impacts cannot be avoided), Project impacts could be reduced to neutral or slight for all heritage places of relevance to the Project identified during this assessment.
- There are 17 registered heritage places relevant to the Project, including five place of state significance such as the Main Range Railway at Ballard, and 11 place of local significance, such as the Bicentennial National Trail.
- The heritage assessment also identified 36 areas of interest of within the cultural heritage study area. This included the Bicentennial National Trail, a rail bridge on the Main Range Railway and Mount Lofty Rifle Range.
- The assessment determined that six of the AOIs are of local heritage significance (but currently unlisted) meaning that they have 'aesthetic, historic, scientific or social value for past, present or future generations . The Bicentennial National Trail was also considered to be locally significant.

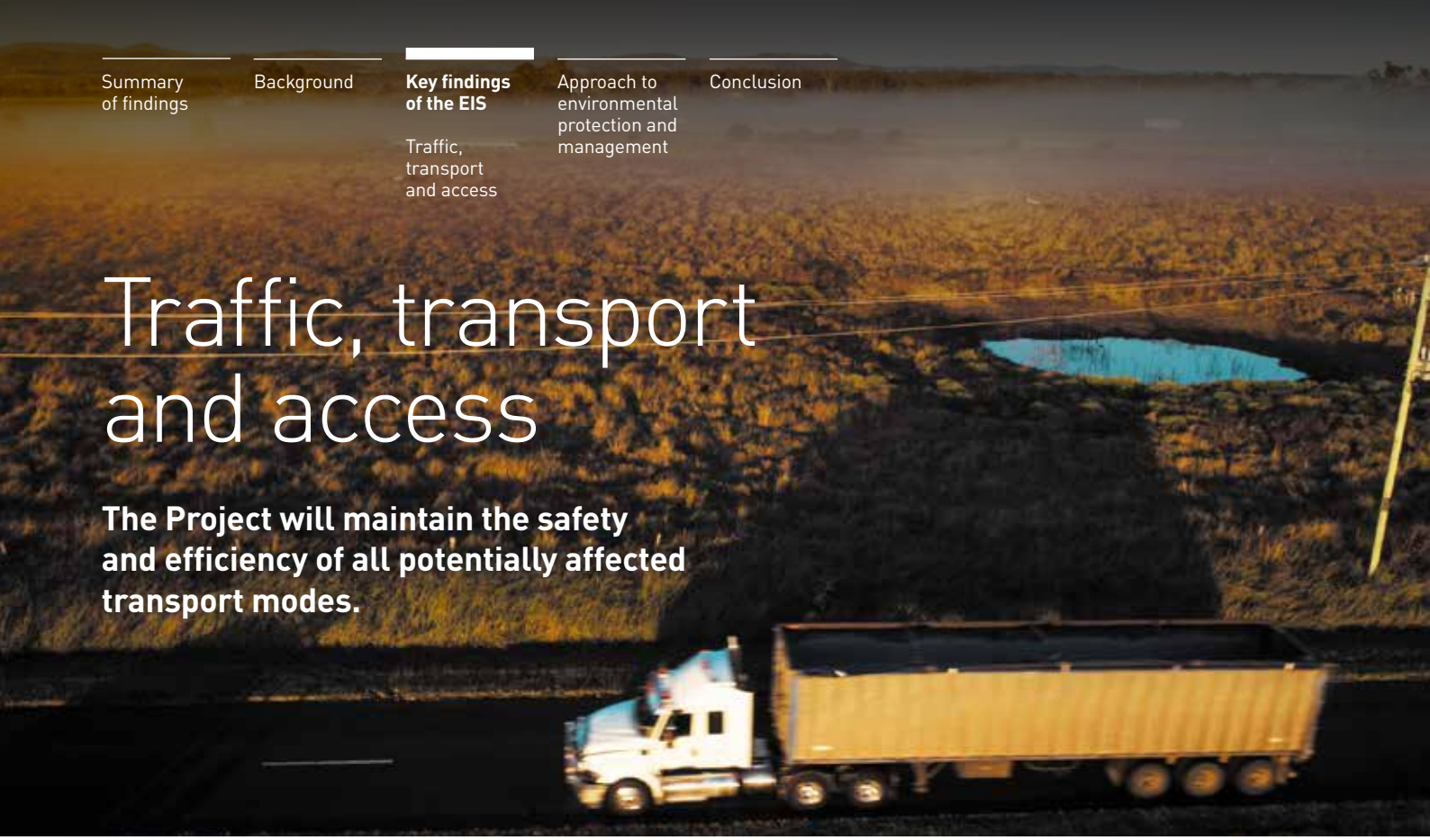
> The accepted methodology for managing potential impacts on heritage places is to avoid wherever possible, minimise as far as is practical, and mitigate where avoidance and minimisation is not possible.

Potential impacts

Impacts on non-Indigenous heritage were assessed in accordance with the Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (International Council on Monuments and Sites (ICOMOS), 2011). Potential impacts on Indigenous and non-Indigenous heritage sites can be divided into two main types:

- Direct impacts occur if a heritage place or site is located directly in a development area and/or would be physically impacted by development (e.g. the demolition or substantial alteration of a building, or the disturbance of an archaeological site).
- Indirect impacts are those that alter the surrounding physical environment in such a way that a heritage place or site is affected (e.g. extra vibration from construction activities or subsequent traffic load, as well as additional water runoff or sediment deposition due to changing hydrology).

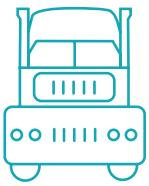
The impact assessment found that, with appropriate mitigation and management measures (e.g. refinement of design to minimise impact during detailed design and digital archival recording where the impacts cannot be avoided), Project impacts could be reduced to neutral or slight for all heritage places of relevance to the Project identified during this assessment.



Traffic, transport and access

The Project will maintain the safety and efficiency of all potentially affected transport modes.

Chapter 19 includes an overview of existing transport network and rail infrastructure for the Project.



Want to know more?

See the following:

- **Chapter 19: Traffic, transport and access (Binder 4)**
- **Appendix U: Traffic impact assessment (Binder 17 and 18)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Improving efficiency

The Project will provide a more efficient and direct route through the Toowoomba Range. It will also improve interoperability between the Queensland Rail (QR) and ARTC networks, providing benefit to new and existing rail operators, while potentially reducing train traffic through Toowoomba city centre and Murphys Creek.

The Project proposes a grade separation of the existing QR West Moreton System and will be co-located with this rail corridor for 5.6 kilometres.

Potential impacts and mitigation measures

Construction activities will impact travel times and access on affected roads, with some roads known school routes, cycle routes or haulage routes. The transportation of materials, equipment and personnel will also impact some roads, with material being sourced from the Toowoomba and Lockyer Valley regions and as far away as northern NSW. These construction routes mainly occur via existing State-controlled roads and local government roads.

Certain sections of the Project will generate construction related traffic volumes in excess of 5 or 10 per cent of the background traffic during the construction phase. The Project may potentially cause a minor change in the level of service for some road sections during each year of construction.

During the operational phase, it is anticipated that occasional access to and from the track will be required to conduct routine inspection and maintenance works. Maintenance vehicles will use the rail maintenance access roads that will be constructed for infrequent inspection and maintenance activities.

Rail operational traffic volumes are likely to be negligible with no envisaged impact to operational conditions of the surrounding road networks, cycle routes or school bus services.

Road-rail interfaces

No new public level crossings are planned for the Project, which also proposes to eliminate an existing public level crossing on the QR network at Gowrie. This is in line with local, state and national policies on level crossings. To facilitate the closure of the existing crossing, Gowrie Junction Road will be realigned, with a new road-over-rail bridge providing north-south connectivity across Gowrie Creek and the new and existing rail corridors.

With the exception of Morris Road, which is proposed to be closed, all road-rail interfaces will be grade separated. As a result of this closure, along with the new road-over-rail bridge, a number of changes to the road network (and access) at Gowrie are proposed. The traffic analysis predicts that these changes are not likely to impact connectivity or capacity.

Continued engagement with Department of Transport and Main Roads, Queensland Rail, Toowoomba Regional Council and Lockyer Valley Regional Council and where applicable emergency services, to be undertaken to formalise the design and end of life requirements for the impacted road and rail networks, undertake safety assessment and develop and implement measures such as a Traffic Management Plan and Road Use Management Plan.

Hazard and risk

ARTC is committed to implementing and maintaining appropriate safety practices throughout construction and operation of the Project.

The existing level crossing at Gowrie Junction.

Chapter 20 addresses potential hazards and risks associated with the design, pre-construction, construction and operation phases of the Project.

Want to know more?

See the following:

- **Chapter 20: Hazard and risk (Binder 4)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Risk assessment process

The Project has incorporated risk identification and assessment practices throughout the design development phase. A preliminary hazard identification and risk assessment was undertaken in accordance with the requirements of Australian and NZ Standard/International Standards Organization AS/NZ ISO 31000:2009) Risk Management—Guidelines (compliant with ISO 31000:2018).

Hazards were identified for each of the Project phases and were evaluated qualitatively to determine residual risks following the implementation of risk management strategies and mitigation measures. No risks were assessed as having a high residual risk ranking, with the majority of the hazards determined to have a low residual risk.

Potential impacts

The following potential impacts have been identified as having a medium residual risk.

Natural hazards

- Bushfire, flooding or severe weather events; landslide, sudden subsidence or movement of soil or rocks during construction; natural events related to climactic conditions; impacts of project on greenhouse gas emissions.

Project-related hazards and risks

- Construction and operation of the Toowoomba Range Tunnel, bridges and viaducts; interaction with existing underground and overhead utilities; health and environmental impacts from contaminated land; increased use of road vehicles and interference with emergency access points; employee fatigue and heat stress; potential rail accidents caused by increased rail movement during the operational phase.

Dangerous goods and hazardous chemicals

- Construction and maintenance chemicals; potential use of explosives for construction; transport of dangerous goods during operational phase.

Mitigation measures

A residual rank of medium is considered tolerable if risks are reduced, so far as is reasonably practicable, following the implementation of proposed mitigation measures.

For these residual risks, the Inland Rail Program Safety Management System will include monitoring activities to ensure the ongoing effectiveness of the risk controls and identification of risk opportunities for further improvement.

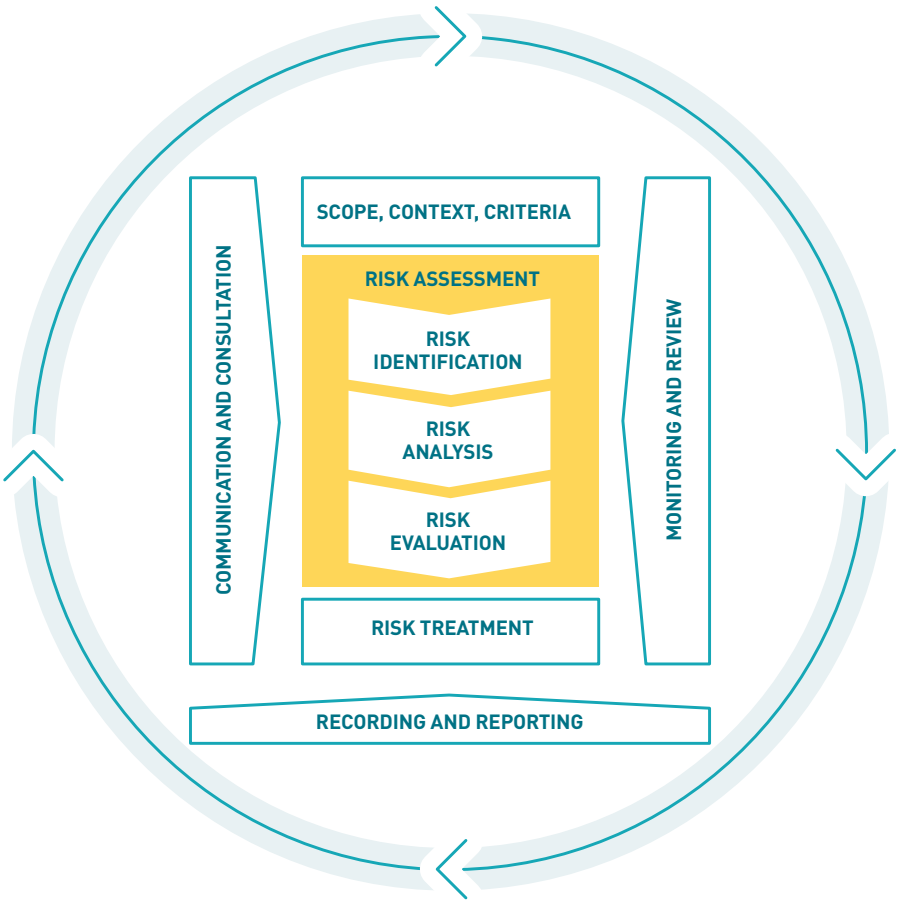
ARTC's Emergency Management Procedure provides a systematic approach to incident response and recovery or incident investigation on the ARTC network. The procedures required to manage incidents and emergencies will be the responsibility of ARTC and rail operators.

The Project is being developed in consultation with relevant emergency management authorities to ensure that external support will be provided by these services in an event of an emergency, including:

- Lockyer Valley and Toowoomba Local Disaster Management Groups
- Emergency Services including:
  - Toowoomba Hospital
  - Queensland Fire and Emergency Services, Queensland Police Services, Queensland Ambulance Services.

The ARTC Safety Policy and the ARTC Fatal and Severe Risk Program will be fully implemented.

> Risk assessment is an ongoing process. As the Project design evolves, the impact of risks will be regularly reviewed and mitigation measures applied to eliminate or manage hazards and reduce risk to an acceptable level.



Waste and resource management

The majority of construction spoil will be reused throughout the Project. Remaining waste will be disposed of through waste avoidance and mitigation strategies.

Construction site on the Inland Rail Parkes to Narromine project.

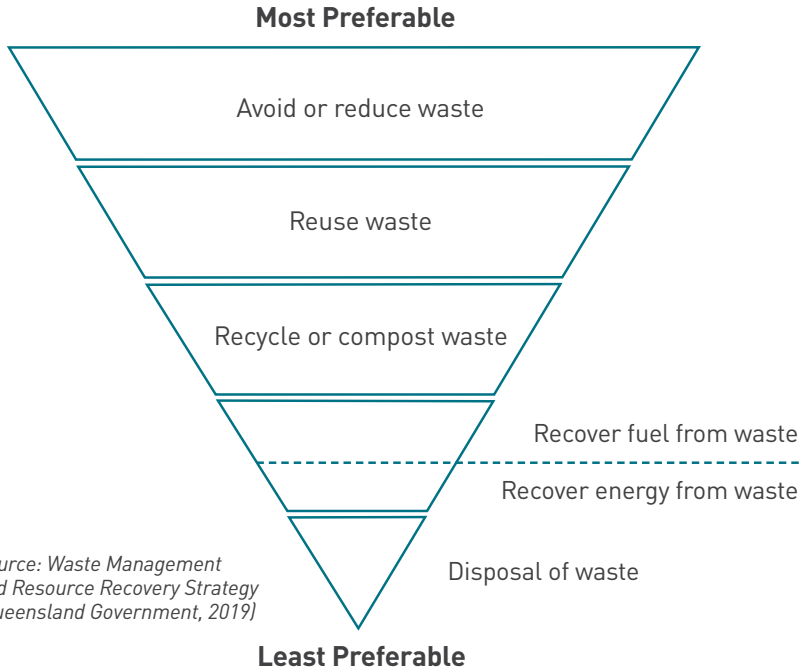
Chapter 21 provides an overview of waste management requirements and regulations for the Project and the waste management strategies that are in place.

Waste disposal

Waste disposal is predominately construction and demolition waste, general municipal waste and commercial, industrial and green waste. Established waste management facilities are located throughout Toowoomba and Lockyer Valley, with the Toowoomba Waste Management Centre identified as the facility with the greatest potential to service the Project due to its annual capacity and proximity to the Project.

When construction timing is confirmed, waste acceptance criteria and permissible annual disposal rates will be determined in consultation with the waste facility operators.

Waste and resource management hierarchy



Source: Waste Management and Resource Recovery Strategy (Queensland Government, 2019)

Want to know more?

See the following:

- **Chapter 21: Waste and resource management (Binder 4)**
- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix T: Spoil management strategy (Binder 16)**

Potential impacts

The construction phase of the Project will generate the majority of waste through:

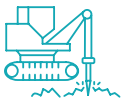
- vegetation clearing
- access tracks
- bulk earthworks
- tunnel portal development
- topsoil stripping
- municipal solid waste generated through activities occurring at construction locations and on multiple work fronts.

The Project is anticipated to generate approximately 3 million cubic metres of excavated material from tunnelling and earthworks during construction. Over 2 million cubic metres of the excavated material will be reused within the Project as fill, while the remainder is spoil.

The majority of spoil will result from the construction of the Toowoomba Range Tunnel. The design allows for the storage of tunnel spoil as a stockpile within the proposed rail corridor at the western tunnel portal.

Waste types

Commercial and industrial



Construction and demolition

General

Green

Recyclables

Regulated

Mitigation measures

The identified waste streams will be managed through waste avoidance and mitigation strategies to minimise potential impacts on the surrounding environment and sensitive receptors, in accordance with the *Waste Reduction and Recycling Act 2011* (Qld) waste management hierarchy.

A Waste Management Sub-plan will be developed as part of the Construction Environment Management Plan (CEMP), which will guide these strategies. A Spoil Management Strategy has also been prepared as part of the draft EIS.

Alternative reuse options will be considered for the management of any material that is not suitable to be reused within the Project. Reuse options include:

- constructing access roads, road embankments and mounds within short haulage distance of the source
- land rehabilitation and landscaping
- fill material for other projects, like Inland Rail's Border to Gowrie and Helidon to Calvert projects, along with Toowoomba Regional Council's Charlton Sports Precinct development
- rehabilitating existing quarries within the area
- daily cover for waste management facilities (e.g. Toowoomba Waste Management Centre)
- landscaping mounds or revegetation works
- profiling and capping soils for waste management facilities
- fill material for extension of the rail formation for future passing loops
- off-site re-use, subject to treatment
- incorporating into commercial soil manufacturing processes, subject to suitability
- rehabilitating the Toowoomba Bypass laydown area at Withcott.

With the exception of spoil, no significant waste streams have been identified. General waste streams will be managed in line with standard industry practices and existing waste management arrangements that exist in the Project locality.

Cumulative impacts

When numerous projects occur within proximity to each other, they can cause cumulative impacts on both environmental and social values.

The existing railway line near Kingsthorpe, looking south.

Chapter 22 addresses potential impacts from the Project in combination with other existing development or planned projects.

Cumulative impact assessment

The cumulative impact assessment (CIA) considered possible environmental, social and economic impacts of up to 15 additional projects within the wider geographic area, including connecting Inland Rail projects. For some environmental aspects such as social and traffic, other transport and access projects such as Cross River Rail were also considered.

It is anticipated that this process of assessment will occur for all projects that have the potential to contribute to cumulative impacts. Each project will be required to mitigate and minimise potential cumulative impacts to acceptable levels.

Potential cumulative impacts

Potential cumulative impacts were considered of low significance, with the exception of the following environmental aspects, which were considered to be of medium significance, or higher:

Land resources – due to landform and topography changes, permanent loss of soil resources and erosion within the project's footprint.

Landscape and visual amenity – due to the operational impacts associated with views of combined, successive and sequential views of adjoining projects. (However, it is noted that Inland Rail projects will, in practice, be viewed as a continuous section of railway).

Want to know more?

See the following:

Chapter 22: Cumulative impacts (Binder 5)

Chapter 23: Draft Outline Environmental Management Plan (Binder 5)

Appendix Y: ARTC Offset strategy (Binder 20)

> Cumulative impacts are expected to occur at a local and regional level, changing over time to influence potential impact intensity or scale, frequency or duration.

Flora and fauna – due to the impacts of habitat loss from vegetation clearing on Matters of National and State Environmental Significance, along with other ecological values relevant to the project.

Social impacts – due to the combined effects of adjoining projects on social matters relating to traffic volumes and traffic safety, land acquisition, rural amenity for landholders, the influx of labour force and the availability of skilled labour in the region.

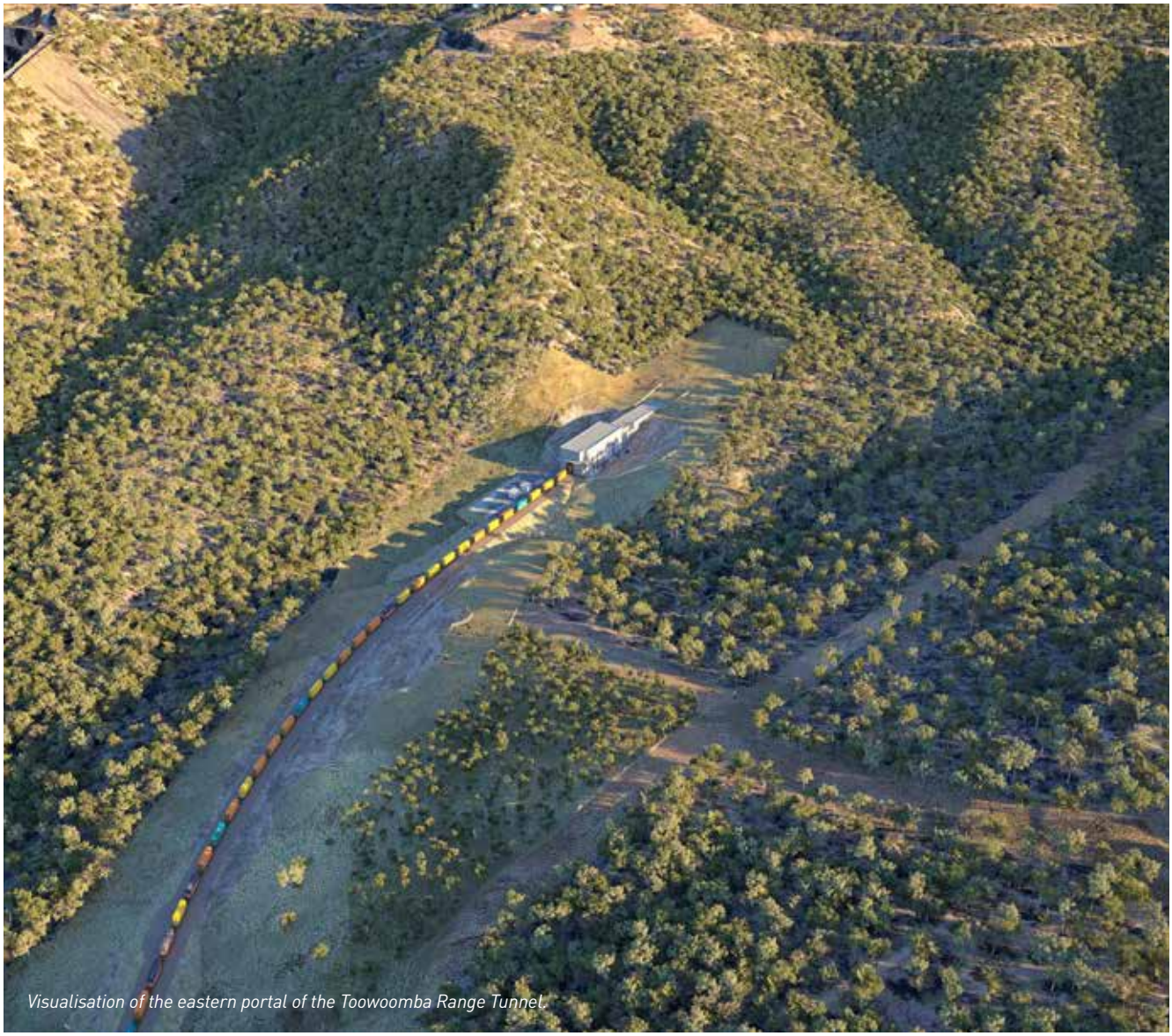
Cultural heritage – due to loss of non-Indigenous cultural heritage sites.

Traffic, transport and access – due to the impacts of construction traffic on local traffic volumes and the extent to which adjoining properties may intensify these effects. Several projects may have overlapping construction schedules, which is likely to lead to increased traffic congestion on certain roads within the traffic area of influence.

Mitigation measures

Key mitigation measures for reducing potential cumulative impacts have been incorporated into recommended mitigation and management measures.

Where mitigation measures are not possible for a number of these ecological values, an offset strategy, which incorporates other Queensland Inland Rail projects, has been developed to offset impacts. This strategy informs the development of offset delivery components, including a Detailed Environmental Offset Delivery Plan and Offset Area Management Plans.



Visualisation of the eastern portal of the Toowoomba Range Tunnel.

Approach to environmental management

All works associated with the Inland Rail Program will be completed in accordance with the ARTC Environmental Policy and ARTC Safety Policy and the conditions of approval.

Ballard, Lockyer Valley.

Chapter 23 addresses ARTC's approach to environmental management and the development of post-EIS environmental management sub-plans.

Want to know more?

See the following:

- **Chapter 23: Draft Outline Environmental Management Plan (Binder 5)**
- **Appendix F: Proponent commitments (Binder 6)**

Approach to environmental management

A draft Outline Environmental Management Plan (EMP) has been prepared for the Project to:

- provide an environmental management framework to identify outcomes to be achieved for the detailed design, pre-construction, construction and commissioning
- establish the process for preparation and implementation of the Outline Environmental Management Plan, Construction Environmental Management Plan (CEMP) and supporting management plans.

The draft Outline EMP draws on outcomes of environmental assessments documented in the draft EIS and establishes the framework for the CEMP. Proponent commitments for the design, construction, commissioning, and operation of the Project are categorised as:

- project-wide, relevant to all or multiple phases of the Project
- detailed design, including ongoing activities and investigations before commencement of Project works
- project works, including pre-construction and early works, construction, commissioning and rehabilitation activities
- operation of the rail corridor, including maintenance.

> All work associated with the Project will be in accordance with relevant ARTC corporate policies and management systems, legislative requirements and approval conditions (Inland Rail Environment and Sustainability Policy, ARTC Environmental Policy and ARTC Safety Policy).

It identifies environmental outcomes, performance criteria, proposed mitigation measures and monitoring requirements for the Project.

Management plans outlined in the draft Outline EMP include but are not limited to:

- erosion and sediment control
- biosecurity management
- species management
- rehabilitation
- groundwater
- traffic management
- road-use management
- waste.

Social and economic matters are addressed under the Social Impact Management Plan (SIMP).

Any conditions imposed by the Coordinator-General in the EIS evaluation report or by the Australian Government Minister for the Environment (or delegate) will need to be incorporated into future EMP versions to ensure that all works are authorised and consistent with those conditions.

Environmental management

The draft Outline EMP describes:

- key elements and delivery phases of the Project
- environmental management framework for the design, construction and commissioning of the Project
- relationship between the draft Outline EMP, the CEMP, sub-plans and other environmental management documents
- monitoring, reporting, auditing, review and documentation requirements
- processes for dealing with a non-compliance, including corrective actions
- requirements for training and awareness, community and stakeholder engagement
- outline of the complaints management and response process.

> Once operational, the Project will become part of the existing ARTC national rail network, and will be subject to the laws, policies and procedures that already apply to that network. Internal ARTC policies and procedures will be reviewed to include any special operational requirements of the Project.

The draft Outline EMP identifies

Environmental outcomes	Environmental outcomes are mandatory and must be achieved. The environmental outcomes are derived from statutory requirements or other relevant criteria and are reflected in the criteria adopted in the draft EIS.
Performance criteria	Measurable goals or indicators of the environmental outcome. Environmental outcomes are deemed to be achieved if the performance criteria are met. If the performance criteria are not met, mitigation measures must be implemented to achieve the environmental outcomes.
Proposed mitigation measures	Measures directed at achieving the environmental outcomes. The proposed mitigation measures have been identified through the EIS process, recognising that additional or different mitigation measures may be applied in order to achieve the environmental outcome. Additional mitigation measures may be developed in consultation with directly affected persons, relevant stakeholders and with the independent advice of the independent Environmental Monitor and/or independent Community Relations Monitor.
Monitoring and reporting requirements	Monitoring and reporting requirements to demonstrate that the environmental outcomes have been achieved, or corrective measures implemented, where applicable.

Conclusion

The Project, and the Inland Rail Program as a whole, provides a 'step change' opportunity to revolutionise freight transport in Australia.

Inland Rail offers a safe and sustainable solution to Australia's freight challenge while seeking to minimise adverse environmental, social and economic impacts.

As part of the wider Inland Rail Program, the Project will:

- relieve pressure on existing road and rail corridors by providing a continuous rail freight route between Melbourne and Brisbane
- provide a service offering competitive with road freight (a Melbourne to Brisbane transit time of less than 24 hours, with a reliability of 98%)
- better connect regional farms with domestic and international export markets
- provide a direct and efficient route across the Toowoomba Range – benefiting existing and future rail operators and aligning with several state and regional plans for the area
- maximise significant economic and social benefits through local employment, local industry participation and opportunities for complementary investment, providing continued community benefit.

The draft EIS has followed the process established by the *State Development and Public Works Organisation Act 1971* (Qld). The draft EIS responds to the terms of reference for the Project issued by the Queensland Coordinator-General in August 2017.

Overall, the Project and the wider Inland Rail Program, will provide significant opportunities to deliver long-term and substantial economic benefits for Australia's future.

Toowoomba City.

The Project is consistent with the objectives of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), including providing for the protection of matters of national environmental significance.
The Project aligns with the core objectives and guiding principles of ecologically sustainable development, is consistent with the Queensland Freight Strategy (DTMR, 2019a), the Inland Rail Business Case (ARTC, 2015a) and Australian Government expectations.

The draft EIS has undertaken a conservative and 'worst case' approach to identifying the potential impacts of the Project. Where environmental impacts have been identified, efforts have been made to avoid or minimise those impacts through design development and nomination of further mitigation measures.

The draft EIS demonstrates that the residual impacts and benefits can be appropriately managed. It is therefore recommended that the Project should proceed, subject to reasonable and relevant conditions that reflect the proponents' commitments (as listed in Appendix F: Proponent Commitments).

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