APPENDIX S

INLAND RAIL

Economic Impact Assessment Technical Report

CALVERT TO KAGARU ENVIRONMENTAL IMPACT STATEMENT

IR_1381

ARTC

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

KPMG

Inland Rail

Calvert to Kagaru

Economic Impact Assessment

Technical Report

2-0000-340-EAP-00-RP-0001

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Summary

Introduction

The following economic impact assessment (EIA) report has been prepared to identify potential economic impacts of the proposed Calvert to Kagaru Project (C2K or the Project), which forms one part of the Inland Rail Program (Inland Rail or the Program). Inland Rail is a direct interstate freight rail corridor, approximately 1,700 kilometres, between Melbourne and Brisbane via central-west New South Wales (NSW) and Toowoomba, Queensland (QLD).

The EIA forms part of an Environmental Impact Statement (EIS) being prepared by ARTC for approval from the Coordinator-General under Section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)(EPBC Act). The Commonwealth Minister for the Environment and Energy determined that C2K is a 'controlled action' under the EPBC Act on 17 March 2017.

ARTC lodged its application, including Initial Advice Statement, on 10 May 2017. The final Terms of Reference (ToR) were issued on 8 December 2017. The following assessment addresses the economic specific information requirements of Section 11.153 of the ToR. Specifically, this assessment:

- Establishes the **existing economic environment and local context** to understand the local economic context and form the basis to measure the economic impacts;
- Identifies potential **economic benefits and impacts** on affected local and regional communities and businesses;
- Assesses the projected economic benefits of the Project, including the basis for their estimation through a detailed economic benefits assessment contextualised against the results of the **cost benefit analysis** (CBA) undertaken for the entire Inland Rail Program, as per the Inland Rail Program Business Case (2015);
- Assesses the economic significance of the Project on the regional, state and national economies through **computable general equilibrium modelling (CGE)**;
- Evaluates the potential **cumulative impacts** on local and regional economies resulting from the construction and operation of related projects, including adjacent Inland Rail project links; and
- Outlines ARTC's commitments to **enhance** economic benefits and to **avoid, mitigate or manage** adverse economic impacts.

Study area

The Project traverses three local government areas (LGAs) – Ipswich, Scenic Rim and Logan. Combined, these LGA boundaries form the **study area** for assessing the local economic impacts of the Project, reflecting a local catchment for workers and economic activity.

The Project traverses the Logan LGA for a distance of approximately 300 metres, in the unpopulated mountainous area of Undullah. There are no communities along the alignment within Logan that are directly impacted by the Project, however potential benefits and impacts on nearby communities are considered in this assessment.

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the Australian Bureau of Statistics (ABS) labour market region boundaries of the Australian Statistical Geography Standard that captures the integrated regional economy within which the Project is located. The Project is located within the Greater Brisbane labour market region which is defined as the **regional economic catchment area** for this EIA.

Baseline and impact assessment

Since the completion of the analysis detailed in this report there have been series of changes to the project and the project environment. This includes changes to the Inland Rail construction program and the economic shock associated with the 2020 quarter 2 market conditions which are not reflected in the economic analysis or economic impact assessment contained within this report at the request of ARTC.

Employment and training opportunities

Existing labour market conditions

According to the Australian Government's quarterly regional estimates of unemployment, as at December 2019 there were a total of 22,886 unemployed persons in the study area (57.1 percent located in Logan) and 82,236 in the regional economic catchment. Within the study area, the unemployment rate is highest in Logan and Ipswich, 7.9 percent and 7.5 percent respectively. This is compared to 6.0 percent in the Scenic Rim, 6.1 percent in the regional economic catchment area and 6.1 percent in QLD.

For the December 2019 quarter, the labour force participation rate across the study area was lower than the average for the regional economic catchment and QLD – 71.2 percent in Ipswich, 70.8 percent in Logan and 68.6 percent in Scenic Rim, compared to 78.6 percent and 78.7 percent respectively.[1]

According to the 2016 Census, the Indigenous population is inadequately represented in the study area's workforce, which is reflected in high rates of Indigenous unemployment and low labour force participation. Across the study area, approximately one-fifth of the Indigenous population is unemployed (18.7 percent) and the labour force participation rate is 58.2 percent.

Youth unemployment rates are also high across the study and regional economic catchment, more than double the total unemployment rate.

These labour market trends indicate that, locally, there is some latent capacity in the local and regional labour force.

Employment by industry

The sectoral distribution of employment for local residents is diverse, reflecting the study area's land use and the geographic distribution of the population.

In Ipswich, the largest proportion of workers are employed in service based industries such as Health Care and Social Assistance (13.2 percent) and Retail Trade (10.5 percent). A significant proportion of the population are also employed in secondary industries, with a further 18.4 percent of residents employed in Manufacturing (10.0 percent) or Construction (8.4 percent).

In Scenic Rim, employment by industry is diverse across primary, secondary and service based industries. This reflects the land uses of the LGA, primarily regional landscape and rural production with a small urban footprint. The highest number of residents are employed in Construction (10.8 percent), followed by Health Care and Social Assistance (10.5 percent) and Agriculture, Forestry and Fishing (8.8 percent).

In Logan, the largest proportion of workers are employed in service based industries such as Health Care and Social Assistance (11.5 percent) and Retail Trade (10.5 percent). A significant proportion of the population are

[1] Australian Government's Small Area Labour Markets publication, December 2019; ABS, *Labour Force Survey, Australia,* December 2019 (12-month moving average) – published 26 March 2020; ABS 2016 Census of Population and Housing. Participation rate for working age population 15 to 64 years June 2016

also employed in secondary industries, with a further 21.7 percent of residents employed in Construction (12.0 percent) or Manufacturing (9.7 percent).

There are a number of residents within the study area employed in directly relevant industry sectors to support the construction of the Project. According to the 2016 Census, 10.6 percent of the total workforce are employed in the Construction industry (24,161 workers), with the largest proportion of workers residing in Logan (15,784 workers). Within the Construction industry, 8.7 percent of local workers are employed in Heavy and Civil Engineering Construction (2,085 workers) and 61.4 percent in Construction Services (15,143 workers). Across the broader Greater Brisbane region, 92,556 workers are employed in the Construction industry, with 9.5 percent of the region's workers employed in Heavy and Civil Engineering Construction (8,769 workers) and 57.4 percent in Construction Services (53,105 workers).

Occupation

The study area's primary occupations of employment are reflective of the study area's strong resident employment in secondary industries. At the broadest level, the area has a higher proportion of Technicians and Trade Workers, Community and Personal Service Workers, and Labourers than the QLD average.

To complement the identification of workers employed in directly relevant industry sectors, workers are employed in a range of occupations relevant to the construction of the Project. Within Ipswich, the largest proportion of workers are employed as Technicians and Trade Workers (15.1 percent), and 19.1 percent are represented by Construction Trade Workers (2,420 workers). Technicians and Trade Workers also represent the highest number of workers in Logan and Scenic Rim (15.9 percent and 16.1 percent respectively). Construction Trade Workers comprise over one-quarter of these workers in Logan (25.6 percent), and close to one-fifth in Scenic Rim (19.1 percent).

A significant proportion of workers are also employed as Labourers (12.9 percent across the study area), with 18.0 percent of these workers employed as Construction and Mining Labourers (3,064 workers).

Construction labour availability

A Railway Skills Capability Study was undertaken by the Australasian Railway Association in 2018 which evaluated workforce capability for the rail industry based on planned and forecast rail infrastructure development in Australia and New Zealand over the next 10 years. The results of the analysis found that in Queensland, workforce gaps are present in rail infrastructure construction sectors, most severe among specialist managers and professionals (such as engineers). The analysis also found that there is currently a slight over-supply of labourers. These trends are also reflected at a national level.[2]

Further, the Australian Industry Group Construction Outlook (November 2018) found that, at a national level, businesses are reporting widespread and increasing difficulties in sourcing skilled labour.[3]

According to the survey, construction companies are forecasting strong growth in major project work, led by a strong pipeline of transport infrastructure projects. The results indicate that 69.2 percent of respondents, up from 66.7 percent six months prior, reported either 'major' or 'moderate' difficulty in recruiting skilled labour in the six months to September 2018. With workforce demand expected to continue at high levels in line with major project activity, labour sourcing difficulties are expected to remain.[4] It is most likely that these shortages in labour availability are for specific specialist trades.

Workforce profile

Direct employment resulting from the construction and operation of C2K has been estimated based on the indicative construction schedule and component activities. The construction of C2K is scheduled for commencement in 2021, with the Project's workforce expected to build to a peak of approximately 620 full time

[2] Australasian Railway Association, 2018, *Skills Capability Study*

[3] A national perspective of labour availability can be used to identify trends in skills shortages. According to the Productivity Commission, workers in the construction industry are likely to be more geographically mobile because of the inherent project-based or seasonal nature of the work; Productivity Commission, 2014, *Geographic Labour Mobility.*

[4] AiGroup, Construction Outlook November 2018

equivalent (FTE). The average annual workforce across the four year construction period would be approximately 271 FTE personnel. A workforce of approximately 20 FTE is expected for the Project's operation.

Overall, the Project has a significant opportunity to support local employment. At the time of construction, this is dependent on a number of factors including labour market conditions, skills availability and the existence of workforce training and participation programs to support local, Indigenous and youth employment.

Based on current labour market trends, and industries and occupations of the local workforce, there may be latent capacity and capability within the study and regional economic catchments to support the construction and operation of the Project. It is likely that labour will be sourced from communities within a safe daily driving distance (less than one hour) from the Project, including Ipswich, Scenic Rim and Logan, and from the broader region. It is likely that local employment will comprise a portion of the construction workforce.

The Project represents a source of potential training and career pathway development for young people in the study area. As detailed in the Social Impact Assessment (EIS Appendix R), local training agencies and some local secondary schools have a strong interest in the potential for the Project to create employment for local residents. ARTC is also establishing the Inland Rail Skills Academy to help create opportunities for education, training, skills development and employment for communities along the Inland Rail Program alignment.

Local businesses and industry

Tourism

Tourism is a significant industry in both the Scenic Rim and Ipswich LGAs, recognised as a popular tourist destination for visitors seeking to explore South East Queensland's (SEQ) natural landscapes and scenic amenity. Due to the location of the Project alignment, there are unlikely to be any impacts to the tourism industry within Logan, and accordingly it is not captured in this baseline.

The Project has the potential to change local amenity and service capacity within the study area, during both construction (temporary) and operation (permanent).

During construction, there is potential for road works, bridge construction and the visual impact of laydown areas to affect tourists' experience and travel times. Some visitors may be deterred from visiting during the construction period which has the potential to impact on tourism based businesses within the area. This impact is anticipated to be small and will be temporary whilst construction activities are undertaken.

The Project alignment will not have a direct impact on tourism businesses, however local businesses have raised concerns regarding the Project such as noise and vibration, dust and air quality and changes in property values. The EIS Appendix C: Consultation Report provides further details relating to the nature of these concerns.

During operation, there is potential for reduced scenic amenity due to the Project's location within the rural and regional landscape. It is likely that some visitors will see the proposal as diminishing rural character while others will find interest in the proposal structure. According to the Landscape and Visual Amenity Assessment (Chapter 10), this is not expected to have a significant impact on tourism visitation.

Agriculture

According to the Queensland Agricultural Land Audit, the Project is located within the SEQ agricultural region, with agricultural activities accounting for approximately 57 percent (1,221,193 hectares (ha)) of the total land area of the region.[5] The Audit outlines that the dominant agricultural industries in the SEQ region as horticulture, poultry, cattle, dairy and cultivated turf.

As at June 2018, there were a total of 177 employing businesses within the Agriculture, Forestry and Fishing Industry in Scenic Rim (a further 950 were non employing), and 33 employing businesses in Ipswich (318 non employing).[6] There are a number of agricultural / farming businesses located along the C2K alignment which may be impacted by the Project.

[5] Queensland Department of Agriculture and Fisheries, 2017, *Queensland agricultural land audit*.

[6] ABS, 2019, *Count of Australian Businesses, including Entries and Exits, June 2014 to June 2018*, cat. no. 8165.0

The development of the Bromelton State Development Area (SDA) will further enhance agricultural opportunities in Scenic Rim by providing increased market, transportation and support service access.

On the 30th of April 2019, the Queensland Coordinator-General declared the *Scenic Rim Agricultural Industrial Precinct* a coordinated project. The precinct will offer opportunities to further enhance the region's agricultural sector, through food processing and value-add. The precinct will support food processing, production and manufacturing businesses to be located together.

The construction and operation of the Project has the potential to impact farming operations and general agricultural uses across the study area. These potential impacts include:

- Loss of agricultural land;
- Land fragmentation and disruption to access and infrastructure;
- Disruption to stock and product movement; and
- Improvements in supply chain efficiency.

Consultation with landholders is ongoing to further determine potential impacts as the Project progresses through detailed design. Details on consultation undertaken for the Project is included within Appendix C: Stakeholder Engagement Report.

Loss of agricultural land

As detailed in Chapter 8: Land use and Tenure, the Project will result in the sterilisation of productive agricultural land within the permanent disturbance footprint.[7] The scale of the total loss (within the permanent disturbance footprint) of Class A and B agricultural land is anticipated to be low. At a local government level, within Ipswich the permanent disturbance footprint traverses approximately 51 ha of Class A (0.5 percent of total Class A land within Ipswich) and 21 ha of Class B (0.3 percent of total Class B land within Ipswich) land. Within the Scenic Rim, the permanent disturbance footprint traverses approximately 12 ha of Class A (<0.1 percent of total Class A land within the Scenic Rim) and 3 ha of Class B (<0.1 percent of total Class B land within the Scenic Rim) land. According to the Queensland Agricultural Audit, these land classes are considered the most productive agricultural land in Queensland, with soil and land characteristics which may allow successful crop and pasture production. Of these areas, land is primarily used for grazing, as well as irrigated seasonal horticulture, and a small amount of land is used for cropping and irrigated perennial horticulture uses.

Overall, the permanent disturbance footprint will traverse 0.002 percent of total productive agricultural land in the study area (168 ha impacted out of a total productive area of 9.433 million ha). This proportion can be used to estimate, at a high level, the potential foregone value of agricultural production resulting from the Project. In 2017-18, the gross value of agricultural production in the Ipswich and Scenic Rim LGAs was $323 million.[8] Accordingly, it is estimated that the Project could result in a loss of approximately $5,745 (value foregone) in gross agricultural production per year.[9]

ARTC will continue its ongoing consultation with directly affected landowners during the detailed design phase to develop measures to mitigate impacts resulting from the loss of agricultural land.

Land fragmentation and disruption to access and infrastructure

The Project may result in impacts to agricultural land outside of the permanent disturbance footprint. The fragmentation or alienation of properties may cause a disruption in farm operations due to impacts to essential farming infrastructure, services or access routes.

[7] The permanent disturbance footprint is defined as the physical rail corridor including the rail tracks and associated infrastructure. It also includes other permanent works associated with the Project, such as where changes to the road network are required.

[8] Queensland Government, 2019, *Queensland Spatial Catalogue: Gross Value of Agricultural Production (GVAP) per Local Government Area in Queensland.*

[9] This value is an indicative estimate only - it does not consider the value of individual commodities produced per lot or the value-add activities which contribute to the gross value of agricultural production in the region. An assessment of the composition of agricultural production by lot and commodity may be undertaken following detailed design once a more accurate depiction of the lot-specific impacts are able to be quantified.

- Water access and infrastructure: The Project has the potential to impede on essential access to water through impacts to drainage lines, diversions, or cutting off water input to and from dams. This potential fragmentation and alienation of properties may impact on the economic viability of farming operations associated with agricultural land directly impacted by the permanent disturbance footprint. The extent and nature of these impacts will be confirmed during the detailed design phase.

- Transport access and infrastructure: During construction, broader accessibility impacts due to changes in the surrounding road network may also affect local agricultural businesses. Level crossings and road diversions have been proposed to ensure accessibility to surrounding road networks are maintained.

  Where roads are permanently closed or re-routed, these impacts may continue once the Project is operational. The extent of these impacts will be confirmed during the detailed design phase.

Disruption to stock and product movement

Stock routes are corridors on roads, reserves, pastoral leases and unallocated State land along which stock are driven on foot and are designated for travelling stock purposes under the relevant State legislation. The study area does not traverse any known stock routes.

Chapter 8: Land Use and Tenure identifies that there may be informal stock routes used to transfer stock to various grazing paddocks and holding yards. Consultation is ongoing with landholders to identify impacts, if any, to informal stock routes. Accordingly, the extent of these impacts will be confirmed during the detailed design phase.

Improvements in supply chain efficiency

Efficient supply chains support the regional and national capacity to enhance economic opportunities within local communities. C2K is a critical link in the broader Inland Rail Program, offering a more efficient solution for intra and interstate freight operators who will be able to avoid inland and coastal road and rail networks. Specifically, the Project:

- Offers opportunities to improve the productivity of local export industries (such as agriculture); and

- Has the potential to unlock the construction of ancillary and complementary infrastructure, industrial development and logistics operations within the local area. Specifically, C2K may act as a significant catalyst for development in the planned and existing industrial areas at the Ebenezer Regional Industrial Area (RIA), Willowbank Industrial Estate and Bromelton SDA. Key activities will likely relate to rail-dependent industries and support industries associated with transport, freight handling, warehousing and logistics.

Mineral resources and extractive industries

Sterilisation of mineral and petroleum resources

- The permanent disturbance footprint of the Project does not cross any operational mines or areas of mineral resource interest. Accordingly, no resources identified, inferred or implied, related to the activities currently carried out within the existing mining leases are expected to be impacted by the Project.

- The permanent disturbance footprint traverses the Bremer View East Coal Resource Area, which may reduce the financial viability of the resource project.

- The permanent disturbance footprint traverses through two authority to prospect (ATP) permits for petroleum activities and two current applications for potential commercial areas (PCAs) for petroleum activities. The Project may sterilise petroleum resources within these tenements as the amount of land within these areas that is available for production will be reduced.

Consultation with resource interest holders will be undertaken during the detailed design phase. Where the Project may impact on likely significant deposits within the area, appropriate mitigation will be agreed with the resource.

Key resource area

The permanent disturbance footprint traverses the Purga key resource area (KRA), south of the separation area avoiding the resource processing area.

As detailed in Chapter 8: Land Use and Tenure, the distance of the permanent disturbance footprint is approximately four times the depth of the existing quarry pit, and therefore is considered to be located outside of the zone of influence in considerations for the pit wall stability. As such, it is considered that the stability of the quarry pit wall will have a negligible influence on the stability of the permanent disturbance footprint, and vice versa.

Local businesses

Construction materials

There are a number of construction businesses located within the study area, with a total of 3,316 employing businesses and a further 4,943 non-employing businesses across Ipswich, Logan and the Scenic Rim. These businesses are likely to be a significant source of services and equipment during the Project's construction. [10]

The Project will require a range of construction supplies, including borrow material (spoil, gravel or sand) and ballast material (crushed stone), pre-cast concrete, concrete sleepers and turnout panels, steel, fencing, electrical components, fuel and consumables. Precast concrete may be sourced from Ipswich and it is likely that ballast materials may be accessed from local quarries and borrow pits. Other major components such as fencing may be sourced within the study area (with several suppliers based at nearby Amberley and Ipswich). It is likely that concrete sleepers will be soured from outside the study area.

The Project will have significant construction materials and services requirements which may provide local businesses with the opportunity to supply the Project. ARTC has developed a Sustainable Procurement Policy which will ensure that local, regional and Indigenous businesses will have opportunities to supply the Project.

Transportation

The Project may provide opportunities for local transport or logistics businesses during construction to transport materials to laydown areas and remove waste materials and recyclables from construction compounds. These benefits have the potential to accrue over the long term, particularly if the Project acts as a catalyst for the development of freight and logistics operations within close proximity to the alignment, such as at the Ebenezer RIA, Willowbank Industrial Estate or Bromelton SDA.

During operation, the anticipated mode shift from road freight to rail freight is likely to reduce the number of heavy vehicles travelling on the road network, with the potential to impact on levels of trade for local transportation businesses. These impacts may be partially offset by the aforementioned opportunities to increase investment and activity in freight / logistics operations adjacent to Inland Rail.

Local service and supply businesses

The Project is likely to offer opportunities in secondary service and supply industries (such as retail, hospitality and other support services) for businesses in close proximity to the construction footprint. The expansion in construction activity would support additional flow-on demand and additional spending by the construction workforce in the local community (such as in the Logan and Ipswich areas where a portion of the construction workforce are likely to be sourced). This may lead to increased trading levels for small businesses, such as food and beverage businesses in the study area.

Inland Rail Program impacts

As per the requirements of the ToR, this EIA has focussed on the specific economic impacts resulting from the construction and operation of C2K. However, the assessment acknowledges the role of the Project, and the remaining Project links, in collectively delivering the benefits of the Inland Rail Program. In its entirety, Inland Rail

[10] ABS, 2019, *Count of Australian Businesses, including Entries and Exits, June 2014 to June 2018*, cat. no. 8165.0

will enhance Australia's existing national rail network and serve the interstate freight market. As per the Inland Rail Program Business Case (2015), key economic impacts of the Inland Rail Program include:

- Lower prices for consumers as a result of lower intercapital freight transport costs, which reduces the cost of living for households.
- Positive direct net economic benefits, driven by improvements in freight productivity, reliability and availability, and benefits to the community from reduced environmental externalities, reduced road congestion and improved safety benefits. The Program is stated to be economically viable with a benefit cost ratio of 1.02 at a 7 percent discount rate (2.62 at a 4 percent discount rate).
- Economic growth as increased profits (for industries and producers where intercapital freight is an input or output) and incomes are multiplied through the economy. The Program is anticipated to deliver a net positive impact of $16 billion on Gross Domestic Product ($2015) over its 10 year construction period and 50 years of operation.
- Nationally, the Program is also expected to deliver an additional 16,000 jobs at the peak of construction, and an average of 700 additional jobs per annum during operation.
- Enhanced competition between rail and road freight, by providing a credible transport alternative, which will drive further innovation and efficiency.
- Potential to promote the expansion and development of freight precincts around Inland Rail terminals as a result of the benefits from co-location and clustering of industries (as a result of reduced transport costs to warehousing, economies of scale and knowledge-sharing opportunities).

Economic benefits assessment

An economic benefits assessment has been undertaken to identify and assess the likely benefits of C2K, as a discrete project, to the community. These economic benefits have been estimated based on the impacts of the Project on the transport network, in particular freight operators, along with the benefits accrued by non-users (the community). Where the Project improves the transport connectivity and efficiency between freight originators and destinations, these movements across road and rail have been assessed in the appraisal.

Accordingly, for the purposes of this EIA, there are two components to the CBA:

1. Evaluation of the likely benefits of the discrete Project (economic benefits assessment). This analysis assesses only those impacts that would be likely if freight operators were to respond to the completion of the individual Project (in isolation of the whole Inland Rail Program). A Project-specific CBA has not been undertaken as the results will not capture the full economic impact that is expected to be delivered upon completion of the Inland Rail Program.
2. Description of the economic performance measures calculated for the Inland Rail Program as a whole (as per the Inland Rail Program Business Case (2015)).

Economic benefits assessment results

The results of the economic benefits assessment estimate that the Project is expected to provide a total ($2019 present value terms) of $166.22 million in incremental benefits to the Project area (at a 7 percent discount rate). This consists of $126.76 million in freight benefits and $39.46 million in community benefits.

Observing the composition of benefits, the largest share of benefits for C2K is freight operating cost savings, representing ~49 percent of the total benefits (at a 7 percent discount rate). Freight benefits more broadly (including freight time travel savings, operating cost savings, as well as improved reliability and availability) represent ~76 percent of the total projected benefits for C2K.

Reductions in environmental externalities (i.e. air pollution and greenhouse gas emissions) from reduced heavy vehicle kilometres travelled represents ~9 percent of the total benefits (at the 7 percent discount rate).

Results of the economic benefits assessment, present value terms ($2019)

Benefits	Discount Rate		
	4%	7%	10%
Freight Benefits	**$248.34 m**	**$126.76 m**	**$74.87 m**
Travel Time Savings	*$17.09 m*	*$8.92 m*	*$5.35 m*
Operating Cost Savings	*$150.74 m*	*$81.59 m*	*$50.48 m*
Improved Availability	*$62.68 m*	*$27.88 m*	*$14.44 m*
Improved Reliability	*$17.82 m*	*$8.37 m*	*$4.61 m*
Community Benefits	**$72.69 m**	**$39.46 m**	**$24.45 m**
Crash Reduction	*$9.97 m*	*$5.41 m*	*$3.35 m*
Environmental Externalities	*$29.00 m*	*$15.74 m*	*$9.75 m*
Road Decongestion Benefits	*$33.73 m*	*$18.31 m*	*$11.35 m*
TOTAL BENEFITS	**$321.03 m**	**$166.22 m**	**$99.32 m**

Source: KPMG

Cost Benefit Analysis: Inland Rail Program Business Case

As detailed above, due to the nature of the incremental assessment approach adopted for this EIA, a Project-specific CBA has not been undertaken as the results will not capture the full economic impact that is expected to be delivered upon completion of the Inland Rail Program. The total Program is anticipated to deliver benefits above the sum of the individual benefits of each individual link.

The results of the economic analysis undertaken for the full Inland Rail Program, as presented in the Inland Rail Program Business Case (2015), are provided in the table below. As shown, the construction and operation of Inland Rail is estimated to deliver positive net economic benefits with a benefit cost ratio above one.

Economic appraisal results for Inland Rail ($2015)

	Net Present Value	Benefit Cost Ratio
PV at 4% Discount Rate	$13,928 m	2.62
PV at 7% Discount Rate	$116.1 m	1.02

Source: Inland Rail Program Business Case 2015
Note: Assumes complementary investment on the QR network (Western Line and Brisbane metropolitan network).

Regional impact analysis

A regional impact analysis has been undertaken to highlight the economic impacts of C2K on the regional, state and national economy using an equilibrium modelling framework. The regional economy is represented by the Greater Brisbane labour market region.

A CGE model (KPMG-SD) was developed to examine the direct and indirect (flow-on) effects arising from the construction of C2K on the broader economy. The modelling framework assesses the direct and indirect effects of significant net government expenditure on traditional measures of regional economic performance such as Gross Regional product (GRP), Gross State Product (GSP) and Gross Domestic Product (GDP). KPMG-SD also

provides estimates of employment supported through these investment shocks, noting that estimates of employment produced by the model reflect the direct and indirect jobs generated across the economy.[11]

The key impacts of C2K on the Greater Brisbane region during the construction phase are summarised in the table below.

Direct and indirect economic impacts of C2K on the regional economic catchment, construction phase

	Greater Brisbane	
Measure	**Slack Labour Markets**	**Tight Labour Markets**
Additional real GRP ($2018-19)	$355 m	$125 m
Average annual additional direct and indirect employment (persons)	482	96

Source: KPMG
Note: The average annual additional jobs listed in the table reflect jobs generated in the Greater Brisbane area. The Project will also generate jobs in adjacent labour markets.

During the construction phase, real Gross Regional Product (GRP) for the Greater Brisbane Region is projected to be $355 million higher than the baseline level under the assumption of slack labour markets. This increase is more than halved if labour markets are assumed to be tight ($125 million).

The importance of the labour market assumption is reflected in the employment results. In the slack labour market scenario, it is estimated that an additional 482 direct and indirect jobs are generated.[12] Note that this is the average number of jobs per annum during the construction period. With tight labour markets, the increase in jobs is significantly less at 96 jobs. Under tight labour markets, wages are bid up to attract currently employed workers to the businesses contracted to construct C2K. That is, the labour market response is dominated by workers moving from their current job to a higher paying job. With slack labour markets, there are sufficient unemployed and under-employed workers to accommodate the increase in demand for labour without increasing real wages.

The possibility of some tightness in the labour market cannot be completely dismissed. If the government's health and economic policy responses to the 2020 quarter 2 market conditions are highly effective, the economy may grow much faster than expected resulting in significantly more activity in the construction sector than anticipated. For example, the government may seek to bring forward projects to stimulate the economy. If this transpires then labour market conditions may tend towards somewhere between the "slack" and "tight" scenarios.

[11] As compared to the direct jobs determined through the indicative construction schedule and component activities as described in the workforce profile.

[12] To put this in context, the planned workforce requirements (direct employment) of C2K during the construction phase peak at approximately 620 personnel. Almost 80 percent of the C2K CAPEX is expended in 2022 and 2023. It is estimated that the average annual number of jobs in those two years for Greater Brisbane is about 1,100 in slack labour market conditions and 230 in tight labour market conditions.

Cumulative economic impacts

The cumulative economic impact assessment refers to the potential impact of cumulative stimulus to the economy resulting from a set of existing or planned projects within or adjacent to the study area. Cumulative impacts may result from the spatial and / or temporal interaction between these projects.

For the purposes of this report, the cumulative impact assessment has two components:

- **Inland Rail Program in Queensland**

  A quantitative assessment of the cumulative macroeconomic impact of the Inland Rail Program on the economy, resulting from the construction of the QLD sections of the Inland Rail Program.

  There are five sections of the Inland Rail Program which fall in QLD, including Border to Gowrie (B2G), Gowrie to Helidon (G2H), H2C, C2K and K2ARB.

- **Broader cumulative assessment**

  A qualitative assessment of cumulative impact of State significant projects (that have been identified by ARTC as having a relationship to the Project - refer Appendix A) on local and regional labour markets, the supply chain and local businesses.

Inland Rail Program in Queensland

Under the assumption of slack labour markets, the incremental economic impacts of the construction of the QLD sections include an increase in real GSP of $1.75 billion (measured in $2019) and an increase in the average number of jobs (direct and indirect) over the period 2020 to 2025 of 2,059 jobs per year. If labour markets are tight then the incremental benefits are smaller with real GSP increasing by $0.83 billion and the average annual number of jobs increasing by 485 over the same period.

The sections of the Inland Rail Program that are located in the Greater Brisbane region include C2K, K2ARB and part of H2C. Construction activities related to these sections will directly impact the Greater Brisbane economy. The remaining QLD sections of the Inland Rail Program, which are located in the Toowoomba and Darling Downs and Maranoa regions, will impact Greater Brisbane indirectly.

When all the QLD projects are considered jointly, the analogous increment to jobs (direct and indirect) in Greater Brisbane increase to 703 per year (under a slack labour market scenario) and 153 per year (under a tight labour market scenario). The increment to jobs in Greater Brisbane peaks in 2022 at 1,610 and 370 jobs under slack and tight labour market conditions respectively. As discussed in Section 4.5, the labour market conditions expected to prevail in the Greater Brisbane economy over the period 2020 to 2025 will be most consistent with those assumed in the "slack" labour market scenarios that have been simulated. Further discussion regarding the regional labour market implications are discussed in the broader cumulative assessment below.

Broader cumulative assessment

Labour market

The concurrent construction of interacting projects has the potential to increase the demand for labour in the local and regional economy, particularly for workers with trade and construction skills / knowledge. The demand for construction workers within a similar timeframe will lead to cumulative demands on construction labour, not only within the local and regional economy, but also across QLD, and potentially nationally.

The results of the regional economic impact assessment indicate that it is reasonable to assume that the regional labour market will have the capacity to supply a portion of the workforce requirements of the Project, without major disruption. However, these conditions may change in the context of cumulative labour market demand. Prior to the change in 2020 quarter 2 market conditions, the major infrastructure projects in the adjacent and surrounding areas, including those associated with Inland Rail, had the potential to put some

pressure on labour markets if inopportune scheduling resulted in cumulative and competing demand for trades and construction labour. The overall labour demands of the various infrastructure projects expected to be constructed were modest and that scheduling could be optimised to minimise market impact. The prevailing trends in the Greater Brisbane labour market, and the ability of workers to mobilise to project locations, suggested that the risks of labour market disruption were limited. In the current environment, this risk has now been further reduced.

There may be benefits from having additional infrastructure projects in the adjacent and surrounding areas around the same time as C2K. These benefits come in the form of lowered mobilisation costs and transfer of labour experience and skills to projects, particularly those constructed in the period leading up to, and the period following, the C2K's construction phase.

Supply chain and local businesses

Cumulative supply chain impacts are also likely to be realised where construction timeframes occur concurrently and comparable material is required, e.g. the adjacent Inland Rail projects. Opportunities to supply these projects may include supply of fuels, equipment, borrow and quarried material. Where materials are sourced within the surrounding regions, increased local expenditure is likely to increase local and regional economic activity.

Further, the expansion in construction activity and regional employment (with a subsequent increase in temporary and non-resident population) has the potential to increase demand for a range of local infrastructure and services, including housing, health care, child care, and education. Additional spending on consumer orientated products by the construction workforce has the potential to benefit local businesses by increasing their trading levels.

Mitigation and management strategies

C2K will result in a number of economic impacts, with potential economic benefits realised at a local and regional level. In order to maximise the positive outcomes of the Project, a number of strategies to avoid, reduce or mitigate the negative economic impacts, and enhance and facilitate the capture of positive impacts have been proposed by ARTC.

A Social Impact Management Plan (SIMP) has been developed which outlines the objectives, outcomes and performance measures required to manage the social and socio-economic impacts of the Project, and enhance Project benefits and opportunities. There are two action plans which are directly relevant to the economic impacts identified and assessed in this EIA – Workforce Management and Local Business and Industry Participation.

There are a number of economic impacts identified within this EIA which are not addressed within the SIMP. Where these impacts cannot be avoided, a range of measures have been proposed by ARTC to carefully manage and mitigate these impacts. For example, measures include working with individual land owners to develop suitable solutions based on individual farm management practices, rehabilitating land as close as possible to pre-construction conditions, and consulting with tourism associations to develop a strategy to ensure that generalised impacts on tourism values are reduced wherever possible.

Conclusions

A detailed EIA has been undertaken for the C2K link of the Inland Rail Program, in accordance with the requirements under Section 11.153 of the ToR.

Local and regional employment, business and industry impacts

At a local level, the Project will support regional economic development through opportunities for local and regional employment, businesses and industries:

- The Project offers 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. ARTC has developed a Sustainable Procurement Policy which will ensure that local, regional and Indigenous businesses will have opportunities to supply the Project.
- The Project offers opportunities in secondary service and supply industries (such as retail, hospitality and other support services) for businesses in close proximity to the construction footprint. The expansion in construction activity is also likely to support additional temporary flow-on demand and additional spending by the construction workforce in the local community.
- C2K is a critical link in the broader Inland Rail Program. As a greenfield development, C2K comprises new dual gauge track to create a more direct rail freight corridor for freight operators. As a critical link of the broader Inland Rail Program, C2K offers opportunities to support the local agricultural industry, by driving savings in freight costs, improving market access, and reducing the volume of freight vehicles on the region's road network.
- As part of the Inland Rail Program, C2K has the potential to unlock the construction of ancillary and complementary infrastructure, industrial development and logistics operations within the local area. Specifically, C2K may act as a significant catalyst for development in the planned and existing industrial areas at the Ebenezer RIA, Willowbank Industrial Estate and Bromelton SDA.

The Project alignment has been designed to minimise impacts to local business and industry, however the Project may result in the disruption of the tourism and agriculture business through:

- Changes to the amenity of, or connectivity to, the local landscape and attractions. The Landscape and Visual Amenity Assessment (Chapter 10) concludes that a significant decrease in visitation as a result of this impact is unlikely. ARTC will work with tourism associations to ensure that generalised impacts on tourism values are reduced wherever possible; and
- The loss of agricultural land (through disturbance, acquisition, or sterilisation by the permanent disturbance footprint), disruption to farm management, or changes in accessibility or connectivity to market. This may negatively impact on the productive capacity and total economic value add from the local agricultural industry. Based on the proportion of productive agricultural land lost, it is estimated that the Project could result in a loss of $5,745 (value foregone) in gross agricultural production per year.[13] ARTC will work with individual land owners to develop suitable management solutions based on individual farm management practices to mitigate and manage these impacts.

Economic benefits assessment

The economic benefits assessment estimates that the Project is expected to provide a total ($2019 present value terms) of $166.22 million in incremental benefits (at a 7 percent discount rate). These benefits result from improvements in freight productivity, reliability and availability, and benefits to the community from crash reductions, reduced environmental externalities and road decongestion benefits.

[13] This value is an indicative estimate only - it does not consider the value of individual commodities produced per lot or the value-add activities which contribute to the gross value of agricultural production in the region. An assessment of the composition of agricultural production by lot and commodity may be undertaken following detailed design.

Regional economic impact assessment

The Project will promote regional economic growth across the Greater Brisbane region. Using recent labour market trends and projected construction sector activity to inform workforce capacity and capability within the local region, it has been concluded that it is likely that the labour market conditions that will prevail during the construction phase of C2K will most likely be closer to those characterised by the "slack" labour market scenario. Under this scenario, over the construction phase, real GRP is projected to be $355 million higher than the baseline level.

Under a "slack" labour market scenario, C2K is also expected to deliver an additional 482 jobs (direct and indirect) per year over the construction period.

The possibility of some tightness in the labour market cannot be completely dismissed. If the government's health and economic policy responses to the economic shock associated with the 2020 quarter 2 market conditions are highly effective, the economy may grow much faster than expected resulting in significantly more activity in the construction sector than anticipated. For example, the government may seek to bring forward projects to stimulate the economy. If this transpires then labour market conditions may tend towards somewhere between the "slack" and "tight" scenarios.

Cumulative impact assessment

The construction phases of the QLD sections of the Inland Rail Program have been jointly simulated to analyse the cumulative economic impacts of these projects. Under the assumption of slack labour markets, the incremental economic impacts of the QLD sections include an increase in real GSP of $1.75 billion (measured in $2019) and an increase in the average number of jobs over the period 2020 to 2025 of 2,059 jobs per year. If labour markets are tight then the incremental benefits are smaller with real GSP increasing by $0.83 billion and the average annual number of jobs increasing by 485 over the same period.

When all the QLD projects are considered jointly, the analogous increment to jobs (direct and indirect) in Greater Brisbane increase to 703 per year (under a slack labour market scenario) and 153 per year (under a tight labour market scenario). The increment to jobs in Greater Brisbane peaks in 2022 at 1,610 and 370 jobs under slack and tight labour market conditions respectively.

The results of the regional economic impact assessment indicate that it is reasonable to assume that the regional labour market will have the capacity to supply a portion of the workforce requirements of the Project, without major disruption. However, these conditions may change in the context of cumulative labour market demand. Prior to the change in 2020 quarter 2 market conditions, the major infrastructure projects in the adjacent and surrounding areas, including those associated with Inland Rail, had the potential to put some pressure on labour markets if inopportune scheduling resulted in cumulative and competing demand for trades and construction labour. The overall labour demands of the various infrastructure projects expected to be constructed were modest and that scheduling could be optimised to minimise market impact. The prevailing trends in the Greater Brisbane labour market, and the ability of workers to mobilise to project locations, suggested that the risks of labour market disruption were limited. In the current environment, this risk has now been further reduced.

The expansion in construction activity and regional employment is also likely to increase demand for a range of local infrastructure and services, including in the construction supply chain and for local retail and hospitality businesses.

Impact management

ARTC are committed to enhancing the economic benefits of the proposal while avoiding, mitigating or managing any adverse economic impacts. Accordingly, there are a range of actions that ARTC will undertake and / or require its contractor to undertake to manage the social and socio-economic impacts of C2K, and enhance proposal benefits and opportunities.

1 Introduction

The following economic impact assessment (EIA) report has been prepared to identify potential economic impacts of the proposed Calvert to Kagaru Project (C2K or the Project), a project in the Inland Rail Program (Inland Rail or the Program). Inland Rail is a direct interstate freight rail corridor, approximately 1,700 kilometres, between Melbourne and Brisbane via central-west New South Wales (NSW) and Toowoomba, Queensland (QLD).

Inland Rail will enhance Australia's existing national rail network and serve the interstate freight market. The primary economic objective of Inland Rail is to promote economic growth by improving the efficiency of transport for Australia's exports, and increasing the productivity of domestic supply chains. Australian Rail Track Corporation Ltd (ARTC) proposes to construct and operate Inland Rail.

Since the completion of the economic modelling detailed in this report there have been series of changes to the project and the project environment. This includes changes to the Inland Rail construction program and the economic shock associated with the 2020 quarter 2 market conditions which are not reflected in the economic analysis or economic impact assessment contained within this report at the request of ARTC.

1.1 Legislation

The EIA forms part of an Environmental Impact Statement (EIS) being prepared by ARTC for approval from the QLD Coordinator-General under Section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The Commonwealth Minister for the Environment and Energy determined that C2K is a 'controlled action' under the EPBC Act on 17 March 2017.

ARTC lodged its application, including Initial Advice Statement, on 10 May 2017. The final Terms of Reference (ToR) were issued on 8 December 2017. The following assessment addresses the economic specific information requirements of Section 11.153 of the ToR (Table 1).

Table 1: EIA ToR Information Requirements

EIS Economic Objectives	
The construction and operation of the project should aim to: (a) avoid or mitigate adverse economic impacts arising from the project (b) capitalise on opportunities potentially available for capable local industries and communities (c) create a net economic benefit to the region and State.	
Information Requirements	**EIA Section**
Identify the economic impacts of the project on the local and regional area and the State.	Section 4, Section 5, Section 6 and Section 7
Estimate the costs and benefits and economic impacts of the proposal using both regional impact analysis and cost–benefit analysis. The analysis should be consistent with the Coordinator-General's Economic Impact Assessment Guideline (April 2017).	Section 4.4 and Section 4.5

Table 2: Other relevant ToR Information Requirements

Information Requirements	EIA Section
Section 5.1 The objectives of the EIS are to ensure that all relevant environmental, social and economic impacts of the project are identified and assessed, and to recommend mitigation measures to avoid or minimise adverse impacts. The EIS should demonstrate that the project is based on sound environmental principles and practices.	Section 5 and Section 7 (These requirements are addressed through remainder of the EIS)
Section 11.150 The impact assessment should also evaluate and discuss the potential cumulative social impacts resulting from the proposed project in combination with other existing major projects and/or developments and those which are progressing through planning and approval processes (where public information is available) within the SIA study area. Key issues assessed should include: (a) population (b) workforce (construction and operation) (c) workforce accommodation (d) local and regional housing markets (e) use of and access to community infrastructure, services and facilities (including social and health services and facilities).	(b) addressed in Section 6 (other requirements are addressed through the Social Impact Assessment)

1.2 Guidelines

As identified in the ToR, the following EIA has been undertaken in accordance with the guidance provided by the Coordinator-General's Economic Impact Assessment Guideline (April 2017).

The guidelines state that the *'EIA must estimate the project's economic impacts and identify measures to manage any negative impacts and capture the economic opportunities generated by the project. It must:*

- *include both a description of the economic environment with and without the project;*
- *use standardised methodologies and information;*
- *make all assumptions transparent; and*
- *propose targeted impact management measures.*

The EIA must meet the requirements of the ToR and be consistent with the social impact assessment and other elements of the EIS. The EIA must be developed in consultation with key stakeholders such as local governments, industry bodies and local businesses.

1.3 Local and regional policy and planning

Across Federal, State and Local Government, there are a number of strategic policy and planning documents relevant to the C2K EIA, including regional infrastructure and economic development planning.

Australian Infrastructure Plan 2016

The Australian Infrastructure Plan (the Plan) was developed by Infrastructure Australia as a long-term plan for infrastructure reform and investment in Australia. The Plan is guided by four headline aspirations:

- Productive cities, productive regions;
- Efficient infrastructure markets;
- Sustainable and equitable infrastructure; and
- Better decisions and better delivery.

Within the 'productive cities, productive regions' aspiration, the Plan recognises that at a national level the efficient movement of freight into, out of and across Australia is critical to the nation's ongoing productivity growth and competitiveness. The Plan identifies a number of challenges facing the freight network and supply chains, including constraints such as missing links, pinch points, operational restrictions, and first and last mile access challenges.

The Plan highlights the importance of the Melbourne to Brisbane freight corridor in supporting population, production and employment precincts along the east coast of Australia. Inland Rail will improve the efficiency, effectiveness and safety of freight movements travelling along this corridor. As a greenfield project, C2K will contribute to the realisation of these benefits, including improvements to the productivity and competitiveness of Australia's freight sector.

Queensland Freight Strategy – Advancing Freight in Queensland

The Queensland Freight Strategy (the Strategy) sets a shared vision for the State's freight system through a series of commitments that have the aim of guiding policy, planning and investment decision-making over the next 10 years. The vision for Queensland is "an integrated, resilient and safe freight system that supports the economy and community".

The Strategy makes a commitment to optimise existing freight infrastructure and target investment towards creating economic opportunities. The Strategy also acknowledges the importance of smarter connectivity and access, identifying the role of competitive rail freight services in promoting the mode shift for freight from road to rail. As part of the broader Inland Rail Program, the development of C2K supports the strategic intent and direction of the Strategy, by improving the efficiency of rail freight and subsequently increasing the productivity of regional and state supply-chains and industry.

South East Queensland Regional Plan 2017 (Shaping SEQ)

Shaping SEQ (South East Queensland Regional Plan, or the Plan) is the Queensland Government's plan to guide the future development of the South East Queensland (SEQ) region. The Plan aims to "set the direction for sustainability, global competitiveness and high-quality living". The planning framework for the next 25 years is based on five strategic goals; grow, prosper, connect, sustain and live.

In particular, the Plan addresses 'prosper' through a focus on regional economic clusters such as the Western Gateway and South West Industrial Corridor (including Ipswich), which will be further enabled by the development of Inland Rail. The Plan recognises the role of Inland Rail (specifically the C2K alignment) in unlocking opportunities for the greater intensification and consolidation of industrial activities (and rail-dependent industries) within the western subregion, including the development of a transport and logistics hub at Ebenezer. It also recognises the role of Inland Rail in facilitating the long-term development of the Bromelton SDA.

Additionally, the Plan recognises the role of Inland Rail in improving national freight network connections. This will support efficient freight movements, align with the Plan's goal of 'connection' and contribute to economic development throughout SEQ.

DRAFT South East Queensland Regional Transport Plan 2018

The draft SEQ Regional Transport Plan (SEQ RTP) outlines a shared direction for shaping the region's transport system over the next 15 years. The SEQ RTP sets out regional transport priorities and actions for developing the transport system in a way that supports regional communities, growth and productivity. The SEQ RTP details the economic importance of the relationship between infrastructure, transport and land use.

The SEQ RTP recognises the vital role of SEQ's freight network in supporting the future growth of SEQ's export orientated industries to support a globalised economy.

Inland Rail has been identified as an opportunity to improve the efficiency of SEQ's east-west freight link, by improving the availability of rail freight. Specifically, the Plan highlights the potential for Inland Rail (at the Kagaru extent of the Project) to provide convenient access for freight to the Bromelton State Development Area (SDA) and intermodal terminal. Overall, C2K, as part of the broader Inland Rail Program, will increase the attractiveness and competitiveness of rail freight, consistent with the planning intent of the SEQ RTP.

SEQ Regional Freight Strategy 2007-2012

The South-East Queensland Regional Freight Strategy (the Strategy) aims to "facilitate freight moving efficiently across the transport network", enhancing economic development, safety, quality of life and environmental sustainability. While the Strategy is no longer current, the document has not been superseded.

The Strategy acknowledges freight as an important issue for the region with the efficient movement of freight listed as crucial to industry and commercial productivity. As such, Inland Rail is noted as having the potential to influence future freight movements and the development of the SEQ freight network.

The Strategy acknowledges the potential for Inland Rail to encourage mode shift from road freight to rail freight, in addition to opening up interstate rail freight movements entering SEQ from the west. C2K will play an important role in moving freight into SEQ from the west and, as such, is consistent with the Strategy's intent. Further, the potential connection of Inland Rail to key inter-modal freight terminals, including proposed sites at Ebenezer and Bromelton, offers an opportunity to harmonise best practice rail and road operations to increase the productivity of freight movements and economic output from industry.

Advance Ipswich (2015)

Advance Ipswich (the Plan) provides a shared vision for the future of Ipswich, covering the social, economic and environmental priorities for the area. There are five key themes included in the Plan, two of which align to the outcomes of the Project and the broader Inland Rail Program - 'Strengthening our [Ipswich's] Local Economy and Building Prosperity (Jobs)' and 'Managing Growth and Delivering Key Infrastructure'.

From an economic development perspective, the region is focused on promoting economic activity and employment within the regionally significant business and industry areas at Swanbank / New Chum and Ebenezer / Willowbank. By offering opportunities to better link the rail freight network and the proposed inter-modal freight terminal and industrial area at Ebenezer, the development of C2K is consistent with the Plan's intent to support the region's transport, logistics and manufacturing industries within these areas. Consistent with the Plan's key themes, improved transport accessibility has the potential to increase the productive output of local industries and business, increasing opportunities for local employment and economic growth.

Ipswich and West Moreton Regional Committee – Regional Roadmap 2016-2020

The Australian Government along with Regional Development Australia established a network of committees to support and broker economic development opportunities for specific regions. One of the committees established was for the Ipswich and West Moreton Region. The committee's vision is that by '2024, the Ipswich

and West Moreton Region has been able to successfully negotiate a balance between protection of natural assets and facilitating economic growth'.

There are five economic development themes under the Regional Roadmap which will support various projects and initiatives. Investing in critical infrastructure needed to support growth in a large region of rural through to urban areas has been identified as one key theme. The Regional Roadmap recognises that the development of an inland freight rail line will increase the importance of the Region with its distribution channels, which will help to attract new businesses to the area on a long term basis. Subsequently, a key nominated project for growth in the region identified by the Committee is Inland Rail.

City of Ipswich Transport Plan (iGo) (2015)

The City of Ipswich Transport Plan (iGo) outlines the Ipswich City Council's aspirations to advance Ipswich's transport system, and guide future investment decision-making. iGo highlights the importance of efficient and effective freight movements in supporting industry development and sustainable economic growth. Specifically, the Plan outlines the potential for improved freight movements to unlock industrial development in Ipswich within areas such as Carole Park, Wulkuraka, Redbank, Dinmore, Bundamba, Swanbank and Ebenezer.

As such, iGo recognises the importance of Inland Rail, and 'continuing the planning and development of Inland Rail' is listed as one of the key actions of the Plan. Specifically, C2K (as part of the broader Inland Rail Program) has the potential to increase the accessibility and efficiency of rail freight, with potential connections to the proposed logistics hubs and industrial developments at Ebenezer (Ipswich) and Bromelton (Scenic Rim) via inter-modal freight terminals. Overall, the Project has the potential to support economic development and jobs growth in Ipswich.

Logan Economic Development Strategy (2016–2021)

The Logan Economic Development Strategy (the Strategy) provides the overarching direction for achieving economic growth in the City of Logan. Through four core strategies – Local Connections, Global Connections, Industry Development and Investment Attraction, and Tourism Investment Attractions – the Logan City Council seeks to position the City of Logan as an emerging economic powerhouse in SEQ, leveraging its excellent location, connectivity and favourable business conditions.

As described in Section 2.4 below, C2K traverses the City of Logan for a distance of approximately 300 metres, in the unpopulated mountainous area of Undullah. While this footprint is small, the development of Inland Rail – specifically the construction of C2K – will support the strategic intent of the Strategy by supporting existing businesses (through the supply of construction labour and materials) and promoting local employment opportunities (for workers within driving distance of the alignment).

Scenic Rim Planning Scheme 2020

On 20 March 2020, the Scenic Rim Regional Council implemented a new Scenic Rim Planning Scheme (the Scheme) for its LGA. The Scheme seeks to advance State and regional policies through detailed local responses that consider the local and regional context of the Scenic Rim. The policy intent of the Scheme is summarised into four themes – Communities and Character, Growing Economy, Environment and Natural Hazards, and Sustainable Infrastructure.

The development of Inland Rail aligns to the Growing Economy theme within the Scheme, with the Bromelton SDA recognised as a regionally significant industrial area. The Bromelton SDA is expected to contribute to economic growth and employment within the wider region through enabling industries access to both intrastate and interstate markets. C2K will support the strategic intent of the Scheme's economic growth objectives by directly contributing to the connectivity and access to rail freight networks.

1.4 Study area

The Project traverses three LGAs – Ipswich, Scenic Rim and Logan. Combined, these LGA boundaries form the **study area** for assessing the local economic impacts of the Project, reflecting a local catchment for workers and economic activity.

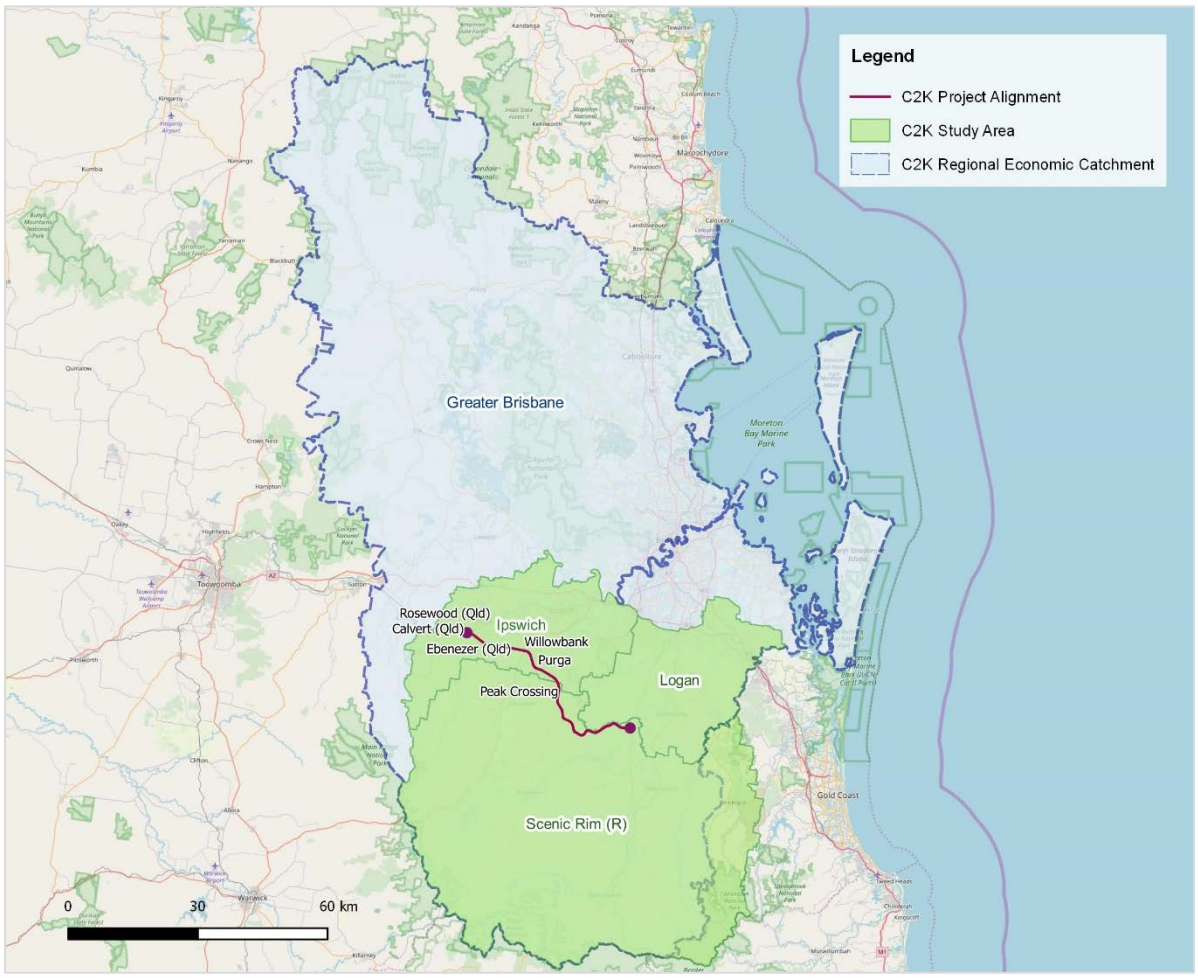
It is important to note that the Project traverses the Logan LGA for a distance of approximately 300 metres, in the unpopulated mountainous area of Undullah. There are no communities along the Project alignment within Logan that are directly impacted by C2K, however potential benefits and impacts on nearby communities are considered in the assessment.

For the purposes of the regional impact analysis, the **regional economic catchment area** is defined as the Australian Bureau of Statistics (ABS) labour market region boundaries of the Australian Statistical Geography Standard that captures the integrated regional economy within which the Project is located. The Project is located within the Greater Brisbane labour market region which is defined as the regional economic catchment area for this EIA.

Area Definitions:

- **Study area:** Ipswich, Scenic Rim and Logan LGAs
- **Regional economic catchment area:** Greater Brisbane Greater Capital City Statistical Area

Figure 1: C2K study area and regional economic catchment



Source: ARTC

Importantly, this EIA acknowledges the potential benefits and impacts of the Project on stakeholders within the study area and regional economic catchment, in addition to the surrounding areas, particularly at the Project extents. There are a number of population centres that are located within close proximity to C2K, including Calvert, Rosewood, Ebenezer, Willowbank, Purga and Peak Crossing.

Calvert

Located within the Ipswich LGA, Calvert is 26 km south east of Gatton and 25 km south west of Ipswich (city centre). The area is approximately 1.8 km west of the Project alignment and can be accessed by the Main Line Railway and Rosewood Laidley Road. Land use in Calvert is typically of a rural nature, with most properties within the area consisting of large-lot grazing areas. The SEQ Regional Plan categorises the area as a regional landscape and rural production area.[14] Calvert has a population of approximately 313 persons and is considered a regional community with a population density of approximately 7.1 persons per square km. This is compared to a population density of more than 140 persons per square km in Ipswich (State Suburb).

Rosewood

Located within the Ipswich LGA, Rosewood is a small town in the Bremer Valley. It lies approximately 20 km west of Ipswich and 60 km south-west of Brisbane on the Bremer River approximately 5 km north of the Project alignment. The area can be accessed through the Warrego Highway to the north and the Cunningham Highway to the east. According to the SEQ Regional Plan, Rosewood is zoned as urban footprint, regional landscape and rural production. Rosewood has a population of approximately 2,834 persons, with a population density of approximately 4.6 persons per square km.

Ebenezer

Ebenezer is located approximately 16 km south east of Ipswich (State Suburb) within the Ipswich LGA. Ebenezer is accessible via the Cunningham Highway to the east and the Main Line Railway to the north. Land use within Ebenezer is predominately regional landscape and rural production, with a small area of urban footprint (SEQ Regional Plan). Ebenezer has a population of approximately 315 persons, with a population density of approximately 6.5 persons per square km.

Willowbank

Willowbank is located approximately 14 km south east of Ipswich (State Suburb) within the Ipswich LGA. The Cunningham Highway passes through the area from north to south, and the area is dissected by Ebenezer Creek. The SEQ Regional Plan categorises Willowbank as a predominately urban footprint, regional landscape and rural production area. Willowbank has a population of approximately 1,315 persons, with a population density of approximately 20.6 persons per square km.

Purga

Purga is a rural community located to the east of the Project alignment, located within the Ipswich LGA. Purga is accessible via the Cunningham Highway and Ipswich-Boonah Road, and is characterised as a regional landscape and rural production area. Purga has a population of approximately 576 persons, with a population density of 0.65 persons per square km.

Peak Crossing

Peak Crossing is located at the junction of the Ipswich and Scenic Rim LGAs, approximately 20 km south of Ipswich (State Suburb). The SEQ Regional Plan categorises Peak Crossing as an urban footprint, and its surrounds as regional landscape and rural production. Peak Crossing is accessible via Ipswich Boonah Road. The area has a population of approximately 965 persons, with a population density of approximately 0.25 persons per square km.

[14] ShapingSEQ, 2017, *Regional Land Use Categories: Map SEQ RP 23.* https://dilgpprd.blob.core.windows.net/general/seqrp-2017-regulatory-map-23.pdf

1.5 Assessment methodology

The EIA has been developed according to the ToR and Queensland's Coordinator-General's Economic Impact Assessment Guideline. Accordingly, the approach adopted for this report is reflective of the recognised industry approach to undertaking an EIA. It represents a whole of life approach, comprising an evaluation of the economic impacts and benefits generated by the Project across both the construction and operational phases. Further, the report considers the cumulative impacts and benefits that will be realised due to the development and operation of adjacent and complementary projects. The following methodology was presented by the Office of the Coordinator-General on 30 October 2018.

Specifically, this assessment:

- Establishes the **existing economic environment and local context** to understand the local economic context and form the basis to measure the economic impacts;
- Identifies potential **economic benefits and impacts** on affected local and regional communities and businesses. This will be drawn from local community consultation and industry engagement undertaken by ARTC, evaluation of publicly available information, and the outputs from the Social Impact Assessment and Land Use and Tenure Assessment;
- Assesses the projected economic benefits of the Project, including the basis for their estimation through a detailed economic benefits assessment. The outcomes of the proposed C2K link-specific analysis will be contextualised against the results of the **cost benefit analysis** (CBA) undertaken for the entire Inland Rail Program, as per the Inland Rail Program Business Case (2015);
- Assesses the economic significance of the Project on the regional, state and national economies through **computable general equilibrium modelling (CGE)**;
- Evaluates the potential **cumulative impacts** on local and regional economies resulting from the construction and operation of related projects, including adjacent Inland Rail project links; and
- Outlines ARTC's commitments to **enhance** economic benefits and to **avoid, mitigate or manage** adverse economic impacts.

1.5.1 Existing economic environment

The existing economic environment section describes the existing economic profile of the study area, and provides a baseline for assessment of the potential economic impacts of C2K. The economic baseline includes key socio-economic characteristics and identifies existing economic activities in the study area.

This section has been developed based on data and information sourced from:

- Strategic economic development, transport and community plans for the study area and regional economic catchment (refer Section 2.3);
- ABS 2016 Census of Population and Housing;
- ABS Regional Population Growth, 2018-19;
- Queensland Government Statisticians Office 2018 edition population projections;
- ABS, Labour Force Survey, Australia, December 2019;
- Australian Government's Small Area Labour Markets publication, December 2019; and
- Consultation with local businesses and the community undertaken by ARTC.

1.5.2 Local economic impact assessment

The local economic impact assessment section describes potential economic impacts resulting from the Project on local business, industry and the community. This assessment has been developed based on:

- Consultation with the local community undertaken by ARTC;
- The outcomes of the Social Impact Assessment (EIS Appendix R) process to identify local and regional business capacity, aspirations and initiatives; and
- The outcomes of the Land Use and Tenure Assessment (Chapter 8) to identify local and regional impacts on industry resulting from land use changes.

1.5.3 Economic benefits assessment

A large proportion of the benefits of the Inland Rail Program stem from improving the connection between regional producers and markets; through to both domestic markets in cities and international markets through ports. As such, an incremental CBA approach assessing each link of the Inland Rail Program, individually and in isolation of the whole Program, will not capture the full impact that is expected to be delivered upon completion of the entire Melbourne to Brisbane connection. Put simply, the benefits of Inland Rail will outweigh the sum of the individual projects.

Accordingly, for the purposes of this EIA, there are two components to the assessment:

1. Evaluation of the likely benefits of the discrete Project (economic benefits assessment). This analysis assesses only those impacts that would be likely if freight operators were to respond to the completion of the individual Project.
2. Description of the CBA economic performance measures calculated for the Inland Rail Program as a whole (as per the Inland Rail Program Business Case (2015)).

The approach to the economic benefits assessment taken in this Technical Report draws from the existing literature and guidelines surrounding the economic appraisal of infrastructure projects, including, but not limited to:

- Infrastructure Australia's (IA) Assessment Framework;
- QLD Government's Project Assessment Framework (PAF) guidance material;
- Transport for NSW's Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives (2018); and
- The Australian Transport Assessment and Planning (ATAP) guidelines.

1.5.4 Regional impact analysis

A regional impact analysis has been undertaken to highlight the economic impacts of C2K on the regional, state and national economies using an equilibrium modelling framework. For the purposes of this analysis, a CGE model has been developed to examine the flow-on impacts arising from C2K on the broader economy. These impacts have been modelled using KPMG-SD, a proprietary regional CGE model of the Australian economy developed and maintained by KPMG.

KPMG-SD is ideally suited to quantifying the industry, regional and economy-wide impacts of major projects like Inland Rail, because it can capture the upstream and downstream linkages between a project's activities and the rest of the economy. KPMG-SD also provides estimates of employment supported through these investment shocks, noting that estimates of employment produced by the model reflect the direct and indirect jobs generated across the economy.

As described above, the regional economy is represented by the Greater Brisbane labour market region.

1.5.5 Cumulative impact assessment

The cumulative economic impact assessment refers to the potential impact of cumulative stimulus to the economy resulting from the construction of a set of existing or planned projects within or adjacent to the study area. Cumulative impacts may result from the spatial and / or temporal interaction between these projects.

This cumulative impact assessment has two components:

1. Quantitative regional impact analysis of the cumulative impact of the construction of the Queensland portion of the Inland Rail Program on the regional, state and national economies using an equilibrium modelling framework (using KPMG-SD); and
2. Qualitative assessment of the cumulative impact of the construction of State significant projects (that have been identified by ARTC as having a relationship to the Project - refer Appendix A) on labour markets, the supply chain and local businesses.

1.5.6 Limitations of the assessment methodology

The findings of this EIA are subject to the following limitations:

- This assessment has not been prepared to inform financial or commercial decision-making processes. The sole purpose of the impact assessment is to meet the requirements of the ToR, including the Coordinator-General's guidelines for EIA.
- Demand inputs to the economic benefits assessment have been sourced from the freight demand projections developed by ACIL Allen Consulting for the Inland Rail Program Business Case (2015). These values have been apportioned based on the information available to represent freight movements that would benefit from the improved rail connectivity provided by C2K, and represent those that are reasonably likely to make use of the C2K as an independent Project.
- The assessment assumes capital expenditure consistent with the Inland Rail Program Business Case (2015).
- A large proportion of the benefits of the Inland Rail Program stem from improving the connection between producers and markets; through to both domestic markets in cities and international markets through ports. As such, an incremental EIA approach assessing each link of the Inland Rail Program individually and in isolation of the whole Program will not capture the full impact that is expected to be delivered upon completion of the entire Melbourne to Brisbane connection.

ARTC Statement

Although further costs and other technical and economic data is expected as each project progresses through design development, the 2015 Inland Rail Program Business Case endorsed by the Australian Government is currently the most detailed assessment for the Inland Rail project. For this reason, and in the interests of maintaining consistency, cost and demand profiles for the Inland Rail project economic impact assessments have been based on the 2015 Inland Rail Program Business Case.

2 Project description

C2K forms part of the overall Inland Rail Program and is one of the 'missing links' across the Program. The Project involves the construction and operation of approximately 53 km of new dual gauge track, connecting to the adjacent Inland Rail projects of Helidon to Calvert (H2C) in the north-west and the Kagaru to Acacia Ridge and Bromelton project (K2ARB) to the south-east.

C2K primarily utilises the existing Southern Freight Rail Corridor (SFRC), which was protected in November 2010 as future railway land under Section 242(1) of the *Transport Infrastructure Act 1994*. The SFRC links the West Moreton line near Calvert to the interstate rail line near Kagaru north of Beaudesert.

The key components of the Project are detailed in the table below.

Table 3: Key components of C2K

Key Component	
Start and finish point	Calvert to Kagaru
Local government areas	Ipswich City Council Scenic Rim Regional Council Logan City Council
Length of alignment	Approximately 53 km in total length
Key features	• Dual gauge track with four crossing loops • 1,015 m Teviot Range tunnel, and bridges to accommodate topography and crossings of waterways and other infrastructure • The construction of associated rail infrastructure including maintenance sidings and signalling infrastructure to support the Advanced Train Management Systems • Rail crossings including level crossings, grade separations / road overbridges, occupational/private crossings, fauna crossing structures • Tie-ins to the existing West Moreton Railway Line at the Project boundary • Tie-ins to the existing operational Sydney to Brisbane interstate railway line • Allowance for the future connection to the Ebenezer Industrial Area at Willowbank • Significant embankments and cuttings will be required along the length of the alignment • Ancillary works including road and public utility crossings and realignments, signage and fencing and provision of services within the corridor (excluding those undertaken as enabling works) • Construction workspace and access roads
Train lengths	Up to 1,800 m in length, with potential for future accommodation of 3,600 m in length

Key Component	
Construction	Project construction is planned to start in 2021, and is expected to be completed in 2026.
Employment	Pre-construction employment: Up to 20 personnel will be required for pre-construction activities. Construction employment: Preliminary estimates indicate that the workforce on site for C2K will peak at approximately 620 FTE personnel. The average annual workforce across the four year construction period will be approximately 271 FTE personnel. Operational employment: Approximately 20 personnel are estimated as required. Operational groups would include train drivers, signallers and maintenance staff.

Source: ARTC

3 Existing economic environment

The following section describes the key demographic and socio-economic characteristics of the study area including the local population, and the existing regional and local economic environment. Unless otherwise stated, all information contained within this section has been drawn from the ABS 2016 Census of Population and Housing. This information may not reflect recent changes in demographic and employment outcomes resulting from the economic shock associated with the 2020 quarter 2 market conditions.

3.1 Population summary

3.1.1 Population profile

As at June 2019, the study area had an estimated resident population of 599,788 people. Between 2009 and 2019, the population grew at an average annual rate of 2.3 percent, due to strong growth in Ipswich (3.2 percent) which grew twice as fast as QLD over the same period (1.6 percent). This growth is forecast to continue, with the population of the study area projected to reach 769,100 by 2026 (at an average annual rate of 3.6 percent compared to 1.7 percent across QLD). This growth will continue to be driven by Ipswich (which is projected to grow at an average annual rate of 5.6 percent), which can be attributed to the strategic provision of new growth areas for residential development offered by the Ripley Valley Priority Development Area (PDA). In absolute terms, significant population growth is also projected for Logan, linked to residential growth in Park Ridge, Yarrabilba and the Greater Flagstone PDA (projected increase of 174,226 persons by 2036).

Table 4: Estimated resident population and projections, study area

	2009	2019	2026	% average annual growth 2009-2019	% average annual growth 2019-2026
Ipswich LGA	161,664	222,307	325,092	3.2%	5.6%
Logan LGA	277,372	334,358	392,602	1.9%	2.3%
Scenic Rim LGA	36,525	43,123	51,405	1.7%	2.5%
Study Area	475,561	599,788	769,100	2.3%	3.6%
QLD	4,328,771	5,094,510	5,722,780	1.6%	1.7%

Source: ABS Regional Population Growth, 2018-19; Queensland Government Statisticians Office 2018 edition population projections

3.1.2 Indigenous population

The proportion of the population that identify as Indigenous (Aboriginal, Torres Strait Islander, or both) within the study area is lower than the proportion across QLD as a whole (3.6 percent compared to 4.0 percent). Within the study area, a larger proportion of the population identify as Indigenous within Ipswich (4.4 percent) compared to the Scenic Rim (3.1 percent) and Logan (3.2 percent).

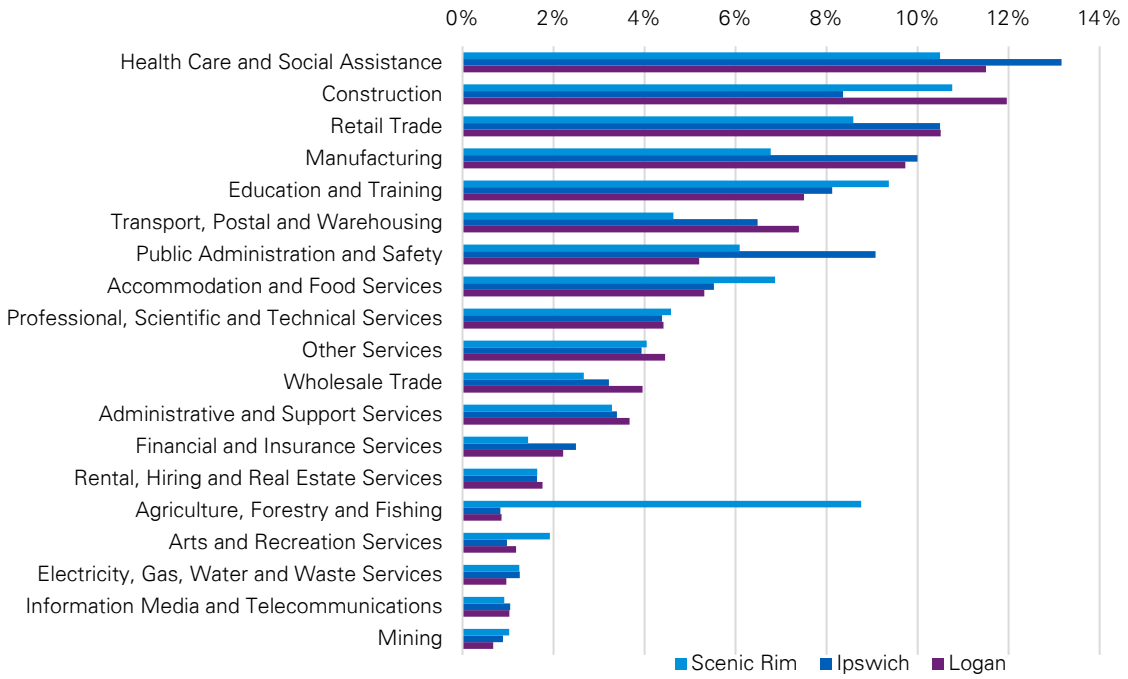
3.2 Description of the economy

3.2.1 Labour market and employment characteristics

Employment by industry

As shown in Figure 2 below, the sectoral distribution of employment for local residents is diverse, reflecting the study area's land use and the geographic distribution of the population.

Figure 2: Employment by industry, study area, 2016[15]



Source: ABS 2016 Census of Population and Housing

In Ipswich, the largest proportion of workers are employed in service based industries such as Health Care and Social Assistance (13.2 percent) and Retail Trade (10.5 percent). A significant proportion of the population are also employed in secondary industries, with a further 18.4 percent of residents employed in Manufacturing (10.0 percent) or Construction (8.4 percent).

In Scenic Rim, employment by industry is diverse across primary, secondary and service based industries. This reflects the land uses of the LGA, primarily regional landscape and rural production with a small urban footprint. The highest number of residents are employed in Construction (10.8 percent), followed by Health Care and Social Assistance (10.5 percent) and Agriculture, Forestry and Fishing (8.8 percent).

In Logan, the largest proportion of workers are employed in service based industries such as Health Care and Social Assistance (11.5 percent) and Retail Trade (10.5 percent). A significant proportion of the population are also employed in secondary industries, with a further 21.7 percent of residents employed in Construction (12.0 percent) or Manufacturing (9.7 percent).

There are a number of residents within the study area employed in directly relevant industry sectors to support the construction of the Project. According to the 2016 Census, 10.6 percent of the total workforce are employed in the Construction industry (24,161 workers), with the largest proportion of workers residing in Logan (15,784

[15] Employment by industry (and industry by employment) from the ABS Census is unable to discern the specific level of activity in the tourism or defence industries. This is because there are difficulties in trying to link a commodity classification with an Australian and New Zealand Standard Industrial Classification (ANZSIC) type industry classification; any one supplier category may overlap several product categories.

workers). Within the Construction industry, 8.7 percent of local workers are employed in Heavy and Civil Engineering Construction (2,085 workers) and 61.4 percent in Construction Services (15,143 workers). Across the broader Greater Brisbane region, 92,556 workers are employed in the Construction industry, with 9.5 percent of the region's workers employed in Heavy and Civil Engineering Construction (8,769 workers) and 57.4 percent in Construction Services (53,105 workers).

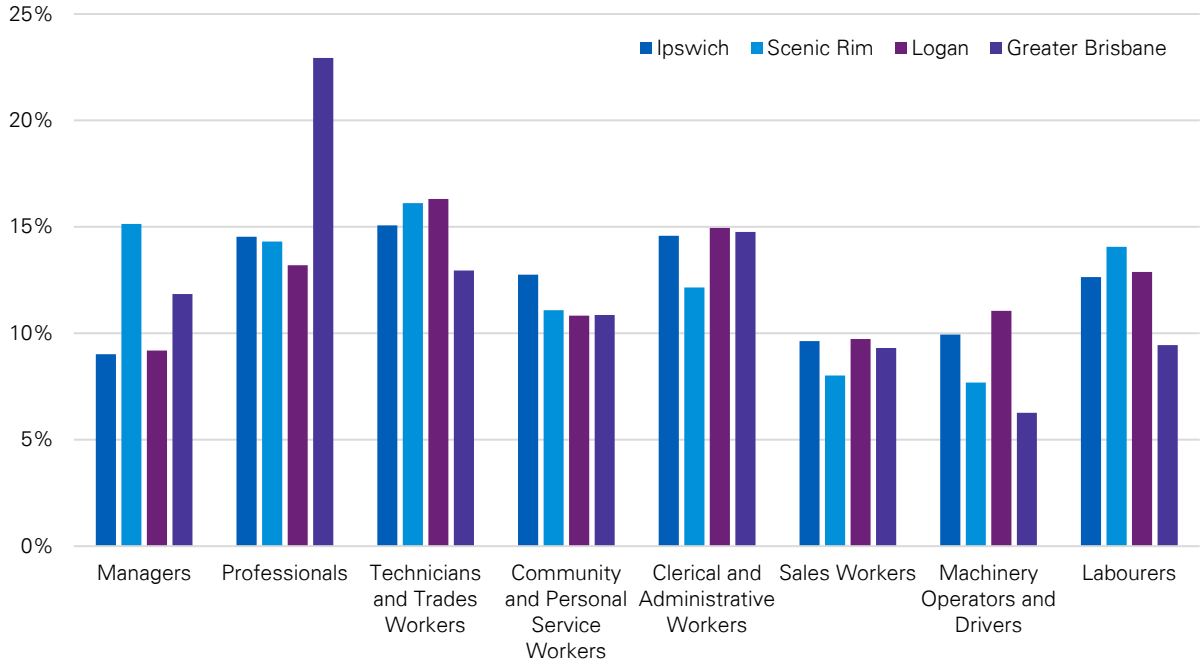
Occupation

The study area's primary occupations of employment are reflective of the study area's strong resident employment in secondary industries. At the broadest level, the area has a higher proportion of Technicians and Trade Workers, Community and Personal Service Workers, and Labourers than the QLD average (Figure 3).

To complement the identification of workers employed in directly relevant industry sectors, workers are employed in a range of occupations relevant to the construction of the Project. Within Ipswich, the largest proportion of workers are employed as Technicians and Trade Workers (15.1 percent), and 19.1 percent are represented by Construction Trade Workers (2,420 workers). Technicians and Trade Workers also represent the highest number of workers in Logan and the Scenic Rim (15.9 percent and 16.1 percent respectively). Construction trade workers comprise over one-quarter of these workers in Logan (25.6 percent), and close to one-fifth in Scenic Rim (19.1 percent).

A significant proportion of workers are also employed as Labourers (12.9 percent across the study area), and 18.0 percent of these workers are Construction and Mining Labourers (3,064 workers).

Figure 3: Local workers occupation, study area, 2016



Source: ABS 2016 Census of Population and Housing

Construction labour availability

A Railway Skills Capability Study was undertaken by the Australasian Railway Association in 2018 which evaluated workforce capability for the rail industry based on planned and forecast rail infrastructure development in Australia and New Zealand over the next 10 years. The results of the analysis found that, in Queensland, workforce gaps are present in rail infrastructure construction sectors, most severe among specialist managers

and professionals (such as engineers). The analysis also found that there is currently a slight over-supply of labourers.[16]

These trends are also reflected at a national level. The Australian Industry Group Construction Outlook (November 2018) found that, at a national level, businesses are reporting widespread and increasing difficulties in sourcing skilled labour.[17]

According to the survey, construction companies are forecasting strong growth in major project work, led by a strong pipeline of transport infrastructure projects. The results indicate that 69.2 percent of respondents, up from 66.7 percent six months prior, reported either 'major' or 'moderate' difficulty in recruiting skilled labour in the six months to September 2018. With workforce demand expected to continue at high levels in line with major project activity, labour sourcing difficulties are expected to remain.[18] It is most likely that these shortages in labour availability are for specific specialist trades.

Labour force

According to the Australian Government's quarterly regional estimates of unemployment, as at December 2019, there were a total of 22,886 unemployed persons in the study area (57.1 percent located in Logan) and 82,236 in Greater Brisbane. Within the study area, the unemployment rate is highest in Logan and Ipswich, 7.9 percent and 7.5 percent respectively. This is compared to 6.0 percent in the Scenic Rim, 6.1 percent in the regional economic catchment and 6.1 percent in QLD.[19]

For the December 2019 quarter, the labour force participation rate across the study area was lower than the average for the regional economic catchment and QLD – 71.2 percent in Ipswich, 70.8 percent in Logan and 68.6 percent in Scenic Rim, compared to 78.6 percent and 78.7 percent respectively (Table 4).

Table 5: Summary of labour force characteristics, December 2019

	Labour force	Participation rate*	Unemployed persons	Unemployment rate	12 month average unemployment rate
Ipswich LGA	113,863	71.2%	8,523	7.5%	7.1%
Logan LGA	164,853	70.8%	13,071	7.9%	7.8%
Scenic Rim LGA	21,414	68.6%	1,292	6.0%	5.9%
Greater Brisbane	1,355,270	78.6%	82,236	6.1%	6.2%
QLD	2,717,291	78.7%	142,928	6.1%	6.1%

Source: Australian Government's Small Area Labour Markets publication, December 2019; ABS, *Labour Force Survey, Australia,* December 2019 (12-month moving average) – published 26 March 2020; ABS 2016 Census of Population and Housing. *Participation rate for working age population 15 to 64 years June 2016

Due to the study area's land uses and geospatial distribution of the population, a significant proportion of the local labour force is located north east of the project alignment (within the urbanised eastern portion of Ipswich and north western portion of Logan) and south of the alignment in the Scenic Rim.

[16] Australasian Railway Association, 2018, *Skills Capability Study*

[17] A national perspective of labour availability can be used to identify trends in skills shortages. According to the Productivity Commission, workers in the construction industry are likely to be more geographically mobile because of the inherent project-based or seasonal nature of the work; Productivity Commission, 2014, *Geographic Labour Mobility.*

[18] AiGroup, Construction Outlook November 2018

[19] Australian Government's Small Area Labour Markets publication, December 2019; ABS, *Labour Force Survey, Australia,* December 2019 (12-month moving average) – published 26 March 2020; ABS 2016 Census of Population and Housing. Participation rate for working age population 15 to 64 years June 2016

Overall, based on current labour market trends, there may be latent capacity within the study area and regional economic catchment to support the construction and operation of the Project.

Indigenous labour force

According to the 2016 Census, the Indigenous population is inadequately represented in the study area's workforce, which is reflected in the high rates of Indigenous unemployment and low labour force participation (Table 5).

Across the study area, approximately one-fifth of the Indigenous population is unemployed (18.7 percent), and highest in Ipswich at 19.6 percent. In Greater Brisbane, 16.8 percent of the Indigenous population is unemployed.

The labour force participation rate for the Indigenous population in the study area was 58.2 percent, compared to a total rate of 70.8 percent. Within the regional economic catchment, Indigenous labour force participation was marginally higher than the study area at 59.2 percent, compared to a total labour participation rate of 78.3 percent.

Table 6: Indigenous labour force

	Indigenous Labour Market			Total Labour Market		
	Unemployment rate	Unemployed persons	Participation rate	Unemployment rate*	Unemployed persons	Participation rate
Ipswich	19.6%	583	58.2%	7.1%	8,523	71.2%
Logan	17.5%	612	58.7%	7.8%	13,071	70.8%
Scenic Rim	12.2%	50	57.8%	5.9%	1,292	68.6%
Greater Brisbane	16.8	3,510	59.2%	6.2%	82,236	78.6%

Source: Australian Government's Small Area Labour Markets publication, December 2019; ABS; ABS 2016 Census of Population and Housing.
Note: Participation rate for the working age population is 15 to 64 years; *12 month average.

Youth labour force

As shown in the table below, youth (15 to 24 years) unemployment rates are high across the study area and regional economic catchment, more than double the total unemployment rate. In Ipswich, the youth unemployment rate is nearly three times the total unemployment rate (19.3 percent compared to a total unemployment rate of 7.1 percent). In Greater Brisbane, the youth unemployment rate is 15.8 percent, compared to a total unemployment rate of 6.2 percent.

Table 7: Youth labour force

	Youth Labour Market			Total Labour Market		
	Unemployment rate	Unemployed persons	Participation rate	Unemployment rate*	Unemployed persons	Participation rate
Ipswich	19.3%	3,372	63.7%	7.1%	8,523	71.2%
Logan	19.2%	5,097	62.3%	7.8%	13,071	70.8%
Scenic Rim	12.1%	306	60.1%	5.9%	1,292	68.6%
Greater Brisbane	15.8%	33,165	64.4%	6.2%	82,236	78.6%

Source: Australian Government's Small Area Labour Markets publication, December 2019; ABS; ABS 2016 Census of Population and Housing.
Note: Participation rate for the working age population is 15 to 64 years, June 2016; Youth Labour Market data as per 2016 Census. *12 month average.

The youth labour force participation rate within the study area and across the regional economic catchment is lower than the total participation rate. Youth labour force participation is highest across Greater Brisbane at 64.4 percent, compared to 63.7 percent in Ipswich, 62.3 percent in Logan and 60.1 percent in the Scenic Rim. Lower levels of labour force participation indicates that a high proportion of young people are either not able to work or are not actively looking for work (for example students, or those who are voluntarily inactive). Across the study area and regional economic catchment, over two-thirds of young persons who are not in the labour force are studying full time (65.8 percent in Ipswich, 69.1 percent in Logan and 73.5 percent in Scenic Rim).

Overall, the youth labour market profile indicates that there may be some latent capacity in the youth labour force, and current job seekers may have the skills, or ability to be up-skilled, to be engaged in the Project.

Household income

The distribution of the population by total household income level in the study area and regional economic catchment are compared in Table 7 below. As reflected, the distribution of income within the study area is broadly consistent with QLD as a whole, with the highest proportion of households earning more than $1,250. It is worth noting that Scenic Rim has the highest proportion of households earning less than $500 per week (15.7 percent), more than QLD (14.3 percent). This may reflect the Scenic Rim's demographic age profile, with a high proportion of persons aged 65 years or older within the Scenic Rim.

These observations are reflected in the median weekly household income. The median weekly household income is highest in Logan ($1,416), followed by Ipswich ($1,410) and the Scenic Rim ($1,222). The median weekly household income in Greater Brisbane is $1,562. Scenic Rim is the only area within the study area and economic catchment with a median weekly household income below QLD ($1,402).

Table 8: Distribution of population by weekly household income, 2016

	< $500	$500 - $1,249	= or > $1,250	Median Income*
Ipswich LGA	12.0%	31.7%	56.3%	$1,410
Logan LGA	12.4%	31.2%	56.3%	$1,416
Scenic Rim LGA	15.7%	35.3%	49.0%	$1,222
Greater Brisbane	12.4%	27.6%	60.0%	$1,562
QLD	14.3%	30.7%	55.0%	$1,402

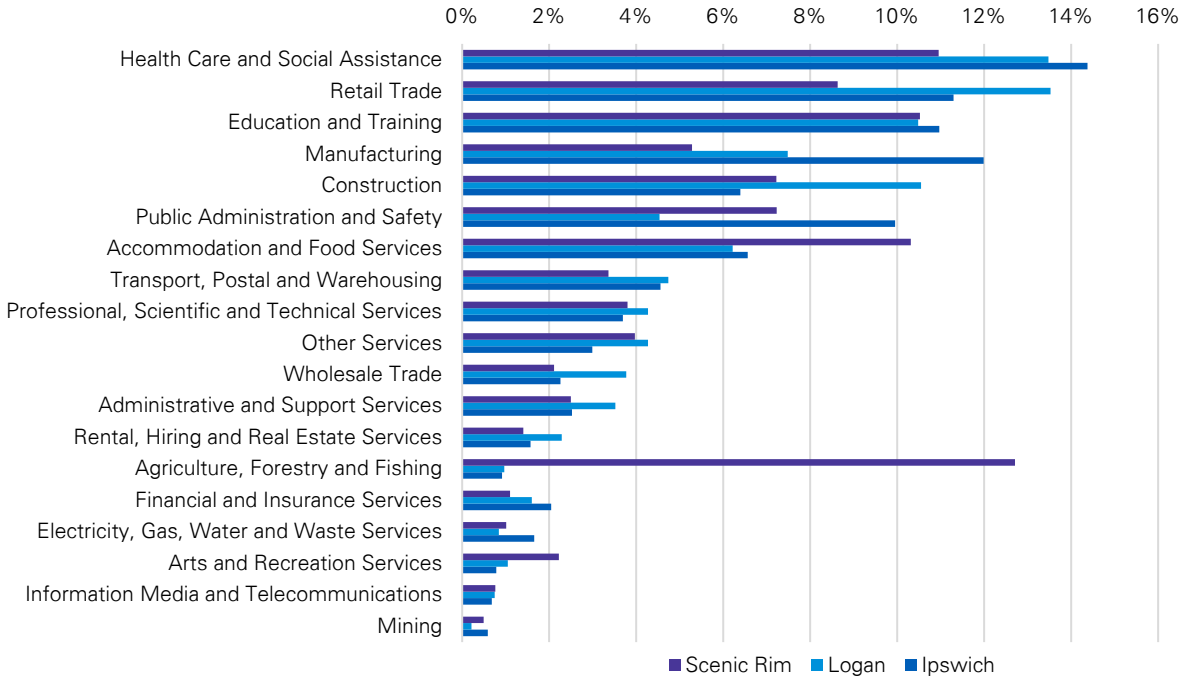
Source: ABS 2016 Census of Population and Housing.
Note: This excludes all the following responses: partial and incomplete income declaration.

3.2.2 Business and industry

Industry by employment

The study area is a place of work for approximately 163,771 persons (who live both within and outside the catchment area).[20] Industry by employment in the study area is shown in the figure below.

Figure 4: Industry by employment, study area 2016



Source: 2016 Census of Population and Housing

Consistent with the study area's employment by industry, the sectoral distribution of jobs is diverse and focused on service-based industries such as Health Care and Social Assistance (13.6 percent), Retail Trade (12.3 percent) and Education and Training (10.7 percent). These sectors are important in meeting the demand for local services from the local population. A further 9.0 percent of jobs are in the Manufacturing industry, and the Construction industry represents 8.7 percent of jobs.

Within the Scenic Rim, Agriculture, Forestry and Fishing is the largest industry of employment, accounting for 12.7 percent of all jobs in the area (1,571 jobs). Within this industry, most workers are employed in the Sheep, Beef Cattle and Grain Farming sector (485 persons) which is reflected in the local business and industry profile below (Section 3.3). The strength of the Scenic Rim's agricultural sector highlights the importance of supply chain efficiency in supporting the area's economy. There are opportunities offered by the Project to improve the productivity of the local industry by reducing the distance between dispersed agricultural activities to processing facilities and markets. These impacts are outlined in the economic benefits assessment.

[20] Industry by employment is used to analyse the sectoral distribution of jobs located within a defined geographic area; it captures all jobs located within an area which may be occupied by residents or workers who travel to the area for employment.

3.3 Local businesses and industry

3.3.1 Tourism

Tourism is a significant industry in both the Scenic Rim and Ipswich LGAs, recognised as a popular tourist destination for visitors seeking to explore SEQ's natural landscapes and scenic amenity. Due to the location of the Project alignment, there are unlikely to be any impacts to the tourism industry within Logan, and accordingly it is not captured in this baseline.

The Scenic Rim is home to a number of National Parks, World Heritage listed rainforests and dams, offering a wide range of outdoor activities, walking trails and food and wine experiences. Ipswich is also regarded for its nature-based recreation, in addition to its heritage and history. Located within driving distance of Brisbane, tourism in the Scenic Rim and Ipswich is primarily comprised of day trip tourism.

According to Tourism Research Australia, the Scenic Rim receives approximately 1.5 million visitors per year, with tourism expenditure totalling approximately $171 million annually.[21] 1.2 million of those visitors are domestic daytrip visitors. Ipswich receives a further 1.2 million visitors per year (925,000 domestic daytrip visitors), with tourism expenditure totalling approximately $217 million annually.[22] Overall, there are a total of 1,731 recorded tourism businesses within the study area, 520 located in the Scenic Rim and 1,211 located in Ipswich.[23]

Table 9: Tourism visitation and expenditure, 2017

	Domestic Overnight Visitors		International Overnight Visitors		Domestic Daytrip Visitors	
	Total Visitors	**Expenditure**	**Total Visitors**	**Expenditure**	**Total Visitors**	**Expenditure**
Ipswich LGA	293,000	$109 m	19,000	$24 m	925,000	$84 m
Scenic Rim LGA	284,000	$84 m	15,000	$10 m	1.2 m	$77 m

Source: Tourism Research Australia, Local Government Area Profiles, 2017

There are a number of natural attractions and recreation areas across the study area which support the local character and the area's attraction as a tourism destination. A number of these areas are within close proximity to the Project, supporting active outdoor recreation (e.g. bike riding, horse riding and trail walking), ecotourism, and food and wine experiences, such as:

- Flinders Peak Conservation Park within the Flinders Coolman Conservation Estate: Boonah to Ipswich Trail (multi-use recreation trail);
- Purga Nature Reserve: Tea Tree Boardwalk Circuit (~240 m north of the Project);
- Beaudesert to Bethania Rail Trail (6 km east of the Project);
- Hardings Paddock trail and picnic area (located 3.6 km north east of the Project);
- Bergmans Road nature walk (1.5 km north of Project);

[21] Tourism Research Australia, *Local Government Area Profiles 2017 – Scenic Rim.*
[22] Tourism Research Australia, *Local Government Area Profiles 2017 – Ipswich.*
[23] Tourism Research Australia, *Local Government Area Profiles 2017 – Ipswich and Scenic Rim.*

- Ironbark Ridge Winery (2.3 km north east of the Project); and
- Hidden Peaks Trail.

There are also a number of local businesses along the Project alignment which are supported by tourists and visitors, including:

- Naughty Little Kids (Goat Farm);
- Ipswich Motorsport Precinct (230 m north of Project);
- A model plane facility and a paintball recreation centre (within 1 km of Calvert);
- Rosewood Railway Museum (4.5 km north east of Project);
- Ivory Rocks Convention Centre (1.5 km west of Project);
- Flinders Peak winery, functions and accommodation (1.3 km west of the Project); and
- Spicers Hidden Vale.

3.3.2 Agriculture

According to the Queensland Agricultural Land Audit, the Project is located within the SEQ agricultural region, with agricultural activities account for approximately 57 percent (1,221,193 hectares) of the total land area of the region.[24] The Audit outlines the dominant agricultural industries in the SEQ region as horticulture, poultry, cattle, dairy and cultivated turf.

At a local government level, the Scenic Rim LGA supports a diverse range of horticultural crops, extensive poultry production, dairy and grazing (meat poultry production occurs in the southern area of the Scenic Rim). The biophysical potential of the region indicates opportunities to expand the production areas for perennial horticulture, cropping, annual horticulture and grazing.

The development of the Bromelton SDA will further enhance agricultural opportunities in the Scenic Rim by providing increased market, transportation and support service access.

On 31 April 2019, the Coordinator-General declared the *Scenic Rim Agricultural Industrial Precinct* a coordinated project. The precinct will offer opportunities to further enhance the region's agricultural sector, through food processing and value-add. The precinct will support food processing, production and manufacturing businesses to be located together.

According to the Agricultural Land Audit, land under agriculture production is declining within the Ipswich LGA. However, it is recognised that Ipswich has the established capacity to provide services such as transport and manufacturing to support and expand agriculture in surrounding areas. This may be enhanced by the development of the proposed Ebenezer Regional Industrial Area (RIA), which has the potential to provide capacity for food processing and other value-adding / supply-chain industries to locate businesses in the area.

As at June 2018, there were a total of 177 employing businesses within the Agriculture, Forestry and Fishing industry in the Scenic Rim (a further 950 were non employing), and 33 employing businesses in Ipswich (318 non employing).[25] There are a number of agricultural / farming businesses located along the C2K alignment which may be impacted by the Project.

3.3.3 Mineral resources and extractive industries

There are a number of operations in the mineral resources and extractive industries sector located within close proximity to the Project. These operations may be directly impacted by the construction of the Project (e.g. land

[24] Queensland Department of Agriculture and Fisheries, 2017, *Queensland agricultural land audit.*

[25] ABS, 2019, *Count of Australian Businesses, including Entries and Exits, June 2014 to June 2018*, cat. no. 8165.0

acquisition) or may have capacity to engage with the Project's construction. The Project also has the potential to impact on existing mineral resource permits, license and leases.

Mineral resource interests

There is one Mining Lease, held by Zedemar Holdings Pty Ltd, located within the land use study area. The mining lease is associated with the Ebenezer Coal Mine and it is understood that the mine is currently not operational and is planned to be rehabilitated.

Coal resource area

Coal resource areas depict the extent of identified coal resource estimates in QLD as presented in the publication Queensland Coals - Physical and Chemical Properties Colliery and Company Information - 14th Edition (Mutton 2003). The study area traverses a coal resource area located at Ebenezer - the Bremer View East coal resource area which is identified as having the potential to contain small to medium size deposits of thermal coal.

According to Chapter 8: Land Use and Tenure, there are no granted coal or mineral exploration permits within the land use study area. There are also no applications for mining permits within the study area.

Petroleum and gas resource interests

The study area crosses two authority to prospect (ATP) permits for petroleum exploration. Both permits are held by B.N.G. Pty Ltd. There are two current applications for potential commercial areas (PCA) for petroleum, held by B.N.G. Pty Ltd, that are located over the ATP permits. These petroleum and gas resource interests are traversed by the study area.

There is one petroleum licence located within the study area. This pipeline licence is associated with the Moonie to Brisbane pipeline.

Chapter 8: Land Use and Tenure provides further details relating to the specific location of these mineral and petroleum permits and licences.

Mineral resource operations

There are three mineral resource operations within close proximity to the Project.

- SEQ Sand and Soil Quarry: a commercial operation that produces sand and soil products. The operation is located within the study area at Kagaru.
- JNJ Resources – Bentonite product production: JNJ Resources is a commercial operation that produces bentonite products.
- Purga Quarry (see Key Resource Area below): a quarry rock resource that provides a substantial proportion of the aggregate production for the Ipswich and Fassifern Valley districts.

Material, such as ballast material, may be sourced from these local quarries to supply the construction of the Project.

Key Resource Area

The Purga Quarry is a key resource area (KRA) located in close proximity to the Project. KRAs are identified locations containing important extractive resources of state or regional significance, worthy of protection for future use. KRAs are included in the State Planning Policy and are supported by the State interest guideline - Mining and Extractive Resources. KRAs are designed to maintain adequate separation distances between sensitive uses and any future extractive industry.

The permanent disturbance footprint[26] traverses south of the separation area associated with the Purga Quarry KRA, avoiding the resource processing area. The separation area does not form part of the operational area of the quarry but is implemented to maintain separation from people who may be affected by impacts such as noise, dust and vibrations from existing or future operations.

[26] The permanent disturbance footprint is defined as the physical rail corridor including the rail tracks and associated infrastructure. It also includes other permanent works associated with the Project, such as where changes to the road network are required.

As detailed in Chapter 8: Land Use and Tenure, the distance of the permanent disturbance footprint is approximately four times the depth of the existing quarry pit, and therefore is considered to be located outside of the zone of influence in considerations for the pit wall stability. As such, it is considered that the stability of the quarry pit wall will have a negligible influence on the stability of the permanent disturbance footprint, and vice versa.

3.3.4 Local construction businesses

There are a number of construction business located within the study area, with a total of 3,316 employing businesses and a further 4,943 non-employing businesses across Ipswich, Logan and the Scenic Rim.[27] These businesses are likely to be a significant source of services and equipment during the Project's construction, including:

- Civil construction companies;
- Earthmoving services;
- Diesel and petrol suppliers;
- Plumbers, electricians, mechanics and building contractors;
- Engineering and machining services;
- Steel fabrication companies; and
- A range of accommodation and retail businesses.

3.3.5 Local Industrial Areas

There are a number of key industrial and logistic areas in close proximity to the Project, including:

Ebenezer Regional Industrial Area

The Ebenezer RIA is east of the Project alignment, approximately 15 km south west of Ipswich on a 5,000 ha site. The area was declared under the Queensland Government's SEQ Regional Plan 2009-2031 as a regional development area and proposed manufacturing hub. It offers the opportunity to accommodate manufacturing and logistics businesses as well as difficult-to-locate, large footprint industries. C2K may act as a significant catalyst for development of the Ebenezer RIA, particularly in relation to rail dependant industries and support industries associated with transport, freight handling, warehousing and logistics. An inter-modal freight terminal is also proposed for the RIA.

Willowbank Industrial Park

Economic Development Queensland (EDQ) has identified a parcel of land (adjacent to the Cunningham Highway west of Ipswich within the Western Corridor Precinct) as ideally suited to establish an industrial precinct. The Willowbank Industrial Park will support local and regional industrial land requirements.

Bromelton SDA

The Bromelton SDA is located south of the Project alignment, approximately 6 km west of Beaudesert and 75 km south of Brisbane. The area was declared as a SDA in 2008, with industries already established in the industrial precinct. The Bromelton SDA includes an intermodal rail freight facility and warehouses on land situated adjacent to the Sydney-Brisbane rail line. The SDA also includes the Beaudesert Town Centre Bypass and Bromelton North South Arterial Road. Accordingly, the SDA is a well suited location for freight and logistics operations, with the potential to promote and support the development of medium to large scale industrial activities.

[27] ABS, 2019, *Count of Australian Businesses, including Entries and Exits, June 2014 to June 2018*, cat. no. 8165.0

4 Impact assessment

4.1 Inland Rail Program impacts

As per the requirements of the ToR, this EIA has focussed on the specific economic impacts resulting from the construction and operation of C2K. However, the assessment acknowledges the role of the Project, and the remaining project links, in collectively delivering the benefits of the Inland Rail Program. In its entirety, Inland Rail will enhance Australia's existing national rail network and serve the interstate freight market. As per the Inland Rail Program Business Case (2015), key economic impacts of the Inland Rail Program include:

- Lower prices for consumers as a result of lower intercapital freight transport costs, which reduces the cost of living for households.
- Positive direct net economic benefits, driven by improvements in freight productivity, reliability and availability, and benefits to the community from reduced environmental externalities, reduced road congestion and improved safety benefits. The Program is stated to be economically viable with a benefit cost ratio of 1.02 at a 7 percent discount rate (2.62 at a 4 percent discount rate).
- Economic growth as increased profits (for industries and producers where intercapital freight is an input or output) and incomes are multiplied through the economy. The Program is anticipated to deliver a net positive impact of $16 billion on Gross Domestic Product ($2015) over its 10 year construction period and 50 years of operation.
- Nationally, the Program is also expected to deliver an additional 16,000 jobs at the peak of construction, and an average of 700 additional jobs per annum during operation.
- Enhanced competition between rail and road freight, by providing a credible transport alternative, which will drive further innovation and efficiency.
- Potential to promote the expansion and development of freight precincts around Inland Rail terminals as a result of the benefits from co-location and clustering of industries (as a result of reduced transport costs to warehousing, economies of scale and knowledge-sharing opportunities).

4.2 Workforce impacts

4.2.1 Direct employment

The Project will result in a number of direct employment opportunities across the pre-construction, construction and operational phases of C2K. These jobs have been estimated based on the indicative construction schedule and component activities.

Pre-construction

Pre-construction activities will be undertaken during the six months before construction commences, and will include:

- Securing land access and undertaking land surveys;
- Geological and geotechnical investigations;
- Ecological investigations;
- Cultural heritage surveys;
- Securing access to borrow material (for construction of rail ballast and embankments); and
- Establishment of site compounds, fencing and access tracks.

Up to 20 personnel will be required for pre-construction activities.

Construction

For the construction period, the size and composition of the workforce will vary depending on the construction activities being undertaken and the staging strategy adopted. The construction of C2K is scheduled for commencement in 2021, with the Project's workforce expected to build to a peak of approximately 620 FTE. The average annual workforce across the four year construction period would be approximately 271 FTE personnel.

The core construction workforce will consist of professional staff, supervisors, trade workers and plat operators, with earthworks crews, bridge structure teams, capping and track-works crews working at different periods through the construction phase.

Operations

Once operational, a workforce of approximately 20 FTE is expected for the Project's operation. Occupational groups required will include:

- Train drivers;
- Maintenance staff, including for the track, associated infrastructure, and maintenance of the tunnel ventilation and safety system; and
- Signallers.

Local employment

The Project has the potential to be a significant opportunity to support local employment, however this is dependent on a number of factors including labour market conditions, skills availability and the existence of local workforce training and participation programs to support Indigenous and youth employment.

Based on current labour market trends, and industries and occupations of the local workforce, there may be latent capacity and capability within the study and regional economic catchment to support the construction and operation of the Project. It is likely that labour will be sourced from communities within a safe daily driving distance (less than one hr) from the Project, including Ipswich, Scenic Rim and Logan, and from the broader region. It is likely that local employment will comprise a portion of the construction workforce.

The Project represents a source of potential training and career pathway development for young people in the study area. As detailed in the Social Impact Assessment (EIS Appendix R), consultation with local stakeholders

highlighted an opportunity for training programs to facilitate access to the Project. There are potential opportunities for ARTC to work with local secondary schools to formalise these pathways.

ARTC is establishing the Inland Rail Academy which is a collection of projects and partnerships with the aim to facilitate local employment and procurement opportunities and build Inland Rail's social licence to operate the Inland Rail Program.

Indigenous participation

As identified in Social Impact Assessment (EIS Appendix R), the Project offers the potential to increase Indigenous employment and business opportunities. ARTC has a strong commitment to training Indigenous people and commits to working with Indigenous communities to strengthen the capacity of the local workforce to participate in the Project.

Changes to housing and accommodation

Most of the workforce are anticipated to be drawn from the local region, within safe driving distance to the Project. Accordingly, it is anticipated that the workforce will return to their place of residence at night, minimising demand for local workforce accommodation. There is a possibility that some construction workers will be recruited from the broader region and will be required to stay locally whilst they are on roster. These numbers are likely to be small, and within the capacity of existing short-term accommodation facilities in the Ipswich, Scenic Rim and Logan LGAs.

See Social Impact Assessment (EIS Appendix R) for further detail on the nature of changes to housing and accommodation.

4.2.2 Indirect employment

The industrial and consumption effects of the Project will result in the creation of indirect jobs both due to upstream and downstream linkages between the Project's activities and the rest of the economy, such as the stimulation of businesses further up the supply chain (e.g. manufacturers and suppliers of industry inputs), and the stimulation of activities downstream (e.g. through the provision of inputs to other sectors and the expenditure patterns of employees). The regional economic modelling results (Section 4.5) indicate that indirect employment will be generated in the Professional, Scientific and Technical Services and Wholesale Trade sectors, reflecting the importance of these two sectors in the construction sector's supply chain. The development of C2K will not only provide employment opportunities in local construction activities, but create indirect employment in occupations such as engineering and consulting (e.g. feasibility assessment) during Project planning, and in the supply chain for construction materials during Project construction.

4.3 Business and industry impacts

The following business and industry impacts have been identified through local consultation and analysis of local businesses undertaken by ARTC.

4.3.1 Tourism

The Project has the potential to change local amenity and service capacity within the study area, during both construction (temporary) and operation (permanent).

During construction, there is potential for road works, bridge construction and the visual impact of laydown areas to affect tourists' experience and travel times. Some visitors may be deterred from visiting during the construction period which has the potential to impact on tourism based businesses within the area. This impact is anticipated to be small and will be temporary whilst construction activities are undertaken.

The Project alignment will not have a direct impact on tourism businesses, however local businesses have raised concerns regarding the Project such as noise and vibration, dust and air quality and changes in property values. The EIS Appendix C: Consultation Report provides further details relating to the nature of these concerns.

During operation, there is potential for diminished scenic amenity due to the Project's location within the rural and regional landscape, particularly where the rail line is elevated with bridge structures. The impact of the Project on the landscape and visual amenity has been assessed in Chapter 10: Landscape and Visual Amenity. The assessment identifies two locations where the Project may impact on visual amenity; looking south east to Flinders Peak from the Cunningham Highway; and looking north east from Ipswich-Boonah Road, whereby some visitors will see the Project diminishing rural character while others will find interest in the Project structure. As a result, the assessment concludes that a significant decrease in visitation as a result of this impact is unlikely.

Further, as detailed in the Social Impact Assessment (EIS Appendix R), the Project is not anticipated to result in the displacement of tourists from accommodation attributable to workforce housing demand.

4.3.2 Agriculture

The construction and operation of the Project has the potential to impact farming operations and general agricultural uses across the study area. These impacts include:

- Loss of agricultural land;
- Land fragmentation and disruption to access and infrastructure;
- Disruption to stock and product movement; and
- Improvements in supply chain efficiency.

These impacts may change the value of agricultural production in the region, due to changes in accessibility, connectivity and / or productivity. Consultation with landholders is ongoing to further determine potential impacts. Details on consultation undertaken for the Project is included within Appendix C: Stakeholder Engagement Report.

Loss of agricultural land

As detailed in Chapter 8: Land use and Tenure, the Project will result in the sterilisation of productive agricultural land within the permanent disturbance footprint. The Agricultural Land Class approach classifies a particular agricultural area based on land and soil information and is used for land audit purposes. The approach comprises a four tier hierarchy ranging from Class A (arable land) through to Class D (land that is unsuitable for agriculture). Class A land is suitable for a wide range of current and potential crops with few limitations to production. Class B land is suitable for a narrow range of current and potential crops but is highly suitable for pastures. Importantly, Agricultural Land is a separate category used in agricultural land auditing and is defined as land that is strategically significant to the region or the state.[28]

The scale of the total loss (within permanent disturbance) of Class A and B agricultural land is anticipated to be low. At a local government level, within Ipswich, the permanent disturbance footprint traverses approximately 51 ha of Class A (0.5 percent of total Class A land in Ipswich) and 21 ha of Class B land (0.3 percent of total Class B land in Ipswich). Within the Scenic Rim, the permanent disturbance footprint traverses approximately 12 ha of Class A (<0.1 percent of total Class A land in the Scenic Rim) and 3 ha of Class B land (<0.1 percent of total Class B land in the Scenic Rim).

Overall, the permanent disturbance footprint will traverse 0.002 percent of total productive agricultural land in the study area (168 ha impacted out of a total productive area of 9.433 million ha). This proportion can be used to estimate, at a high level, the potential foregone value of agricultural production resulting from the Project. In 2017-18, the gross value of agricultural production in the Ipswich and Scenic Rim LGAs was $323 million.[29] Accordingly, it is estimated that the project could result in a loss of approximately $5,745 (value foregone) in gross agricultural production per year.[30]

[28] Department of Agriculture and Fisheries, Agricultural Land Classes, 2010-2019

[29] Queensland Government, 2019, *Queensland Spatial Catalogue: Gross Value of Agricultural Production (GVAP) per Local Government Area in Queensland.*

[30] This value is an indicative estimate only - it does not consider the value of individual commodities produced per lot or the value-add activities which contribute to the gross value of agricultural production in the region. An assessment of the composition of agricultural production by lot and commodity may be undertaken following detailed design once a more accurate depiction of the lot-specific impacts are able to be quantified.

ARTC will continue its ongoing consultation with directly affected landowners during the detailed design phase to develop measures to mitigate impacts resulting from the loss of agricultural land.

Land fragmentation and disruption to access and infrastructure

The Project may result in impacts to agricultural land outside of the permanent disturbance footprint. The fragmentation or alienation of properties may cause a disruption in farm operations due to impacts to essential farming infrastructure, services or access routes.

- Water access and infrastructure: The Project has the potential to impede on essential access to water through impacts to drainage lines, diversions, or cutting off water input to and from dams. This potential fragmentation and alienation of properties may impact on the economic viability of farming operations associated with agricultural land directly impacted by the permanent disturbance footprint. The extent and nature of these impacts will be confirmed during the detailed design phase.

- Transport access and infrastructure: During construction, roadworks, re-alignments and changes to travel distances may affect farming businesses through increases in travel times, resulting in increased operating costs and a reduction in productivity.

  Specifically, changes to transport access and infrastructure may impact the operations of Yackatoon Grazing Co., Purga Breeder Farm and local farms.

The extent of these impacts will be confirmed during the detailed design phase. ARTC will continue its ongoing consultation with directly affected landowners during the detailed design phase to develop measures to mitigate impacts resulting from disruption to access and infrastructure.

Disruption to stock and product movement

Stock routes are corridors on roads, reserves, pastoral leases and unallocated State land along which stock are driven on foot and are designated for travelling stock purposes under the relevant State legislation. The study area does not traverse any known stock routes.

Chapter 8: Land Use and Tenure identifies that there may be informal stock routes used to transfer stock to various grazing paddocks and holding yards. Consultation is ongoing with landholders to identify impacts, if any, to these informal stock routes. Accordingly, the extent of these impacts will be confirmed during the detailed design phase.

Improvements in supply chain efficiency

Efficient supply chains support the regional and national capacity to enhance economic opportunities within local communities. C2K is a critical link in the broader Inland Rail Program, offering a more efficient solution for intra and interstate freight operators who will be able to avoid inland and coastal road and rail networks. Specifically, the Project:

- Offers opportunities to improve the productivity of local export industries (such as agriculture); and

- Has the potential to unlock the construction of ancillary and complementary infrastructure, industrial development and logistics operations within the local area. Specifically, C2K may act as a significant catalyst for development in the planned and existing industrial areas at the Ebenezer RIA, Willowbank Industrial Estate and Bromelton SDA. Key activities will likely relate to rail dependent industries and support industries associated with transport, freight handling, warehousing and logistics.

4.3.3 Mineral resources and extractive industries

Sterilisation of mineral and petroleum resources

The permanent disturbance footprint does not cross any operational mines or areas of mineral resource interest. Accordingly, no resources identified, inferred or implied, related to the activities currently carried out within the existing mining leases are expected to be impacted by the Project.

As detailed in Chapter 8: Land Use and Tenure, the permanent disturbance footprint traverses the Bremer View East Coal Resource Area, which may reduce the financial viability of the Project.

As detailed above, the permanent disturbance footprint traverses through two ATP permits for petroleum activities and two current applications for PCAs for petroleum activities. The Project may sterilise petroleum resources within these tenements as the amount of land within these areas that is available for production will be reduced.

Consultation with resource interest holders will be undertaken during the detailed design phase. Where the Project may impact on likely significant deposits within the area, appropriate mitigation will be agreed with the resource interest holders.

Key resource area

As detailed above, the permanent disturbance footprint traverses the Purga KRA, south of the separation area avoiding the resource processing area.

As detailed in Chapter 8: Land Use and Tenure, the distance of the permanent disturbance footprint is approximately four times the depth of the existing quarry pit, and therefore is considered to be located outside of the zone of influence in considerations for the pit wall stability. As such, it is considered that the stability of the quarry pit wall will have a negligible influence on the stability of the permanent disturbance footprint, and vice versa.

4.3.4 Local businesses

Construction materials

The Project will require a range of construction supplies, including borrow material (spoil, gravel or sand) and ballast material (crushed stone), pre-cast concrete, concrete sleepers and turnout panels, steel, fencing, electrical components, fuel and consumables. Precast concrete may be sourced from Ipswich and it is likely that ballast materials may be accessed from local quarries and borrow pits. Other major components such as fencing may be sourced within the study area (with several suppliers based at nearby Amberley and Ipswich). It is likely that concrete sleepers will be soured from outside the study area.

The Project will have significant construction materials and services requirements which may provide local businesses with the opportunity to supply the Project. ARTC has developed a Sustainable Procurement Policy which will ensure that local, regional and Indigenous businesses will have opportunities to supply the Project.

Transportation

The Project may provide opportunities for local transport or logistics businesses during construction to transport materials to laydown areas and remove waste materials and recyclables from construction compounds. These benefits have the potential to accrue over the long term, particularly if the Project acts as a catalyst for the development of freight and logistics operations within close proximity to the alignment, such as at the Ebenezer RIA, Willowbank Industrial Estate or Bromelton SDA.

During operation, the anticipated mode shift from road freight to rail freight is likely to reduce the number of heavy vehicles travelling on the road network with the potential to impact on levels of trade for local transportation businesses. These impacts may be partially offset by the aforementioned opportunities to increase investment and activity in freight / logistics operations adjacent to Inland Rail.

Local service and supply businesses

The Project is likely to offer opportunities in secondary service and supply industries (such as retail, hospitality and other support services) for businesses in close proximity to the construction footprint. The expansion in construction activity would support additional flow-on demand and additional spending by the construction workforce in the local community (such as in the Logan and Ipswich areas where a portion of the construction workforce are likely to be sourced). This may lead to increased trading levels for small businesses, such as food and beverage businesses in the study area.

4.4 Economic benefits assessment

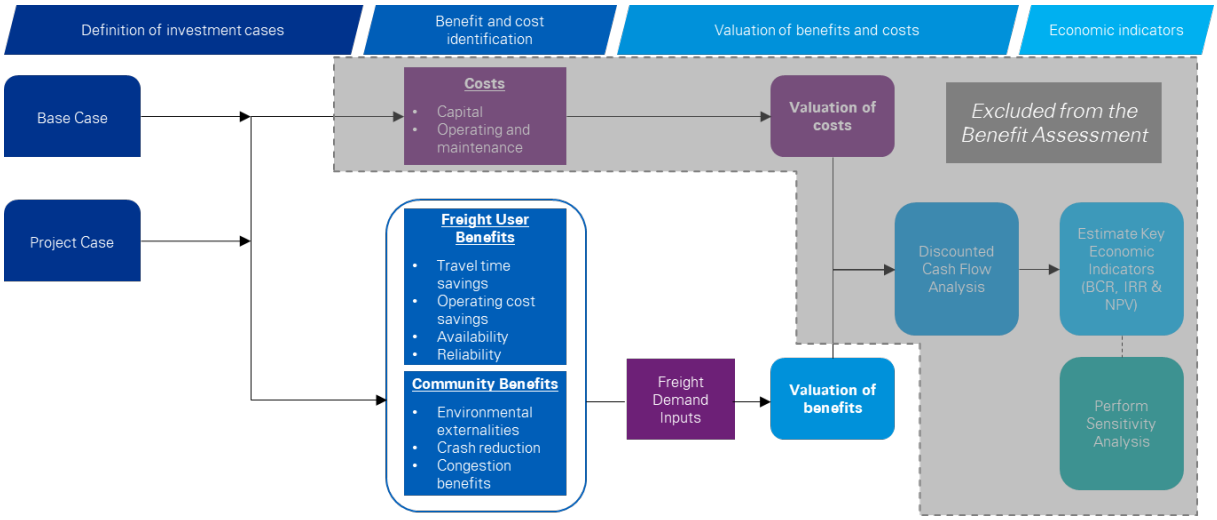
4.4.1 Methodology

The approach below reflects the three-step benefit assessment modelling process adopted for the purposes of the EIS:

1. **Define base and investment cases**: a clear articulation of the problem, investigation and definition of Base Case and Project Case option, and future demand drivers
2. **Identify benefits**: identification of relevant economic, social and environmental benefits associated with impact groups which can be measured for the Project
3. **Monetise benefits**: quantification, monetisation and assessment of benefits over the project appraisal period.

The figure below outlines a typical CBA approach and its application to the assessment of C2K.

Figure 5: CBA approach and the economic benefits assessment



Critically, the key difference between the complete CBA approach and the economic benefits assessment approach adopted in this analysis is the exclusion of costs.[31] As a consequence, the estimation of economic indicators is not applicable to this analysis; rather, the discounted present values of the benefits is the focus of the assessment.

4.4.2 Base Case and Project Case

The benefits assessment measures the incremental benefits derived by the Project, by defining two network performance scenarios:

- The **Base Case** adopted for this benefit assessment is a 'do nothing' scenario, where it is assumed that no other sections of the Inland Rail Program are progressed, and freight continues to be moved via either coastal rail or the road network.

[31] The economic benefits assessment has been undertaken prior to the refinements made to the construction program. The impact of this refinement would have a minor effect on the economic benefits identified. This change to program timing explains any inconsistencies between the construction program identified in the economic analysis and those identified within the body of this report.

- The **Project Case** adopted for this benefit assessment is C2K. The economic benefits estimated as part of the analysis assess only those impacts that would be likely if freight operators were to respond to the completion of this individual Project.

Key assumptions and parameters adopted for use in the benefit assessment are presented in Table 9.

Table 10: Economic benefits assessment assumptions

Parameter	Value	Source
Discount rate	A 7% real discount rate is used for the central case with sensitivity tests conducted at 4% and 10%	Infrastructure Australia Business Case Assessment Template 2016
Price year	2019	
Discount reference year	2019	
Appraisal period	50 years from the year of opening. First year of measured benefits is 2024 (first full year of benefits)[32]	Australian Transport Assessment and Planning (ATAP) Guidelines (Category 4, Section 2.4)
Temporal treatment of benefits and costs	Demand model outputs for 2024, 2054 and 2074 were used as the basis for analysis. Linear interpolation has been undertaken to estimate benefits between these years	Inland Rail Program Business Case (2015) and KPMG analysis
Indexation	Unit costs and parameter values indexed to the price year by the appropriate price indices	Australian Bureau of Statistics
Annualisation	Demand projections are presented in annual terms	Inland Rail Program Business Case (2015)

4.4.3 Freight demand

At the request of ARTC, demand inputs to the benefit assessment have been sourced from the freight demand projections developed by ACIL Allen for the Inland Rail Program Business Case (2015). The assumptions underpinning these demand projections are documented in Chapter 7 of the Inland Rail Program Business Case (2015). This section outlines how these demand projections have been adopted for the C2K EIS.

The demand projections developed by ACIL Allen are presented in terms of 66 different origin-destination (OD) pairs for both the Base Case and Project Case. These OD pairs span the entire Program length, and as discussed above, many represent freight movements that would not be impacted if C2K were to be constructed independently of the overarching Inland Rail Program.

To enable an incremental economic benefits assessment to be undertaken for C2K, selected OD pairs were chosen which represent freight movements that would benefit from the improved rail connectivity associated specifically with C2K. The selected OD pairs, which originate both within and south of the NSW Border to Gowrie area and flow through to Brisbane, consist of:

- North Star- Brisbane
- Narrabri Cotton to Brisbane
- North Moree- Brisbane
- South QLD/North NSW to Brisbane Port Cottonseed
- South QLD/North NSW to Brisbane Port Grain on existing narrow gauge

[32] While noting the operational life of the Project is 100 years, the benefits assessment has been conducted for a 50 year appraisal period in line with best practice methodologies, as specified in the ATAP guidelines.

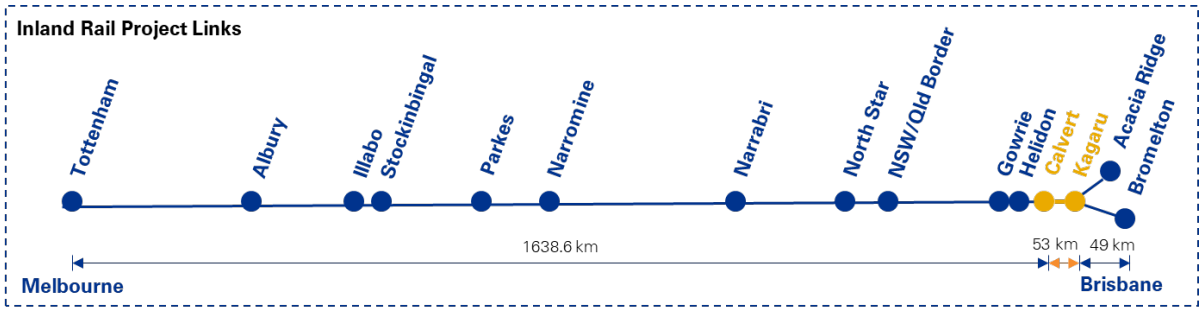
- Toowoomba-Brisbane
- Goondiwindi Cotton to Brisbane
- Charlton-Wellcamp to Brisbane Port Containerised.

The transport network and surrounding areas impacted by these freight movements represent the project area for the purposes of the economic benefits assessment.

As the projected travel time (both in terms of net tonne hours and hours travelled) for these OD pairs are dependent on downstream upgrades, the benefits associated with these freight movements have been apportioned. The factor used to scale these benefits is the ratio of the length of track upgrades that forms C2K, and the total length of proposed track upgrades from NSW Border to the Program extent at Acacia Ridge (e.g. 53 km / 399 km).[33]

Notably, some road freight movements are not presented in terms of OD pairs, and instead are presented by commodity (e.g. 'agriculture'). To account for these general freight movements, the proportion of freight movement associated with C2K has been estimated using the ratio of the length of track upgrades that forms C2K, and the total length of track upgrades as part of Inland Rail (e.g. 53 km / 1,740.6 km).

Figure 6: Inland Rail Program - Project extents



Source: ARTC Note: figure is not to scale, used for illustrative purposes only.

For the purposes of the economic benefit assessments contained within the Inland Rail EIS, freight movements from coal demand have been excluded. This is on the basis of the CBA results for the scenarios "No Western Line Upgrade" (refer Inland Rail Program Business Case (2015) Chapter 9. Economic Analysis), where coal benefits are equal to zero (0). Subsequently, in the absence of the Western Line upgrade to the existing Queensland Rail network, no benefits are expected to accrue to coal movements as a result of the delivery of Inland Rail. These results imply that, under this scenario, there is no net benefit to coal trips traversing any of the new links to be delivered as part of the Inland Rail Program.

Further, the results of the Inland Rail Program Business Case (2015) CBA highlight that the identified benefits accruing to coal trips are a direct result of the Inland Rail Program with complementary investment in Western Line Upgrades, which do not form part of the scope of the Inland Rail Program as it stands currently, and are not funded. For a more detailed note on the treatment of coal in the EIS please refer to Appendix C.

4.4.4 Benefit categories

The economic benefits assessment considers a range of benefit types, which have been categorised into two broad benefit streams:

- **Freight benefits**: these benefits include the changes in cost to freight operators by switching mode from road to rail; and
- **Community benefits**: these benefits include the changes in costs to the community resulting from a reduction in delays on the road network, and other externalities such as crash reductions and reduced environmental impacts.

[33] The track length used in the economic benefits assessment is based on the Inland Rail alignment published in February 2017.

A description of each of the benefits included in the assessment are provided in the following table (Table 10).

Table 11: Benefit category descriptions

Benefit Category	Description
Freight Benefits	
Travel time savings	Freight travel time cost savings represent the value to the economy associated with freight arriving at its destination more efficiently as a result of improvements to the rail network that enable shorter distances, faster travel, and subsequently, increased capacity. Where freight demand is induced (either diverted from road to rail, or new generated freight travel) as a result of improvements to the rail network, the rule of half has been used to estimate the benefits to the new rail freight. Notably, no induced freight demand is assumed for C2K.
Operating cost savings	Operating cost savings represent the reduction in costs associated with fuel, crew, maintenance and depreciation to both road and rail freight operators as a result of operators making use of the Project. Many of the benefits in this category are derived from the savings associated with shifting freight from road onto rail which has lower operating costs per net tonne kilometre.
Improved service availability	Improved service availability represents the increased flexibility in arrival and departure times afforded to the rail freight network as result of the Project. This is due to fewer restrictions on freight service times provided by the increased network capacity. Freight service availability benefits have been estimated based on the values presented in the Inland Rail Program Business Case (2015). These benefits were derived by ARTC in 2015, and have been apportioned to individual projects for the purposes of this incremental benefit assessment. The values calculated by ARTC have been escalated to a 2019 price year using Producer Price Index (PPI) Rail Freight Transport (A2314067L).
Improved service reliability	Improved service reliability represents the certainty in transit time and subsequent economic efficiency gains to freight operators. This provides reduced wait times at points of loading / unloading along the network, allowing goods to reach their destinations in a timelier manner. As with availability benefits, reliability benefits have been estimated based on the values presented in the Inland Rail Program Business Case (2015). These benefits were derived by ARTC in 2015, and have been apportioned to individual projects for the purposes of this incremental benefit assessment. The values calculated by ARTC have been escalated to a 2019 price year using PPI Rail Freight Transport.
Community Benefits	
Crash reduction	Crash cost savings represent the reduced costs associated with fatal and serious injuries resulting from both road and rail incidents.

Benefit Category	Description
Environmental externalities	Reduced environmental externality costs represent reductions in air pollution and greenhouse gas emissions due to the Project. The majority of these benefits can be attributed to the mode shift from road freight to rail freight.
Road decongestion benefits	As the Project encourages greater movement of freight by rail, the reduced truck movements that are projected upon completion of the Project result in reduced congestion in urban areas.

Freight Benefits

The freight benefits have been quantified and monetised using demand assumptions from the Inland Rail Program Business Case (2015) and the parameters set out in Table 11.

Value of freight per tonne hour unit rates have been derived from previous analysis completed for the Inland Rail Program Business Case (2015) and escalated to $2019 using appropriate producer price indices.

The analysis estimated a range of rail operating costs for both the Base Case and Project Case. The rates provided in the table demonstrate the efficiency improvements gained in rail operations through the completion of the Project, with higher capacity trains and improved transit times resulting in lower rail operating parameters (unit rates drop from $0.040 – $0.039 per net tonne kilometres (NTK) in the Base Case down to $0.017 – $0.018 NTK in the Project Case for agricultural freight, and $0.106 – $0.067 per NTK in the Base Case down to $0.068 – $0.039 NTK in the Project Case for containerised freight). These parameters have been estimated based on the outputs from the Inland Rail Program Business Case (2015) and Transport for New South Wales' (TfNSW) Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives (2018).

The freight service improvements utilise the previous analysis completed for the Inland Rail Program Business Case (2015) and have been escalated to $2019 and apportioned to C2K.

Table 12: Freight benefit parameter values ($2019)

Parameter Value		Variable/s	Source/s
Freight Travel Time			
Value of Freight (Rail)		$1.69 tonne hour	ATAP, Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)
Value of Freight (Road)		$1.45 tonne hour	ATAP, Inland Rail Program Business Case (2015), PPI Road Freight Transport (A2314058K)
Operating Cost			
Agricultural	**Rail Operating Cost – Base Case**	2024: 0.040 $/ntk 2054: 0.034 $/ntk 2074: 0.039 $/ntk	TfNSW (2018), Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)
	Rail Operating Cost – Project Case	2024: 0.017 $/ntk 2054: 0.017 $/ntk 2074: 0.018 $/ntk	TfNSW (2018), Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)

Parameter Value		Variable/s	Source/s
Containerised	**Rail Operating Cost – Base Case**	2024: 0.106 $/ntk 2054: 0.080 $/ntk 2074: 0.067 $/ntk	TfNSW (2018), Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)
	Rail Operating Cost – Project Case	2024: 0.068 $/ntk 2054: 0.048 $/ntk 2074: 0.039 $/ntk	TfNSW (2018), Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)
Road Operating Costs		0.063 $/ntk	ATAP, Inland Rail Program Business Case (2015), PPI Road Freight Transport (A2314058K)
Road Driver Costs		29.95 $/h	Austroads, Inland Rail Program Business Case (2015), CPI
Freight Service[34]			
Freight Service Availability		2024: $16.75 m 2054: $182.69 m 2074: $299.23 m	Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)
Freight Service Reliability		2024: $11.17 m 2054: $45.35 m 2074: $81.07 m	Inland Rail Program Business Case (2015), PPI Rail Freight Transport (A2314067L)

The total freight demand for the Project consists of agricultural freight travelling from northern NSW (including North Star, Narrabri and North Moree), southern Queensland (including Goondiwindi and Toowoomba) regions through to Brisbane, along with containerised freight from Charlton-Wellcamp to Brisbane. As indicated within the Inland Rail Program Business Case (2015), induced freight demand has only been modelled for the entire extents of Inland Rail (e.g. Melbourne to Brisbane and Brisbane to Melbourne); as such, no induced demand has been included in the analysis for C2K.[35]

Consistent with the assumption contained within the Inland Rail Program Business Case (2015), the resulting freight demand from C2K is expected to see all future contestable freight carried by rail. Under these demand projections, freight users will benefit from a significant reduction in average travel times by rail in the Project Case (from 7.87 hours in the Base Case to 5.53 hours in the Project Case in 2054). This results in the shift of the total freight task from road freight to rail - the total tonnes carried is the same between the Base Case and the Project Case. Notably, as a result of the shift to rail freight and longer average trip distances, the total net tonne kilometres (NTK) travelled increases in the Project Case (in 2054 the Base Case 1,351 mNTK (million net tonne kilometres) increases to 1,363 mNTK in the Project Case).

[34] For the freight service benefits, interpolation has been applied using years 2024, 2054, and 2074, these values are then apportioned as per the methodology above.

[35] It is noted that no new independent demand modelling has been undertaken to validate the assumptions contained within the Inland Rail Program Business Case (2015).

Table 13: Freight demand assumptions – C2K

	Base Case			Project Case		
	2024	2054	2074	2024	2054	2074
Trips						
Rail	768	1,066	1,327	1,786	1,907	2,373
Road	66,921	92,917	115,643	-	-	-
Total Tonnes ('000s)						
Rail	870	1,208	1,503	2,603	3,614	4,498
Road	1,733	2,406	2,995	-	-	-
Average Trip Time (hours)						
Rail	6.56	7.87	8.83	5.00	5.53	6.22
Road	6.33	6.72	6.99	-	-	-
Million Net Tonne Km (mNTK)						
Rail	285	396	493	982	1,363	1,696
Road	688	955	1,189	-	-	-
TOTAL mNTK	**973**	**1,351**	**1,682**	**982**	**1,363**	**1,696**

Source: Inland Rail Program Business Case 2015

Freight benefits have been estimated using the appropriate change in freight demand (such as mNTK) by mode type by the relevant parameter unit. The estimated freight benefits for C2K are provided over a 50 year analysis period in the table below. Overall, the Project's freight benefits represent an incremental $126.76 million in present value terms over the Base Case.

Table 14: Estimated freight benefits ($2019)

Benefit	Undiscounted - $m	Present Value (7%) - $m
Freight Time Savings	54.05	8.92
Operating Cost Savings	456.74	81.59
Freight Service Availability	242.65	27.88
Freight Service Reliability	65.71	8.37
TOTAL	**819.15**	**126.76**

Operating cost savings represent 64 percent of freight benefits, with $81.59 million in present value terms as freight shifts from road to rail. This is representative of the significant efficiency benefits gained from lower transit times (the average rail freight journey time in 2054 drops from 7.87 hours in the Base Case to 5.53 hours in the Project Case) and higher capacity freight trains. In addition, each rail trip in the Project Case is expected to remove the equivalent of 49 road freight trips from the Project area in 2054.

Freight service availability and reliability represent a combined $36.25 million in present value terms to freight benefits (~29 percent). This is apportioned to C2K on the basis of the combined service improvements from the broader Inland Rail Program and represent the expected benefit from improved freight service within the Project area.

Freight time savings provide the remaining $8.92 million in present value terms to freight benefits (~7 percent). As with operating cost savings, this is largely representative of the combined efficiency improvements and the resulting mode shift of road freight trips to rail.

Community Benefits

The community benefits have been quantified and monetised using demand assumptions from the Inland Rail Program Business Case (2015) and the parameters set out in Table 14.

The avoided crash cost saving per net tonne kilometre has been adapted from the Bureau of Transport Economics (BTE) estimates. The parameters are consistent with typical transport appraisal methodologies used in business cases throughout Australia. The values presented in the table below have been escalated by CPI.

The environmental externalities cost saving per kilometre travelled parameters have been adapted from Austroads' Guide to Project Evaluation Part 4 Section 5 (2012) and are consistent with the parameters applied within the Inland Rail Program Business Case (2015). The values presented in the table below have been escalated by CPI.

The marginal cost of congestion per vehicle kilometre travelled parameters have been adapted from TfNSW's Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives. This is consistent with the approach applied within the Inland Rail Program Business Case (2015). The value presented in the table below has been escalated using PPI for Road Freight Transport.

Table 15: Community benefit parameter values ($2019)

Parameter Value	Variable/s	Source/s
Crash Cost Savings		
Road	0.0053 $/ntk	BTE (1999), CPI
Rail	0.0005 $/ntk	BTE (1999), CPI
Environmental Externalities		
Road (Urban)	37.87 $/1000 km	Part 4 Section 5 Guide to Project Evaluation Austroads (2012), Inland Rail Program Business Case (2015), CPI
Road (Rural)	12.53 $/1000 km	Part 4 Section 5 Guide to Project Evaluation Austroads (2012), Inland Rail Program Business Case (2015), CPI
Rail (Urban)	6.15 $/1000 km	Part 4 Section 5 Guide to Project Evaluation Austroads (2012), Inland Rail Program Business Case (2015), CPI
Rail (Rural)z	1.64 $/1000 km	Part 4 Section 5 Guide to Project Evaluation Austroads (2012), Inland Rail Program Business Case (2015), CPI
Road Decongestion Benefits		
Marginal congestion cost	2.81 $/vkt	TfNSW, Inland Rail Program Business Case (2015), CPI

The shift of road freight to rail provides significant reduction in freight demand by kilometres travelled. This frees up capacity on the road network, and reduces the level of interaction between heavy vehicles and cars. Subsequently, businesses and community members are able to move more freely through the local network.

Table 15 provides the assumed freight demand by kilometres travelled as per the modelling completed for the Inland Rail Program Business Case (2015).

Table 16: Freight demand by kilometres travelled ('000s) - C2K

Mode	2024	2054	2074
Base Case			
Rail	261	363	451
Road	26,569	36,890	45,913
Project Case			
Rail	714	818	1,018
Road	-	-	-

Source: Inland Rail Program Business Case 2015

Community benefits have been estimated using the appropriate change in freight demand (such as kilometres travelled) by mode type by the relevant parameter unit. The estimated community benefits for C2K are provided over a 50 year analysis period in the table below. Overall, the Project's community benefits represent an incremental $39.46 million in present value terms over the Base Case.

Table 17: Estimated community benefits ($2019)

Benefit	Undiscounted - $m	Present Value (7%) - $m
Crash Cost Savings	30.05	5.41
Environmental Externalities	87.40	15.74
Road Decongestion Benefits	101.66	18.31
TOTAL	**219.11**	**39.46**

Crash cost savings represent ~14 percent of community benefits ($5.41 million in present value terms) as freight traffic is removed from the road network.

The reduction in heavy vehicle freight will provide further cost savings from environmental externalities, such as air pollution, greenhouse gas emissions, noise and other environmental disruptions. The avoided environmental externality costs resulting from the Project has been estimated to provide $15.74 million in benefits to the community (~40 percent of community benefits).

Road decongestion benefits provided the greatest share of community benefits (~46 percent), with an estimated $18.31 million in present value terms. Relative to the Base Case, the Project Case is expected to remove all road freight traffic from the area allowing other commuters to travel more freely across the road network.

4.4.5 Economic benefits assessment results

The results of the economic benefits assessment estimate that the Project is expected to provide a total ($2019 present value terms) of $166.22 million in incremental benefits to the Project area (at a 7 percent discount rate). This consists of $126.76 million in freight benefits and $39.46 million in community benefits.

Observing the composition of benefits, the largest share of benefits for C2K is freight operating Inland Rail Program Business Case 2015 savings, representing ~49 percent of the total benefits (at a 7 percent discount

rate). Freight benefits more broadly (including freight time travel savings, operating cost savings, as well as improved reliability and availability) represent ~76 percent of the total projected benefits for C2K.

Reductions in environmental externalities (i.e. air pollution and greenhouse gas emissions) from reduced heavy vehicle kilometres travelled represents ~9 percent of the total benefits (at the 7 percent discount rate).

The full results of the economic benefits assessment are presented in the table below.

Table 18: Results of the economic benefits assessment, present value terms ($2019)

Benefits	Discount Rate		
	4%	7%	10%
Freight Benefits	**$248.34 m**	**$126.76 m**	**$74.87 m**
Travel Time Savings	*$17.09 m*	*$8.92 m*	*$5.35 m*
Operating Cost Savings	*$150.74 m*	*$81.59 m*	*$50.48 m*
Improved Availability	*$62.68 m*	*$27.88 m*	*$14.44 m*
Improved Reliability	*$17.82 m*	*$8.37 m*	*$4.61 m*
Community Benefits	**$72.69 m**	**$39.46 m**	**$24.45 m**
Crash Reduction	*$9.97 m*	*$5.41 m*	*$3.35 m*
Environmental Externalities	*$29.00 m*	*$15.74 m*	*$9.75 m*
Road Decongestion Benefits	*$33.73 m*	*$18.31 m*	*$11.35 m*
TOTAL BENEFITS	**$321.03 m**	**$166.22 m**	**$99.32 m**

Source: KPMG

4.4.6 Cost Benefit Analysis: Inland Rail Program Business Case

As detailed above, due to the nature of the incremental assessment approach adopted for this EIS, a Project-specific CBA has not been undertaken as the results will not capture the full impact that is expected to be delivered upon completion of the Inland Rail Program. Instead, the results of the economic analysis undertaken for the Inland Rail Program Business Case (2015) are provided to illustrate the anticipated net economic impact of Inland Rail to the community as a whole. The results of this analysis, as presented in the Business Case, are provided in the table below.

Table 19: Economic appraisal results for Inland Rail ($2015)

	Net Present Value	Benefit Cost Ratio
PV at 4% Discount Rate	$13,928 m	2.62
PV at 7% Discount Rate	$116.1 m	1.02

Source: Inland Rail Program Business Case 2015

The CBA results indicate that Inland Rail is estimated to be economically viable, with an economic benefit cost ratio of 1.02 at a 7 percent discount rate (2.62 at a 4 percent discount rate). By beneficiary, intercapital freight users account for 68 percent of total benefits, followed by regional freight (16 percent). A further 13 percent of benefits accrue to the broader community.

4.5 Regional impact analysis

A regional impact analysis has been undertaken to highlight the impacts of the C2K segment of the Inland Rail Program on the regional, state and national economies using a computable general equilibrium modelling framework. [36] For the purposes of this analysis, a CGE model (KPMG-SD) has been applied to examine the flow-on effects arising from C2K on the broader economy.

As described throughout this report, the regional economy is represented by the Greater Brisbane labour market region.

4.5.1 Key considerations

The direct and indirect economic impacts of C2K during its construction phase are modelled using a comparative-static version of KPMG-SD. In comparative static mode, KPMG-SD does not trace out the dynamics of how the economy adjusts through time to accommodate the construction of C2K. Rather, in comparative static mode, KPMG-SD provides estimates of how the economy is impacted over the construction phase period, during which C2K's capital expenditure (CAPEX) program is completed.

Under this configuration, KPMG-SD provides two snapshots of the structure and size of the economy for the Project:

- The first snapshot is the **baseline** representation of the economy. For the construction phase, the baseline is a representation of the size and structure of the economy before the CAPEX program associated with the Project's rail development commences.
- The second snapshot is a **revised** representation of the economy that includes the impacts of the Project. For the construction phase, this revised snapshot is a representation of the economy during the expenditure of the CAPEX program associated with the development of the Project.

The key modelling assumptions and inputs that underpin the regional economic assessment results are provided in Appendix B. It is noted that the analysis in this report was largely completed before the economic shock associated with the 2020 quarter 2 market conditions. In particular, the baseline representation of the economy does not account for 2020 quarter 2 market conditions.

4.5.2 Limitations

It is important to note that the results of the CGE modelling are subject to the following limitations:

Construction phase

The capital expenditure program associated with the development and construction of C2K is modelled in KPMG-SD as a transitory expenditure shock to the economy. Accordingly, modelling the construction phases of the 13 individual project links that comprise the Inland Rail Program in isolation is reasonable. If there is significant overlap in the timing of the construction phases of the other links in the Inland Rail Program, modelling each link in isolation may result in an under-estimation of the pressures on resource availability, particularly labour. This could also be exacerbated by other construction projects in the surrounding region. In recognition of this possibility, the assessment models the construction phase of each link under two labour market scenarios:

- In the first scenario, it is assumed that labour markets are characterised by the availability of unemployed and under-employed workers with relevant skills ('slack labour market') so that any increases in the demand for labour can be accommodated without increasing real wages.

[36] The regional impact analysis has been undertaken prior to the refinements made to the construction program. The impact of this refinement would have a minor effect on the economic benefits identified. This change to program timing explains any inconsistencies between the construction program identified in the economic analysis and those identified within the body of this report.

- In the second scenario, it is assumed that real wages are sensitive to additional labour market demand ('tight labour market').

Operational phase

Due to the nature of the Project, the operational economic impacts of C2K will only be fully realised once all components of Inland Rail are completed. As detailed above, assessing each link of the Inland Rail Program individually and in isolation of the whole Program will not capture all the benefits expected to be generated upon completion of the entire Melbourne to Brisbane connection.

In the context of the regional impact analysis, when modelling each link of Inland Rail in isolation, the CAPEX is disproportionate to the benefits directly attributable to that particular link. If the C2K link was built but no other link was completed, the benefits would be insufficient to justify the investment. From a modelling perspective, it would appear as if there had been a significant over-investment in rail infrastructure. That is, the supply of rail services is greater than the demand for these services. This excess supply of rail services can be eliminated by a combination of reducing the price of rail service (to stimulate demand), writing off the investment and subsidising the rail operations. Each of these mechanisms has a distortionary impact on the economy. These distortions are an artefact of the requirement to consider the benefits of the C2K link in isolation rather than a reflection of what will actually happen in the economy. For this reason, the operational phase modelling results are not included in this EIA.

4.5.3 Regional economic impact analysis results

The headline impacts of C2K on the Greater Brisbane region during the construction phase are summarised in the table below.

Table 20: Summary of the direct and indirect economic impacts of C2K

	Greater Brisbane	
Measure	**Slack Labour Markets**	**Tight Labour Markets**
Additional real GRP ($2018-19)	$355 m	$125 m
Average annual additional direct and indirect employment (persons)	482	96

Source: KPMG
Note: The average annual additional jobs listed in the table reflect jobs generated in the Greater Brisbane area, the Project will also generate jobs in adjacent labour markets (refer Figure 9).

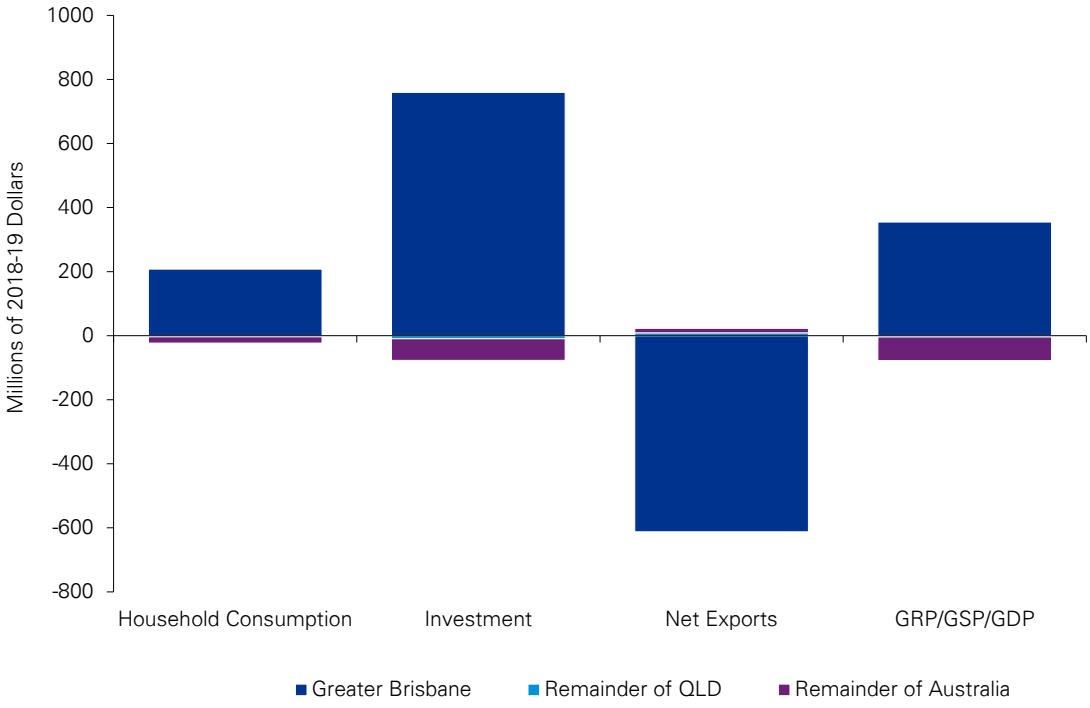
During the construction phase, real GRP for the Greater Brisbane Region is projected to be $355 million higher than the baseline level under the assumption of slack labour markets. This increase is more than halved if labour markets are assumed to be tight ($125 million).

The importance of the labour market assumption is reflected in the employment results. In the slack labour market scenario, it is estimated that an additional 482 direct and indirect jobs are generated.[37] Note that this is the average number of jobs per annum during the construction period. With tight labour markets, the increase in jobs is significantly less at 96 jobs. Under tight labour markets, wages are bid up to attract currently employed workers to the businesses contracted to construct C2K. That is, the labour market response is dominated by workers moving from their current job to a higher paying job. With slack labour markets, there are sufficient unemployed and under-employed workers to accommodate the increase in demand for labour without increasing real wages.

Figures 7 and 8 summarise the macroeconomic results for the Greater Brisbane region in the context of the rest of the QLD and Australian economies.

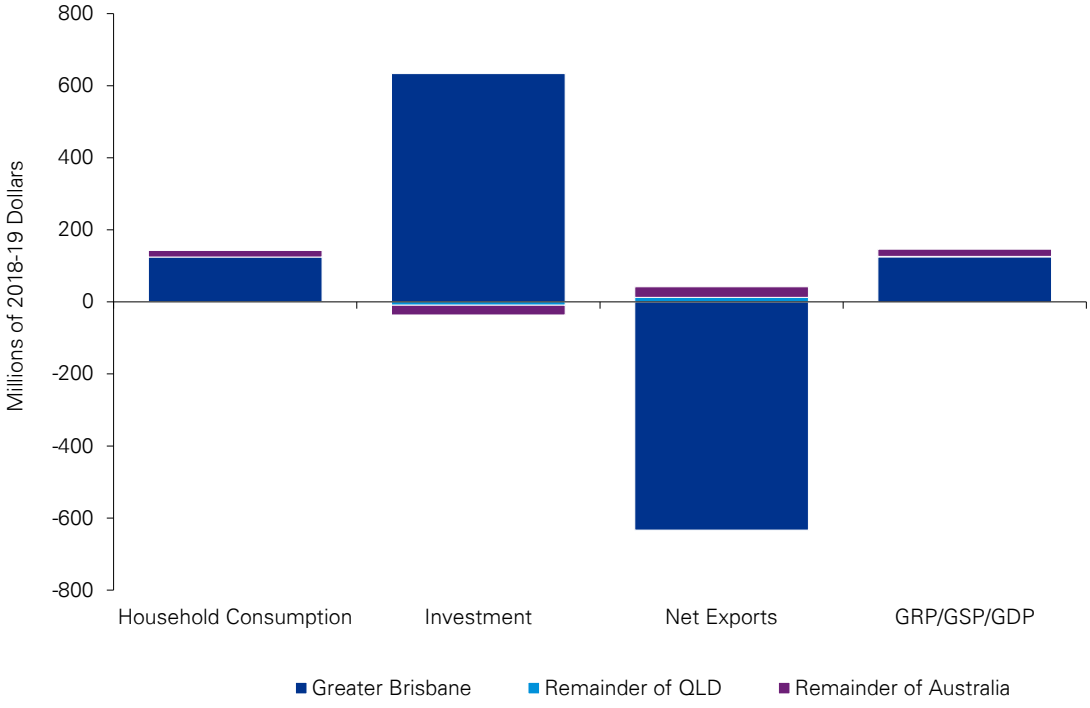
[37] To put this in context, the planned workforce requirements (direct employment) of C2K during the construction phase peak at approximately 620 personnel. Almost 80 percent of the C2K CAPEX is expended in 2022 and 2023. It is estimated that the average annual number of jobs in those two years for Greater Brisbane is about 1,100 in slack labour market conditions and 230 in tight labour market conditions.

Figure 7: Macroeconomic results: construction phase, slack labour markets



Source: KPMG

Figure 8: Macroeconomic results: construction phase, tight labour markets

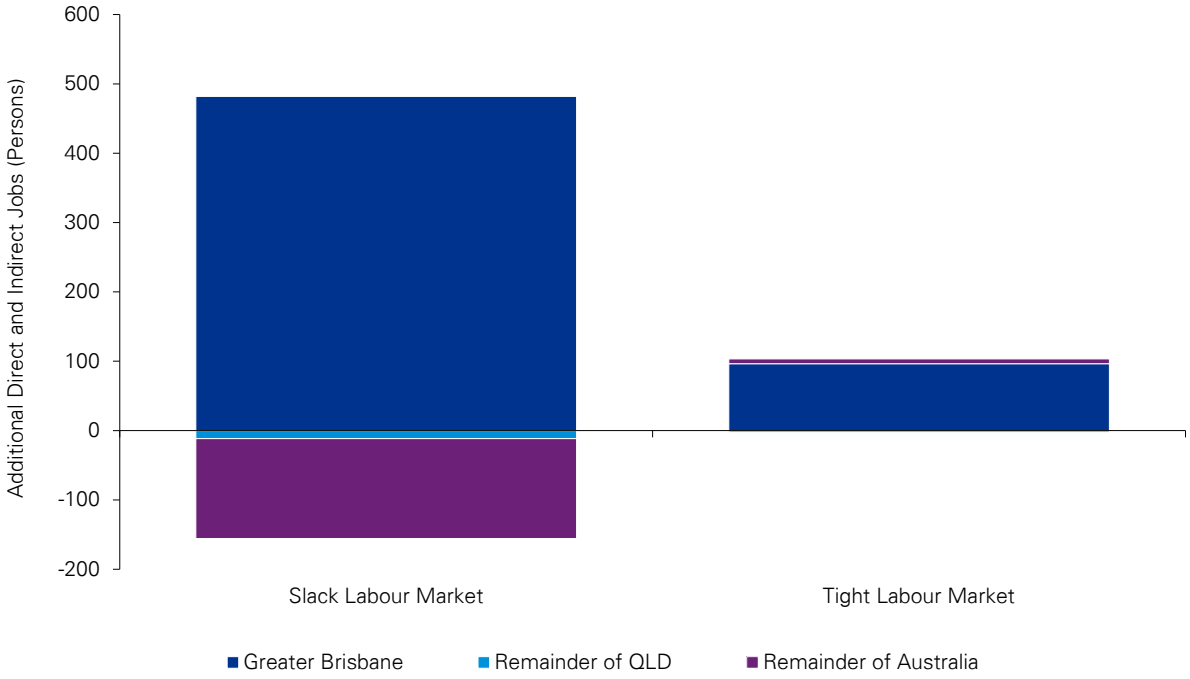


Source: KPMG

The simulation results indicate that the economic impacts of C2K during the construction phase are concentrated in the Greater Brisbane Region. Net exports, which include inter-regional and international exports and imports, are negatively impacted. The resources required to complete the construction of C2K are sourced locally and from interstate and overseas suppliers. At the local level, higher costs induce the cost-sensitive trade-exposed sectors to release resources to accommodate the investment demands of C2K. [38]

The modelled direct and indirect impacts of the Project on employment are presented in the figure below.

Figure 9: Direct and indirect employment results



Source: KPMG

The labour market conditions that are likely to prevail during the construction phase of C2K will be most consistent with the "slack" labour market scenario.

Recent labour market trends can be used to inform workforce capacity and capability within the local region. In Greater Brisbane, over the four quarters ending in the December quarter 2019, the unemployment rate averaged 6.1 percent[39], and the participation rate averaged 78.7 percent over the 12 months ending in December 2019.[40] Labour market conditions in Greater Brisbane appear to have been stable with the unemployment rate within the range of 6.0 – 6.2 percent since the December quarter 2018 and the participation rate staying above 78.2 percent since the start of 2019. Sustained high unemployment rates, coupled with an upward trend in participation rates, suggests that the labour market in the Greater Brisbane area is not stretched. However, it is important to consider these statistics in a broader context, including with regard to labour market conditions at the state and national levels.

[38] The C2K CAPEX program associated with the Project constitutes a temporary expenditure shock to the economy. Some of the goods and services purchased by customers in the Greater Brisbane economy are imported from interstate and overseas. CAPEX, particularly at the regional level, is more import intensive than other types of expenditure. This means that a CAPEX shock will, other things being equal, result in net exports contracting. In addition, KPMG have assumed that businesses do not respond to the temporary shock by increasing their productive capacity through investment in fixed capital. Instead, businesses use more labour with their existing fixed assets (e.g. plant and equipment), which increases costs and reduces competitiveness. Where it is profitable to do so, businesses switch some of their productive capacity towards accommodating the demands associated with C2K and away from sales to other customers (e.g. to interstate and overseas customers). The results reported in Figures 7 and 8 are roughly linear for small deviations in the assumed CAPEX. For example, if C2K CAPEX was increased by 5 percent (from $648.2 million to $680.6 million) then net exports for Greater Brisbane would fall by a further 5 percent.

[39] Based on Australian Government's Small Area Labour Markets (SALM) publication, December 2019

[40] Participation rate of working-age population 15 – 64 years; ABS, Labour Force Survey 2020, cat. no. 6291.0. Released 26 March 2020.

At the time of writing, the latest available regional labour market statistics in the Small Area Labour Markets (SALM) publication contained data to December 2019. More recent macro-economic data suggest that labour market conditions may have deteriorated further and the economic shock associated with the 2020 quarter 2 market conditions has added considerable downside risks to the broader economy in the short to medium term. The National Accounts data for Quarter 4, 2019 show domestic demand has remained soft, even before recent natural disaster events (i.e. bushfires and floods) and the global Coronavirus outbreak. Economic conditions are anticipated to deteriorate markedly in the short to medium term, increasing the likelihood that the national and regional labour markets will be consistent with the "slack" labour market scenario during the construction phase.

Looking specifically at skilled labour capacity, recent Labour Force Survey results indicate that a relatively high proportion of unemployed workers were last employed in the Construction sector.[41] In QLD, during the reference week in the quarter ended November 2019, 12,900 unemployed persons (approximately 8.5 percent) reported that their last job was in Construction, representing a 45.5 percent increase from the corresponding quarter in the previous year. Nationally, over the same period, 15.1 percent of unemployed persons who reported losing their job last worked in the Construction industry. The ABS estimates that job vacancies in the Construction sector have fallen sharply as at November 2019 (around 14.0 percent) from their peak in the quarter ended February 2019.[42] These indicators suggest a degree of softness in the Construction sector. The industry and occupational profile of the Greater Brisbane workforce, together with evidence that the Construction sector is not currently stretched, means that it is reasonable to assume that the regional labour market has the capacity to supply a significant portion of the workforce requirements of the Project without major disruption.[43]

The possibility of some tightness in the labour market cannot be completely dismissed. If the government's health and economic policy responses to the 2020 quarter 2 market conditions are highly effective, the economy may grow much faster than expected, resulting in significantly more activity in the construction sector than anticipated. For example, the government may seek to bring forward projects to stimulate the economy. If this transpires then labour market conditions may tend towards somewhere between the "slack" and "tight" scenarios.

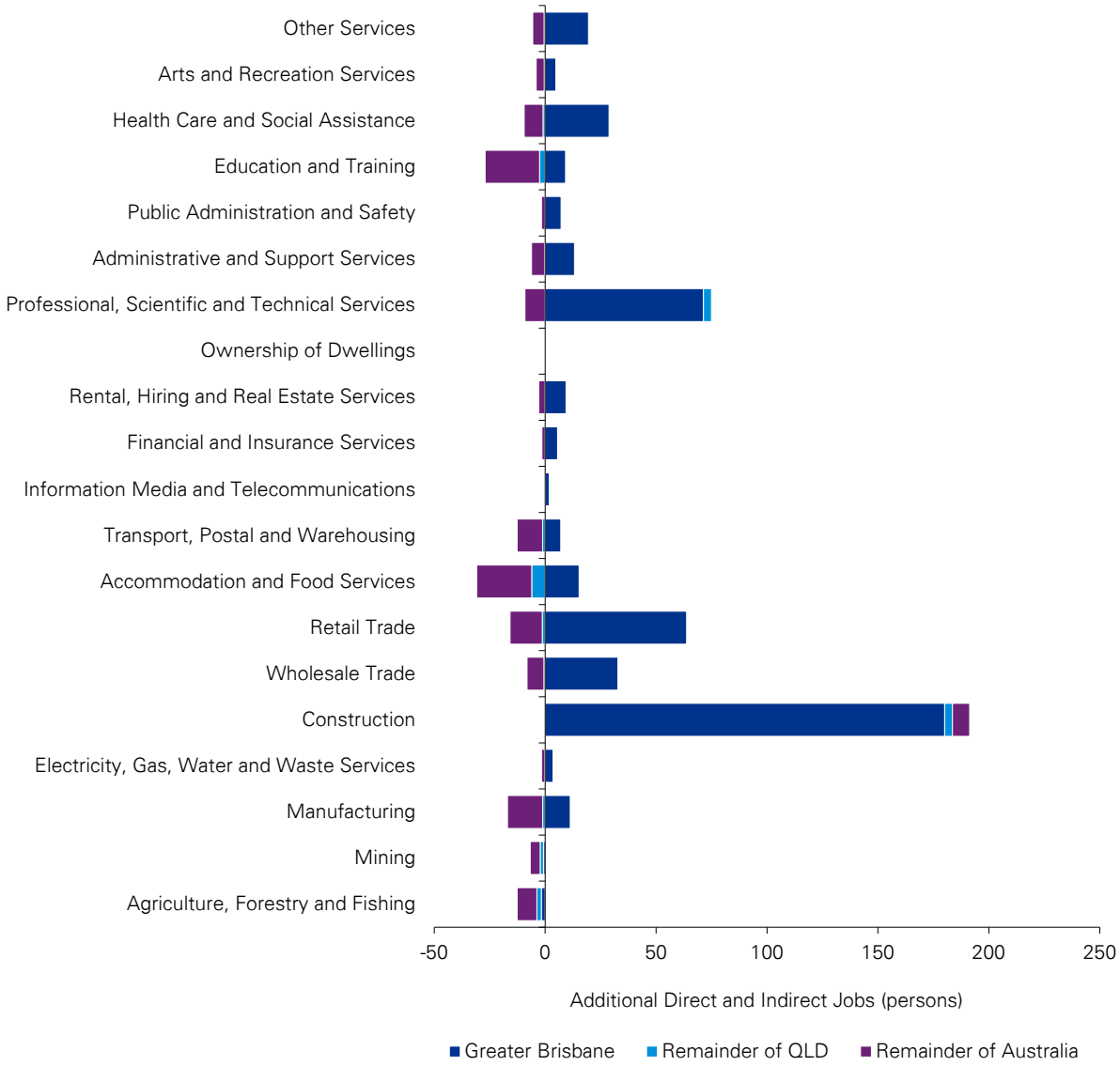
Employment results at the industry level are presented in Figure 10 and Figure 11. Although the patterns are the same under the two labour market scenarios, it is evident that under the tight labour market assumption, there is greater displacement of workers.

[41] Based on ABS, Labour Force Survey, Quarterly, November 2019, cat no. 6291.0.55.003. Released 23 December 2019.

[42] Based on ABS, Job Vacancies, November 2019, cat no. 6354.0. Released 8 January 2020.

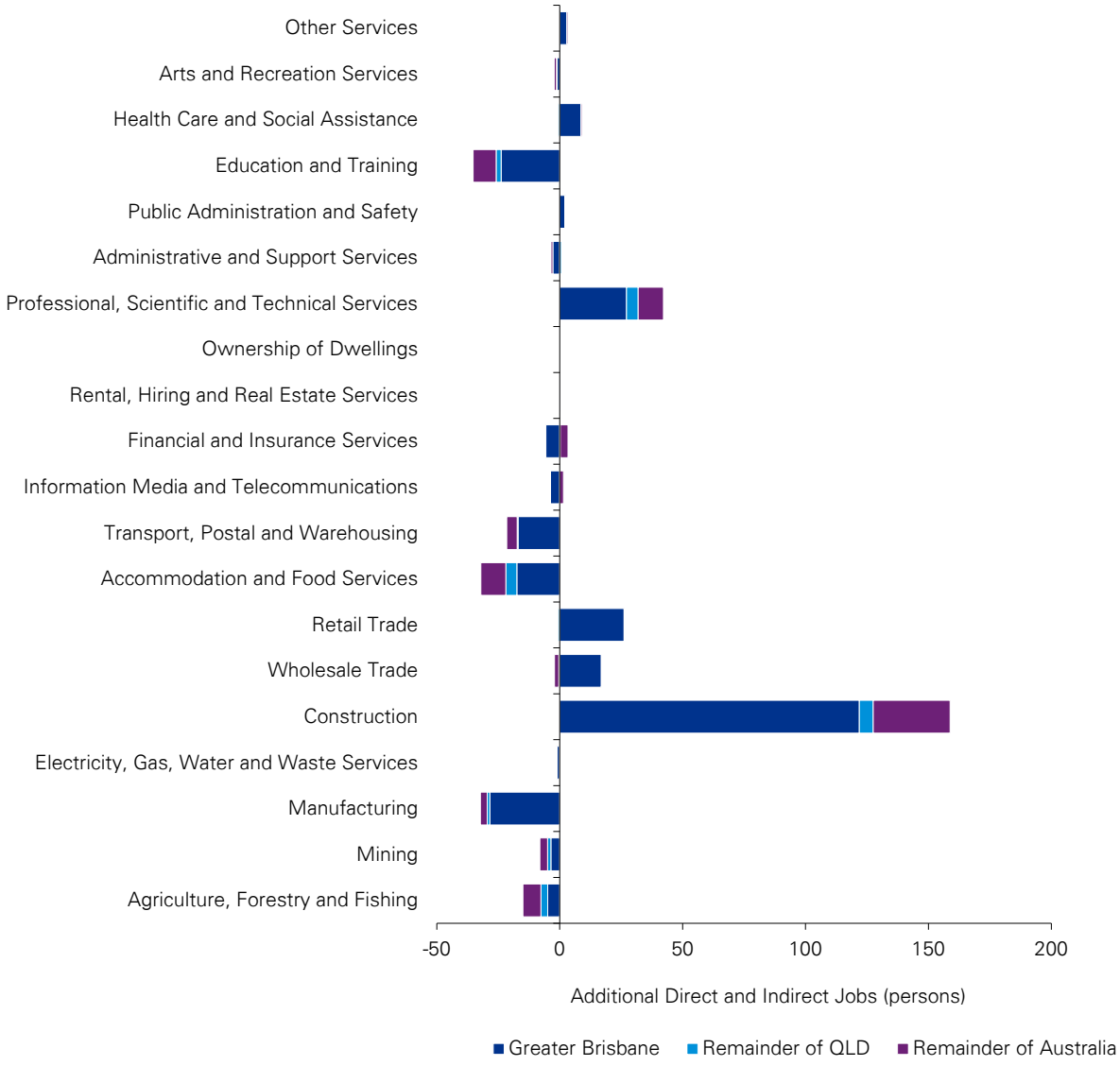
[43] Workers with specialist skills may be sourced from outside of the local region.

Figure 10: Industry employment results: construction phase, slack labour markets



Source: KPMG

Figure 11: Industry employment results: construction phase, tight labour markets



Source: KPMG

The Construction sector, which benefits directly from C2K, is anticipated to expand employment by the greatest number of jobs. The results also indicate the expansion of employment in the Professional, Scientific and Technical Services and Wholesale Trade sectors. This reflects the importance of these two sectors in the Construction industry's supply chain. The increase in demand for resources to complete the construction of C2K tends to increase costs. This has negative impacts on traditional cost-sensitive trade-exposed sectors, such as Agriculture, Forestry and Fishing, Mining, and Manufacturing and on non-traditional trade-exposed sectors such as Accommodation and Food Services, and Education and Training. As a result, these sectors contract and release resources to the construction-related sectors.

Under slack labour market conditions, the increase in the demand for workers can be partially accommodated by drawing from the ranks of the unemployed (or under-employed) and accordingly the displacement of workers from existing jobs is less pronounced. With slack labour markets, the benefits from increased labour demand are primarily in the form of additional jobs. Under tight labour markets, as businesses compete for workers who are already employed, the benefits from increased labour demand are primarily in the form of higher real wages resulting in the displacement of workers from lower paying jobs to higher paying jobs.

5 Cumulative impacts

The cumulative economic impact assessment refers to the potential impact of cumulative stimulus to the economy resulting from a set of existing or planned projects within or adjacent to the study area. Cumulative impacts may result from the spatial and / or temporal interaction between these projects.

For the purposes of this report, the cumulative impact assessment has two components:

- **Inland Rail Program in Queensland (Section 5.1)**

  A quantitative assessment of the cumulative macroeconomic impact of the Inland Rail Program on the economy, resulting from the construction of the QLD sections of the Inland Rail Program. [44]

  There are five sections of the Inland Rail Program which fall in QLD, including Border to Gowrie (B2G), Gowrie to Helidon (G2H), H2C, C2K and K2ARB.

- **Broader cumulative assessment (Section 5.2).**

  A qualitative assessment of cumulative impact of State significant projects (that have been identified by ARTC as having a relationship to the Project - refer Appendix A) on local and regional labour markets, the supply chain and local businesses.

5.1 Inland Rail Program in Queensland

The construction phases of the QLD sections of the Inland Rail Program have been jointly simulated to analyse the cumulative economic impacts of these projects. Table 20 and Table 21 summarise the cumulative macroeconomic impacts of the QLD sections of the Inland Rail Program. Under the assumption of slack labour markets, the incremental economic impacts of the QLD sections include an increase in real GSP of $1.75 billion (measured in $2019) and an increase in the average number of jobs over the period 2020 to 2025 of 2,059 jobs per year. If labour markets are tight then the incremental benefits are smaller with real GSP increasing by $0.83 billion and the average annual number of jobs increasing by 485 over the same period.

The sections of the Inland Rail Program that are located in the Greater Brisbane region include C2K, K2ARB and part of H2C. Construction activities related to these sections will directly impact the Greater Brisbane economy. The remaining QLD sections of the Inland Rail Program, which are located in the Toowoomba and Darling Downs and Maranoa regions, will impact Greater Brisbane indirectly.

When all the QLD projects are considered jointly, the analogous increment to jobs (direct and indirect) in Greater Brisbane increase to 703 per year (under a slack labour market scenario) and 153 per year (under a tight labour market scenario). The increment to jobs in Greater Brisbane peaks in 2022 at 1,610 and 370 jobs under slack and tight labour market conditions respectively. As discussed in Section 4.5, the labour market conditions expected to prevail in the Greater Brisbane economy over the period 2020 to 2025 will be most consistent with those assumed in the "slack" labour market scenarios that have been simulated. Further discussion regarding the regional labour market implications are discussed in the broader cumulative assessment below.

[44] The cumulative economic impact assessment has been undertaken prior to the refinements made to the construction program. The impact of this refinement would have a minor effect on the economic benefits identified. This change to program timing explains any inconsistencies between the construction program identified in the economic analysis and those identified within the body of this report.

Table 21: Summary of Queensland – wide economic impacts – slack labour markets

	GRP/GSP/GDP ($m 2019)	Jobs (persons)		
		Average Annual	Peak	Year of Peak
Greater Brisbane	$595	703	1,610	2022
Darling Downs - Maranoa	$314	290	722	2022
Toowoomba	$821	1,071	2,106	2022
Remainder of QLD	$24	-5	16	2022
Queensland	***$1,754***	***2,059***	***4,455***	***2022***
Remainder of Australia	$23	-335	-39	2020
Australia	$1,777	1,724	3,835	2022

Table 22: Summary of Queensland – wide economic impacts – tight labour markets

	GRP/GSP/GDP ($m 2019)	Jobs (persons)		
		Average Annual	Peak	Year of Peak
Greater Brisbane	$285	153	370	2022
Darling Downs - Maranoa	$147	69	175	2022
Toowoomba	$370	258	523	2022
Remainder of QLD	$31	5	23	2022
Queensland	***$832***	***485***	***1,090***	***2022***
Remainder of Australia	$277	86	249	2022
Australia	$1,109	572	1,339	2022

5.2 Broader cumulative impacts

5.2.1 Interacting projects

There are a range of projects, within or adjacent to the study area, that may contribute to local and regional economic impacts. These projects are detailed in Table 22, with the potential cumulative impacts on the local and regional labour market, local businesses and supply chain detailed below the table.

The details provided in Table 22 reflect known information as at the time of drafting this report. Further details on the cumulative impacts of the Project can be found in Chapter 22: Cumulative Impacts.

Table 23: Projects with the potential to interact with the construction and operation of C2K

Project and Location	Construction Dates / Jobs	Relationship to C2K
Helidon to Calvert (Inland Rail)	2021 – 2026 1,800 jobs	Potential overlap of construction finalisation for H2C and commencement for C2K.
Kagaru to Acacia Ridge and Bromelton (Inland Rail)	2023 – 2025 Jobs TBA	Potential overlap of construction finalisation for C2K and commencement for K2ARB.
Greater Flagstone Priority Development Area	2011 – 2041 Jobs TBA	Potential overlap of construction times, demand for resources and traffic volumes in the Kagaru area.
Bromelton SDA	2016 – 2031 Jobs TBA	Ongoing development north of Kagaru in the Bromelton SDA could result in a conflict for construction resources and see an increase of traffic volumes in the Kagaru area.
Ripley Valley Priority Development Area	2009 – 2031 Jobs TBA	Development could result in potential conflict for construction resources and see an increase in vehicle traffic.
South West Pipeline	2021 Jobs TBA	Potential conflict with demand for construction resources.
RAAF Amberley future works	2016 – 2022 7,000 Jobs	Ongoing development at RAAF Base Amberley may see increase in road traffic with heavy vehicles and further increase as the C2K construction occurs.
Cross River Rail (CRR)	2019 – 2024 1,547 jobs	CRR is located approximately 43 km from C2K at Kagaru. CRR is unlikely to result in material cumulative environmental impacts; however, depending on timing there may be competition for construction workers.
Remondis Waste to Energy Project	2021- 2024 200 jobs	Potential overlap of construction times, demand for resources and traffic volumes in the Ipswich area.

Source: ARTC, Chapter 22: Cumulative Impacts

5.2.2 Cumulative regional labour market impacts

The concurrent construction of interacting projects has the potential to increase the demand for labour in the local and regional economy, particularly for workers with trade and construction skills / knowledge. The demand for construction workers within a similar timeframe will lead to cumulative demands on construction labour, not only within the local and regional economy, but also across QLD, and potentially nationally.

The results of the regional economic impact assessment indicate that it is reasonable to assume that the regional labour market will have the capacity to supply a portion of the workforce requirements of the Project, without major disruption. However, these conditions may change in the context of cumulative labour market demand. Prior to the change in 2020 quarter 2 market conditions, the major infrastructure projects in the adjacent and surrounding areas, including those associated with Inland Rail, had the potential to put some pressure on labour markets if inopportune scheduling resulted in cumulative and competing demand for trades and construction labour. The overall labour demands of the various infrastructure projects expected to be constructed were modest and that scheduling could be optimised to minimise market impact. The prevailing trends in the Greater Brisbane labour market, and the ability of workers to mobilise to project locations,

suggested that the risks of labour market disruption were limited. In the current environment, this risk has now been further reduced.

There may be benefits from having additional infrastructure projects in the adjacent and surrounding areas around the same time as C2K. These benefits come in the form of lowered mobilisation costs and transfer of labour experience and skills to projects, particularly those constructed in the period leading up to, and the period following, the Project's construction phase.

5.2.3 Cumulative supply chain impacts

Cumulative supply chain impacts are likely to be realised where construction timeframes occur concurrently and comparable material is required, e.g. the adjacent Inland Rail projects. Opportunities to supply these projects may include supply of fuels, equipment, borrow and quarried material. Where materials are sourced within the surrounding regions, increased local expenditure is likely to increase local and regional economic activity.

However, should the demand for material surpass supply, resulting in a shortage of available material, input costs to C2K may increase (due to increased prices of materials) driving up the total construction cost, negatively impacting on the economic return of the Project.

5.2.4 Cumulative impacts on local businesses

The expansion in construction activity and regional employment (with a subsequent increase in temporary and non-resident population) has the potential to increase demand for a range of local infrastructure and services, including housing, health care, child care, and education. Further, spending on consumer orientated products by the construction workforce has the potential to benefit local retail businesses by increasing their trading levels.

6 Impact Management

C2K will result in a number of economic impacts, with potential economic benefits realised at a local and regional level. In order to maximise the positive outcomes of the Project, a number of strategies to avoid, reduce or mitigate the negative economic impacts, and enhance and facilitate the capture of positive impacts have been proposed by ARTC.

A SIMP has been developed which outlines the objectives, outcomes and performance measures required to manage the social and socio-economic impacts of C2K, and enhance Project benefits and opportunities. The SIMP outlines the objectives, outcomes and performance measures for, and the actions undertaken to manage the social and socio-economic impacts of C2K, and enhance Project benefits and opportunities.

There are two action plans which are directly relevant to the economic impacts identified and assessed in this EIA – Workforce Management and Local Business and Industry Participation. A summary of the impacts and benefits identified in this EIA and the relevant ARTC commitments within the SIMP action plans is provided in the table below. Further details of these plans can be found in the Social Impact Assessment (EIS Appendix R).

An implementation plan which outlines the respective responsibilities of ARTC and other stakeholders, timing, stakeholders to be involved in each measure and performance monitoring will be developed during the post-approval phase.

Table 24: Social Impact Management Action Plans

Impact / Benefit	ARTC Commitment
Project Employment The Project has the potential to be a significant opportunity to support local employment, including Indigenous and youth employment opportunities.	• ARTC will develop strategies to promote engagement of local workers • Minimum local employment targets will be negotiated and agreed between ARTC and the contractor • Contractors will be required to seek workers from the Ipswich and Scenic Rim LGAS where possible • Develop strategies to promote engagement of local workers from the Ipswich and Scenic Rim LGAS • Require contractors to encourage employment, training and skills development opportunities by: - identifying the skills required in the building, construction, equipment and services fabrication and supply, maintenance, operation and support to the Inland Rail Program, for its design, construction, operational and maintenance phases - arranging timely training, and qualification arrangements to meet the needs of skills development to support all phases of the Inland Rail Program - ensuring that training and qualification systems meet the requirements of the National Standards Framework. • Establishment of the Inland Rail Skills Academy • Provide a clear and efficient process for people to seek information about employment opportunities and register their interest

Impact / Benefit	ARTC Commitment
	• Work closely with Indigenous communities to strengthen community members' capacity for employment, support the design and delivery of training and development programs, encourage applications and increase the number of Indigenous people applying for Project-related jobs • Work with key partners to link training and development programs with other projects and local industries to provide the greatest regional benefit • Work with schools and local training providers to provide appropriate training • Work with the Commonwealth and Queensland Governments to provide long term outcomes through training, mentoring and other support programs • Provide a workplace that is inclusive and values the contributions of Aboriginal and Torres Strait Islander employees.
Local Business and Industry Participation The Project will have significant construction materials and services requirements which may provide local businesses with the opportunity to supply the Project.	• Inland Rail's AIPP and Sustainable Procurement Policy will be implemented for the Project • Access to services and businesses during construction will be maintained. Where alternative access arrangements are required, these will be developed in consultation with relevant landholders • Indigenous participation and local participation will be included as key elements of construction tender assessments and ARTC work closely with contractors to achieve agreed outcomes • A clear and efficient process for businesses to seek information about opportunities and register their interest in Project supply is provided • ARTC will work with DESBT, DITRDC and local and Indigenous businesses to: - Build businesses' capacity to participate in the Project's supply chain through business development, mentoring and pre-qualification projects - Support Indigenous businesses to ensure they are prepared for and provided with opportunities to participate.

Source: EIS Appendix R - Social Impact Assessment

There are a number of economic impacts identified within this EIA that relate to the agricultural properties and businesses. Where these impacts cannot be avoided, a range of measures have been proposed by ARTC to carefully manage and mitigate these impacts. The measures summarised in the table below are not captured within the SIMP, but represent commitments by ARTC. Further details are provided in Chapter 8: Land Use and Tenure.

Table 25: Summary of proposed management and mitigation measures

Impact	Proposed Mitigation / Management Measures
Agriculture	
Disruption to agricultural landowners from loss of agricultural land, disruption to access, land fragmentation and infrastructure and alterations to stock routes.	• Communicate with affected agricultural landholders to explain the land resumption process and/or the result of EIS studies on noise and dust, as relevant • Consult with agricultural landholders within the EIS investigation corridor and ensure an appropriate level of access is maintained for agricultural businesses across and between properties directly affected by the Project, to minimise impacts on the movement of stock, water, produce and equipment • Work with directly affected landholders to develop cooperative strategies which will reduce impacts on grazing, cropping businesses or other agribusinesses, which may include, as relevant: – property access and communication protocols – design measures to mitigate impacts on groundwater bores, fences, stock/product movements or water access – surface and/or groundwater management – erosion control – noise and vibration mitigation – weed and pest management.
Tourism	
Disruption to local tourism businesses and industry from changes in amenity and rural character.	• Continue engagement with the Ivory's Rock Convention and Events Centre and Flinders Peak Winery to communicate EIS findings, and if necessary and feasible, refine strategies to mitigate noise or visual amenity impacts on these properties during construction • Consult with tourism-related businesses (wineries, accommodation facilities, farm stays, restaurants, cafes and specialty shops) located within 5 km of the Project to: o Explain the Draft Outline Environmental Management Plan Traffic Management Plan and Construction Environmental Management Plan provisions and accept feedback on measures of relevance to tourism and related businesses o Identify any additional, feasible strategies which would reduce or offset impacts on connectivity or businesses' amenity during construction and/or operation • Discuss local marketing and/or business development initiatives which ARTC could support to offset impacts on tourism during construction.

Impact	Proposed Mitigation / Management Measures
	• Consult with ICC (and if advised by ICC, other stakeholders) to forecast the Ipswich Motorsports Precinct's event schedule during the construction phase, and identify feasible measures such as scheduling of noisy works or works which would disrupt access to the Precinct during major events • Consult ICC and DTMR regarding use of Champion's Way and the Cunningham Highway to inform the Project's TMP

Source: Chapter 8: Land Use and Tenure; EIS Appendix R: Social Impact Assessment

7 Conclusions

A detailed EIA has been undertaken for the C2K link of the Inland Rail Program, in accordance with the requirements under Section 11.153 of the ToR.

Inland Rail Program impacts

As per the requirements of the ToR, this EIA has focussed on the specific economic impacts resulting from the construction and operation of C2K. However, the assessment acknowledges the role of the Project, and the remaining project links, in collectively delivering the benefits of the Inland Rail Program. In its entirety, Inland Rail will enhance Australia's existing national rail network and serve the interstate freight market. As per the Inland Rail Program Business Case (2015), key economic impacts of the Inland Rail Program include:

- Lower prices for consumers as a result of lower intercapital freight transport costs, which reduces the cost of living for households.
- Positive direct net economic benefits, driven by improvements in freight productivity, reliability and availability, and benefits to the community from reduced environmental externalities, reduced road congestion and improved safety benefits. The Program is stated to be economically viable with a benefit cost ratio of 1.02 at a 7 percent discount rate (2.62 at a 4 percent discount rate).
- Economic growth as increased profits (for industries and producers where intercapital freight is an input or output) and incomes are multiplied through the economy. The Program is anticipated to deliver a net positive impact of $16 billion on Gross Domestic Product ($2015) over its 10 year construction period and 50 years of operation.
- Nationally, the Program is also expected to deliver an additional 16,000 jobs at the peak of construction, and an average of 700 additional jobs per annum during operation.
- Enhanced competition between rail and road freight, by providing a credible transport alternative, which will drive further innovation and efficiency.
- Potential to promote the expansion and development of freight precincts around Inland Rail terminals as a result of the benefits from co-location and clustering of industries (as a result of reduced transport costs to warehousing, economies of scale and knowledge-sharing opportunities).

Local and regional employment, business and industry impacts

At a local level, the Project will support regional economic development through opportunities for local and regional employment, businesses and industries:

- The Project offers 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. ARTC has developed a Sustainable Procurement Policy which will ensure that local, regional and Indigenous businesses will have opportunities to supply the project.
- The Project offers opportunities in secondary service and supply industries (such as retail, hospitality and other support services) for businesses in close proximity to the construction footprint. The expansion in construction activity is also likely support additional temporary flow-on demand and additional spending by the construction workforce in the local community.
- C2K is a critical link in the broader Inland Rail Program. As a greenfield development, C2K comprises new dual gauge track to create a more direct rail freight corridor for freight operators. As a critical link of the broader Inland Rail Program, C2K offers opportunities to support the local agricultural industry, by driving

savings in freight costs, improving market access, and reducing the volume of freight vehicles on the region's road network.

- As part of the Inland Rail Program, C2K has the potential to unlock the construction of ancillary and complementary infrastructure, industrial development and logistics operations within the local area. Specifically, C2K may act as a significant catalyst for development in the planned and existing industrial areas at the Ebenezer RIA, Willowbank Industrial Estate and Bromelton SDA.

The Project alignment has been designed to minimise impacts to local business and industry, however the Project may result in the disruption of the tourism and agriculture business through:

- Changes to the amenity of, or connectivity to, the local landscape and attractions. The Landscape and Visual Amenity Assessment (Chapter 10) concludes that a significant decrease in visitation as a result of this impact is unlikely. ARTC will work with tourism associations to ensure that generalised impacts on tourism values are reduced wherever possible; and
- The loss of agricultural land (through disturbance, acquisition, or sterilisation by the permanent disturbance footprint), disruption to farm management, or changes in accessibility or connectivity to market. This may negatively impact on the productive capacity and total economic value add from the local agricultural industry. Based on the proportion of productive agricultural land lost, it is estimated that the Project could result in a loss of $5,745 (value foregone) in gross agricultural production per year.[45] ARTC will work with individual land owners to develop suitable management solutions based on individual farm management practices to mitigate and manage these impacts.

Economic benefits assessment

The economic benefits assessment estimate that the Project is expected to provide a total ($2019 present value terms) of $166.22 million in incremental benefits (at a 7 percent discount rate). These benefits result from improvements in freight productivity, reliability and availability, and benefits to the community from crash reductions, reduced environmental externalities and road decongestion benefits.

Regional economic impact assessment- Greater Brisbane region.

The Project will promote regional economic growth across the Greater Brisbane region. Using recent labour market trends and projected construction sector activity to inform workforce capacity and capability within the local region, it has been concluded that it is likely that the labour market conditions that will prevail during the construction phase of C2K will most likely be closer to those characterised by the "slack" labour market scenario. Under this scenario, over the construction phase, real GRP is projected to be $355 million higher than the baseline level

Under a "slack" labour market scenario, C2K is also expected to deliver an additional 482 jobs (direct and indirect) per year over the construction period.

The possibility of some tightness in the labour market cannot be completely dismissed. If the government's health and economic policy responses to the 2020 quarter 2 market conditions are highly effective the economy may grow much faster than expected resulting in significantly more activity in the construction sector than anticipated. For example, the government may seek to bring forward projects to stimulate the economy. If this transpires then labour market conditions may tend towards somewhere between the "slack" and "tight" scenarios.

Cumulative impact assessment

The construction phases of the QLD sections of the Inland Rail Program have been jointly simulated to analyse the cumulative economic impacts of these projects. Under the assumption of slack labour markets, the

[45] This value is an indicative estimate only - it does not consider the value of individual commodities produced per lot or the value-add activities which contribute to the gross value of agricultural production in the region. An assessment of the composition of agricultural production by lot and commodity may be undertaken following detailed design.

incremental economic impacts of the QLD sections include an increase in real GSP of $1.75 billion (measured in $2019) and an increase in the average number of jobs over the period 2020 to 2025 of 2,059 jobs per year. If labour markets are tight then the incremental benefits are smaller with real GSP increasing by $0.83 billion and the average annual number of jobs increasing by 485 over the same period.

When all the QLD projects are considered jointly, the analogous increment to jobs (direct and indirect) in Greater Brisbane increase to 703 per year (under a slack labour market scenario) and 153 per year (under a tight labour market scenario). The increment to jobs in Greater Brisbane peaks in 2022 at 1,610 and 370 jobs under slack and tight labour market conditions respectively.

The results of the regional economic impact assessment indicate that it is reasonable to assume that the regional labour market will have the capacity to supply a portion of the workforce requirements of the Project, without major disruption. However, these conditions may change in the context of cumulative labour market demand. Prior to the change in 2020 quarter 2 market conditions, the major infrastructure projects in the adjacent and surrounding areas, including those associated with Inland Rail, had the potential to put some pressure on labour markets if inopportune scheduling resulted in cumulative and competing demand for trades and construction labour. The overall labour demands of the various infrastructure projects expected to be constructed were modest and that scheduling could be optimised to minimise market impact. The prevailing trends in the Greater Brisbane labour market, and the ability of workers to mobilise to project locations, suggested that the risks of labour market disruption were limited. In the current environment, this risk has now been further reduced.

The expansion in construction activity and regional employment is also likely to increase demand for a range of local infrastructure and services, including in the construction supply chain and for local retail and hospitality businesses.

Impact management

ARTC are committed to enhancing the economic benefits of the Project while avoiding, mitigating or managing any adverse economic impacts. Accordingly, they have developed a Social Impact Management Plan which outlines the objectives, outcomes and performance measures for, and the actions that ARTC will undertake and / or require its contractor to undertake to manage the social and socio-economic impacts of C2K, and enhance Project benefits and opportunities.

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Appendix A Interacting project conditions

CALVERT TO KAGARU ENVIRONMENTAL IMPACT STATEMENT

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Appendix A: Interacting project conditions

The EIA considers the potential impacts of Inland Rail's adjacent Gowrie to Helidon (G2H) and Calvert to Kagaru (C2K) projects, and other State significant projects which have been deemed to have a relationship to the Project by the ARTC. This relationship has been determined by ARTC according to the following conditions - the cumulative project:

a) Are currently being assessed under Part 1 of the Chapter 3 of the *Environmental Planning Act 1994* (Qld) (EP Act) and, as a minimum, have an initial advice statement available on the DES's website

b) Have been declared a 'coordinated project' by the Coordinator-General under the SDPWO Act and an EIS is currently being prepared or is complete, or an initial advice statement is available on the Department of State Development, Manufacturing, Infrastructure and Planning website

c) May use resources located within the region (including materials, groundwater, road networks or workforces) that are the same as those to be used by the Project

d) Could potentially compound residual impacts that the Project may have on environmental or social values.

A search of publicly available information (i.e. council websites) was also undertaken to identify any potential projects where there is potential for a compound residual impact on environmental or social values.

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Appendix B Regional economic assessment—assumptions

CALVERT TO KAGARU ENVIRONMENTAL IMPACT STATEMENT

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Appendix B: Regional economic assessment - assumptions

The choice of exogenous variables determines the economic environment in which the construction of C2K will be assessed. The construction phase CAPEX required to construct C2K can be thought of as a temporary shock to the economy. That is, it is a one-off increase in investment expenditure.

The economic impacts of the construction phase of C2K are directly related to the stimulus that is provided to the economy through the boost to expenditure required to construct C2K. Analysis of the construction phase of C2K is best done in the context of a short-run economic environment to recognise the temporary nature of the stimulus that this phase of the Project provides.

The choice of exogenous variables for the construction phase simulation is designed to configure KPMG-SD so that it represents the behaviour of the economy in the shorter term. The key settings include:

i. tax rates and government policy settings are held fixed at their baseline values with budget balances free to vary;

ii. sector-specific capital stocks are held fixed at their baseline values;

iii. a value for investment in the Greater Brisbane Rail Transport sector is imposed to reflect C2K CAPEX assumptions whilst investment in the remaining sectors responds to sector-specific rates of return;

iv. the labour market is assumed to have sufficient slackness in the short term that increases in demand do not impact real wages;

v. the number of working-age people in the nation is held fixed at the number in the baseline;

vi. the average propensity to consume out of household disposable income is held fixed at its baseline value; and

vii. consumer preferences and technical change parameters are held fixed at their baseline values.

The default setting for the labour market listed under (iv) warrants further explanation. In comparative-static mode, the labour market in KPMG-SD can be configured in one of two conventional ways. The first approach, consistent with (iv) above, is to assume that real wages are fixed at their baseline values and that labour demand is accommodated by supply responses that do not induce changes in real wages. This assumption is reasonable in environments where there is slack in labour markets (where unemployed, under-employed workers, and working-age people currently not in the labour force can be drafted into jobs). The second approach is to assume that labour markets are extremely tight and that increases in labour demand are accommodated by increases in real wages as businesses compete for workers that are already employed.

In this report, the sensitivity of the labour market assumption is calculated by simulating the construction phase of C2K under the two approaches described above (i.e. slack or tight labour markets).

B.1 Model inputs

The numerical inputs (or shocks) that are imposed on KPMG-SD are designed to capture the direct impacts of the construction phase of C2K on the economy. KPMG-SD then estimates the flow-on effects of these shocks on the economy.

The model uses the CAPEX incurred over the construction phase.[46] Pre-construction costs are not included because they are spent outside of the indicative construction period (prior to 2020). The construction phase CAPEX is projected to be $648 million ($2019), with the majority of this expenditure occurring in 2021-2023.

Modelling inputs - Construction Phase

Year	$2015 [a, c]	$2019 [b, c]
2020	$16,214,413	$17,342,503
2021	$78,080,106	$83,512,395
2022	$256,324,989	$274,158,360
2023	$221,474,076	$236,882,754
2024	$32,897,615	$35,186,410
2025	$1,039,656	$1,111,988
Total	**$ 606,030,854**	**$ 648,194,410**

Notes:
a) Derived from capital cost plan and construction programming provided to KPMG by ARTC.
b) Conversion to 2019 dollars based on the Producer Price Index growth from December 2015 to March 2019. The Producer Price Index used relates to output of the Heavy and Civil Engineering Construction industry specifically.
c) These figures reflect capital costs and do not include other provision (insurances, construction camps, ATMS, utilities and property & site remediation).

[46] The assessment assumes a capital expenditure profile consistent with the Inland Rail Program Business Case, using parameters and inputs based on the state of the economy projected for those years. Pre-construction costs prior to 2020 are not included because they are spent outside of the indicative construction period.

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Appendix C CAPEX for the Queensland Inland Rail Projects

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Appendix C: CAPEX for the Queensland Inland Rail Projects

This appendix has been included to outline the CAPEX figures across the Queensland Inland Rail Projects. The CAPEX for the five Queensland Inland Rail Projects are outlined in the bale below.

Total CAPEX for Queensland Inland Rail Projects

Inland Rail Project	$2015 [a, c]	$2019 [b, c]
NSW/Qld Border to Gowrie	$1,042,245,408	$1,114,757,844
Gowrie to Helidon	$1,016,149,084	$1,086,845,913
Helidon to Calvert	$528,227,194	$564,977,695
Calvert to Kagaru	$ 606,030,854	$ 648,194,410
Kagaru to Acacia Ridge and Bromelton	$47,751,792	$51,074,041
Total	**$3,240,404,332**	**$3,465,849,903**

a) The CAPEX figures outlined are incurred over the construction phase which have been derived from the capital cost plan and construction programming provided to KPMG by ARTC. Pre-construction costs are not included because these are incurred outside of the indicative construction period (prior to 2020).
b) Conversion to 2019 dollars based on the Producer Price Index growth from Dec 2015 to Mar 2019. The Producer Price Index used relates to output of the Heavy and Civil Engineering Construction industry specifically.
c) These figures reflect capital costs and do not include other provisions (insurances, construction camps, ATMS, utilities and property & site remediation).

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Appendix D Treatment of coal demand for the Inland Rail EIS'

CALVERT TO KAGARU ENVIRONMENTAL IMPACT STATEMENT

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Appendix D Treatment of coal demand for the Inland Rail EIS'

This appendix has been developed to document KPMG's assumption relating to the treatment of coal demand within the benefits assessment developed for the Inland Rail Environmental Impact Statements (EIS).

For the purposes of the economic benefit assessments contained within the Inland Rail EIS, freight movements from coal demand have been excluded. This approach is consistent with the Cost Benefit Analysis (CBA) completed for the PwC/ARTC Inland Rail Program Business Case (2015), with specific reference to the CBA results for the scenarios **"No Western Line Upgrade"** (see table below, extracted from the Inland Rail Business Case Chapter 9. Economic Analysis), where coal benefits are equal to zero (0).

Cost benefit analysis results for Inland Rail by beneficiary (incremental to the base case, discounted 2014-15 dollars)

BENEFICIARY (PV $ MILLIONS)	INCLUDING WESTERN LINE UPGRADE*		NO WESTERN LINE UPGRADE	
	PV AT 4% DISCOUNT RATE ($M)	PV AT 7% DISCOUNT RATE ($M)	PV AT 4% DISCOUNT RATE ($M)	PV AT 7% DISCOUNT RATE ($M)
COSTS				
Capital costs	7650	6590	7607	6553.8
Operating costs	133	66	133	65.6
Maintenance costs	793	380	775	371.4
Total costs	**8575**	**7036**	**8515**	**6991**
BENEFITS				
1) Intercapital/intermodal freight	**15 361**	**4666**	**15 862**	**4716**
Melbourne to Brisbane	12 222	3697	12 621	3737
Brisbane to Adelaide	1278	389	1320	393
Brisbane to Perth	1860	579	1921	585
2) Regional freight	**3524**	**1271**	**1995**	**693**
Coal	1592	585	0	0
Agricultural products	1850	658	1910	665
Others (including steel, minerals, general freight, and other extra-corridor)	82	28	84	28
3) Community	**2821**	**879**	**3126**	**962**
4) Passengers	**50**	**16**	**52**	**16**
5) Rail network owners (ARTC & QR)	**747**	**321**	**772**	**324**
Total benefits	**22 503**	**7152**	**21 806**	**6711**
Net present value of costs and benefits	**13 928**	**116**	**13 291**	**(280)**
Benefit cost ratio	**2.62**	**1.02**	**2.56**	**0.96**

Source: Inland Rail Program Business Case 2015

On this basis, it is the understanding of KPMG that, in the absence of the Western Line upgrade to the existing Queensland Rail network[47], no benefits are expected to accrue to coal movements as a result of the delivery of Inland Rail. These results imply that, under this scenario, there is no net benefit to coal trips traversing any of the new links to be delivered as part of the Inland Rail Program. For example, as a stand-alone project, the Calvert to Kagaru project link is not expected to generate net benefits to coal freight.

Further, the above table highlights that the identified benefits accruing to coal trips are a direct result of the Inland Rail Program with complementary investment in Western Line Upgrades, which do not form part of the scope of the Inland Rail Program as it stands currently, and are not funded.

On this basis, KPMG have ensured consistency with the assumptions contained within the PwC/ARTC Inland Rail Business Case which indicates there are no net benefits to coal freight movements under the "No Western Line Upgrade" scenario.

Any further consideration of potential benefits that may be expected to accrue to coal movements as a result of the Project would require additional validation of the demand assessment undertaken as part of the business case.

[47] (referred to as "*complementary investment on the QR network (Western Line and Brisbane metropolitan network) to enable coal train lengths to increase from 650 metres to 1010 metres*")