Australian Government
Department of the Environment

Referral of proposed action

What is a referral?

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides for the protection of the environment, especially matters of national environmental significance (NES). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any of the matters of NES without approval from the Australian Government Environment Minister or the Minister's delegate. (Further references to 'the Minister' in this form include references to the Minister's delegate.) To obtain approval from the Environment Minister, a proposed action should be referred. The purpose of a referral is to obtain a decision on whether your proposed action will need formal assessment and approval under the EPBC Act.

Your referral will be the principal basis for the Minister's decision as to whether approval is necessary and, if so, the type of assessment that will be undertaken. These decisions are made within 20 business days, provided sufficient information is provided in the referral.

Who can make a referral?

Referrals may be made by or on behalf of a person proposing to take an action, the Commonwealth or a Commonwealth agency, a state or territory government, or agency, provided that the relevant government or agency has administrative responsibilities relating to the action.

When do I need to make a referral?

A referral must be made for actions that are likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World Heritage properties (sections 12 and 15A)
- National Heritage places (sections 15B and 15C)
- Wetlands of international importance (sections 16 and 17B)
- Listed threatened species and communities (sections 18 and 18A)
- Listed migratory species (sections 20 and 20A)
- Protection of the environment from nuclear actions (sections 21 and 22A)
- Commonwealth marine environment (sections 23 and 24A)
- Great Barrier Reef Marine Park (sections 24B and 24C)
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
- The environment, if the action involves Commonwealth land (sections 26 and 27A), including:
    - actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land);
    - actions taken on Commonwealth land that may have a significant impact on the environment generally;
- The environment, if the action is taken by the Commonwealth (section 28)
- Commonwealth Heritage places outside the Australian jurisdiction (sections 27B and 27C)

You may still make a referral if you believe your action is not going to have a significant impact, or if you are unsure. This will provide a greater level of certainty that Commonwealth assessment requirements have been met.

To help you decide whether or not your proposed action requires approval (and therefore, if you should make a referral), the following guidance is available from the Department's website:

- the Policy Statement titled Significant Impact Guidelines 1.1 – Matters of National Environmental Significance. Additional sectoral guidelines are also available.

- the Policy Statement titled Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies.
- the Policy Statement titled Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources.
- the interactive map tool (enter a location to obtain a report on what matters of NES may occur in that location).

Can I refer part of a larger action?

In certain circumstances, **the Minister may not accept a referral for an action that is a component of a larger action and may request the person proposing to take the action to refer the larger action for consideration under the EPBC Act (Section 74A, EPBC Act).** If you wish to make a referral for a staged or component referral, read 'Fact Sheet 6 Staged Developments/Split Referrals' and contact the Referrals Gateway (1800 803 772).

Do I need a permit?

Some activities may also require a permit under other sections of the EPBC Act or another law of the Commonwealth. Information is available on the Department's web site.

Is your action in the Great Barrier Reef Marine Park?

If your action is in the Great Barrier Reef Marine Park it may require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If a permission is required, referral of the action under the EPBC Act is deemed to be an application under the GBRMP Act (see section 37AB, GBRMP Act). This referral will be forwarded to the Great Barrier Reef Marine Park Authority (the Authority) for the Authority to commence its permit processes as required under the Great Barrier Reef Marine Park Regulations 1983. If a permission is not required under the GBRMP Act, no approval under the EPBC Act is required (see section 43, EPBC Act). The Authority can provide advice on relevant permission requirements applying to activities in the Marine Park.

The Authority is responsible for assessing applications for permissions under the GBRMP Act, GBRMP Regulations and Zoning Plan. Where assessment and approval is also required under the EPBC Act, a single integrated assessment for the purposes of both Acts will apply in most cases. Further information on environmental approval requirements applying to actions in the Great Barrier Reef Marine Park is available from http://www.gbrmpa.gov.au/ or by contacting GBRMPA's Environmental Assessment and Management Section on (07) 4750 0700.

The Authority may require a permit application assessment fee to be paid in relation to the assessment of applications for permissions required under the GBRMP Act, even if the permission is made as a referral under the EPBC Act. Further information on this is available from the Authority:

Great Barrier Reef Marine Park Authority

2-68 Flinders Street PO Box 1379
Townsville QLD 4810
AUSTRALIA

Phone: + 61 7 4750 0700
Fax: + 61 7 4772 6093

www.gbrmpa.gov.au

What information do I need to provide?

Completing all parts of this form will ensure that you submit the required information and will also assist the Department to process your referral efficiently. If a section of the referral document is not applicable to your proposal enter N/A.

You can complete your referral by entering your information into this Word file.

Instructions

Instructions are provided in blue text throughout the form.

Attachments/supporting information

The referral form should contain sufficient information to provide an adequate basis for a decision on the likely impacts of the proposed action. You should also provide supporting documentation, such as environmental reports or surveys, as attachments.

Coloured maps, figures or photographs to help explain the Project and its location should also be submitted with your referral. Aerial photographs, in particular, can provide a useful perspective and context. Figures should be good quality as they may be scanned and viewed electronically as black and white documents. Maps should be of a scale that clearly shows the location of the proposed action and any environmental aspects of interest.

Please ensure any attachments are below three megabytes (3mb) as they will be published on the Department's website for public comment. To minimise file size, enclose maps and figures as separate files if necessary. If unsure, contact the Referrals Gateway (email address below) for advice. Attachments larger than three megabytes (3mb) may delay processing of your referral.

Note: the Minister may decide not to publish information that the Minister is satisfied is commercial-in-confidence.

How do I pay for my referral?

From 1 October 2014 the Australian Government commenced cost recovery arrangements for environmental assessments and some strategic assessments under the EPBC Act. If an action is referred on or after 1 October 2014, then cost recovery will apply to both the referral and any assessment activities undertaken. Further information regarding cost recovery can be found on the Department's website.

Payment of the referral fee can be made using one of the following methods:

- **EFT Payments can be made to:**

  BSB: 092-009
  Bank Account No. 115859
  Amount: $7352
  Account Name: Department of the Environment.
  Bank: Reserve Bank of Australia
  Bank Address: 20-22 London Circuit Canberra ACT 2601
  Description: The reference number provided (see note below)

- **Cheque** - Payable to "Department of the Environment". Include the reference number provided (see note below), and if posted, address:

  The Referrals Gateway
  Environment Assessment Branch
  Department of the Environment
  GPO Box 787
  Canberra ACT 2601

- **Credit Card**

  Please contact the Collector of Public Money (CPM) directly (call (02) 6274 2930 or 6274 20260 and provide the reference number (see note below).

Note: in order to receive a reference number, submit your referral and the Referrals Gateway will email you the reference number.

How do I submit a referral?

Referrals may be submitted by mail or email.

Mail to:

Referrals Gateway
Environment Assessment Branch
Department of Environment
GPO Box 787
CANBERRA ACT 2601

- If submitting via mail, electronic copies of documentation (on CD/DVD or by email) are required.

Email to: epbc.referrals@environment.gov.au

- Clearly mark the email as a 'Referral under the EPBC Act'.
- Attach the referral as a Microsoft Word file and, if possible, a PDF file.
- **Follow up with a mailed hardcopy including copies of any attachments or supporting reports.**

What happens next?

Following receipt of a valid referral (containing all required information) you will be advised of the next steps in the process, and the referral and attachments will be published on the Department's web site for public comment.

The Department will write to you within 20 business days to advise you of the outcome of your referral and whether or not formal assessment and approval under the EPBC Act is required. There are a number of possible decisions regarding your referral:

The proposed action is NOT LIKELY to have a significant impact and does NOT NEED approval

No further consideration is required under the environmental assessment provisions of the EPBC Act and the action can proceed (subject to any other Commonwealth, state or local government requirements).

The proposed action is NOT LIKELY to have a significant impact IF undertaken in a particular manner

The action can proceed if undertaken in a particular manner (subject to any other Commonwealth, state or local government requirements). The particular manner in which you must carry out the action will be identified as part of the final decision. You must report your compliance with the particular manner to the Department.

The proposed action is LIKELY to have a significant impact and does NEED approval

If the action is likely to have a significant impact a decision will be made that it is a *controlled action*. The particular matters upon which the action may have a significant impact (such as World Heritage values or threatened species) are known as the *controlling provisions*.

The controlled action is subject to a public assessment process before a final decision can be made about whether to approve it. The assessment approach will usually be decided at the same time as the controlled action decision. (Further information about the levels of assessment and basis for deciding the approach are available on the Department's web site.)

The proposed action would have UNACCEPTABLE impacts and CANNOT proceed

The Minister may decide, on the basis of the information in the referral, that a referred action would have clearly unacceptable impacts on a protected matter and cannot proceed.

Compliance audits

If a decision is made to approve a Project, the Department may audit it at any time to ensure that it is completed in accordance with the approval decision or the information provided in the referral. If the Project changes, such that the likelihood of significant impacts could vary, you should write to the Department to advise of the changes. If your Project is in the Great Barrier Reef Marine Park and a decision is made to approve it, the Authority may also audit it. (See "*Is your action in the Great Barrier Reef Marine Park,"* p.2, for more details).

For more information

- call the Department of the Environment Community Information Unit on 1800 803 772 or
- visit the web site http://www.environment.gov.au/topics/about-us/legislation/environment-protection-and-biodiversity-conservation-act-1999

All the information you need to make a referral, including documents referenced in this form, can be accessed from the above web site.

Referral of proposed action

Project title: Inland Rail – Calvert to Kagaru

1 Summary of proposed action

NOTE: You must also attach a map/plan(s) and associated geographic information system (GIS) vector (shapefile) dataset showing the location and approximate boundaries of the area in which the Project is to occur. Maps in A4 size are preferred. You must also attach a map(s)/plan(s) showing the location and boundaries of the Project area in respect to any features identified in 3.1 & 3.2, as well as the extent of any freehold, leasehold or other tenure identified in 3.3(i).

1.1 **Short description**

Use 2 or 3 sentences to uniquely identify the proposed action and its location.

The Australian Government has committed to delivering the Inland Rail Programme which is designed to deliver freight rail services over a distance of approximately 1700km between Melbourne and Brisbane, via central-west New South Wales (NSW) and Toowoomba in Queensland, shown in **Attachment 1**.

The Inland Rail Programme consists of 13 separate projects that will be assessed, procured and constructed separately. Each of the projects is able to operate independently of other projects within the Inland Rail Programme.

Australian Rail Track Corporation Ltd (ARTC) ('the proponent') is the proponent for the Calvert to Kagaru Project. The Calvert to Kagaru Project is a proposed single track, dual gauge freight line, comprising standard gauge and narrow gauge, approximately 53km in length, largely utilising greenfield corridor of future railway land gazetted under the provisions of the Queensland *Transport Infrastructure Act 1994* following the Southern Freight Rail Corridor study in November 2010. The Calvert to Kagaru Project includes construction of track and track formation, new culverts and bridges, an approximately 1.1km tunnel and ventilation infrastructure, construction of new crossing loops, rationalisation of level crossings and some grade separations of the local road network.

1.2 **Latitude and longitude**

Latitude and longitude details are used to accurately map the boundary of the proposed action. If these coordinates are inaccurate or insufficient it may delay the processing of your referral.

A Preferred Alignment and wider Study Area have been defined for the Calvert to Kagaru Project as discussed in **Section 1.4**. Coordinates for both polygons are included in **Attachment 2**.

Also attach the associated GIS-compliant file that delineates the proposed referral area. If the area is less than 5 hectares, please provide the location as a point layer. If greater than 5 hectares, please provide a polygon layer. If the proposed action is linear (e.g. a road or pipeline) please provide a polyline layer (refer to GIS data supply guidelines at Attachment A).

Do not use AMG coordinates.

1.3 **Locality and property description**

Provide a brief physical description of the property on which the proposed action will take place and the Project location (e.g. proximity to major towns, or for off-shore Projects, shortest distance to mainland).

The Calvert to Kagaru Project is shown in **Attachment 3**. The Calvert to Kagaru Project will generally be located in the gazetted future railway land of the Southern Freight Rail Corridor (SFRC). The preferred alignment passes to the southwest of Ipswich and is aligned in an approximate north-west to south-east direction and would connect to the Queensland Rail 'Western System' near Calvert at its north-west end, to the existing ARTC Interstate line near Kagaru in the south-east. The Calvert to Kagaru Project is located between the adjacent Inland Rail projects of Helidon to Calvert in the north and Kagaru to Acacia Ridge in the south.

1.4	**Size of the development footprint or work area (hectares)**	The Concept Engineering and Environmental Assessment Phase of the Calvert to Kagaru Project have identified a Preferred Alignment and a broader Study Area shown in **Attachment 3**. This will allow for route and tunnel optimisation and other value engineering opportunities to be investigated during subsequent design development, community engagement, environmental assessment and approvals processes. The final Alignment and Project Corridor will be defined during the Environmental Impact Statement (EIS) and design development phases. The resulting Corridor width will be wide enough to accommodate two dual-gauge freight railways. The coordinates of the Preferred Alignment and Study Area are included in **Attachment 2**.
1.5	**Street address of the site**	The preferred alignment passes to the southwest of Ipswich and is aligned in an approximate north-west to south-east direction and would connect to the Queensland Rail 'Western System' near Calvert at its north-west end, and to the existing ARTC Interstate line near Kagaru in the south-east. The project does not have a single address point.

1.6 **Lot description**

Describe the lot numbers and title description, if known.

The Calvert to Kagaru Project traverses multiple lots, the majority of which were identified as part of the future railway land gazetted under the *Transport Infrastructure Act 1994* by the Queensland Government in 2010 following the Queensland Transport Southern Freight Rail Corridor study. The properties intersected by the Calvert to Kagaru preferred alignment are listed in **Attachment 2**.

1.7 **Local Government Area and Council contact (if known)**

If the Project is subject to local government planning approval, provide the name of the relevant council contact officer.

The preferred alignment is located within the Ipswich City Council and Scenic Rim Regional Council local government areas. The proposed action is not currently subject to any local government planning approvals.

1.8 **Time frame**

Specify the time frame in which the action will be taken including the estimated start date of construction/operation.

The indicative timeframes for the Calvert to Kagaru Project are as follows:

- 2017-2019: design, planning and approvals
- 2019-end of 2020: pre-construction and land acquisition
- 2020 - 2022: Construction
- 2024 Project Opening.

1.9	**Alternatives to proposed action** Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?		No
		✓	Yes ARTC have prepared a business case which considers alternatives to projects that are part of the Melbourne to Brisbane Inland Rail Programme.
1.10	**Alternative time frames etc** Does the proposed action include alternative time frames, locations or activities?		No
		✓	Yes There are numerous studies investigating alternate routes between Calvert and Kagaru. The Study Area identified by ARTC also allows for further consideration of route definition and value engineering as the Project develops.

1.11	**State assessment** Is the action subject to a state or territory environmental impact assessment?	 ✓	No Yes An initial advice statement (IAS) will be submitted to the Queensland Coordinator-General seeking a coordinated Project declaration. If granted, the Project will be assessed under the Queensland *State Development and Public Works Organisation Act 1971*. If the project is a controlled action, it is anticipated that assessment will follow under the assessment bilateral agreement between the Queensland and Commonwealth governments.
1.12	**Component of larger action** Is the proposed action a component of a larger action?	✓ 	No
1.13	**Related actions/proposals** Is the proposed action related to other actions or proposals in the region (if known)?	 ✓	No Yes The Calvert to Kagaru Project is one of 13 separate projects in the Melbourne to Brisbane Inland Rail Programme. Each of the 13 projects is delivered as a separate, but related action, as each project: • will be subject to separate State assessments; • will be delivered within different timeframes; • will be separately procured, with it being likely that there will be a separate contract for each project; • is designed so that it can be constructed and operated independently of each other project; • will be delivered on State-owned land, with tenure different between each jurisdiction; • will be subject to separate referrals under the EPBC Act, if required. Separate projects that are within the Inland Rail Programme that are adjacent to the Calvert to Kagaru project are the Helidon to Calvert Project and the Kagaru to Acacia Ridge Project. The Calvert to Kagaru Project connects to the existing rail line, with tie-in points designed to enable the Project to proceed and be operated independently of the Helidon to Calvert and Kagaru to Acacia Ridge Projects, if required. These Projects are shown in **Attachment 1**.
1.14	**Australian Government funding** Has the person proposing to take the action received any Australian Government grant funding to undertake this Project?	 ✓	No Yes The Melbourne to Brisbane Inland Rail Programme has been allocated funding from the Australian Government in mid-2016 to progress planning approvals and commence land acquisition.
1.15	**Great Barrier Reef Marine Park** Is the proposed action inside the Great Barrier Reef Marine Park?	✓ 	No

2 Detailed description of proposed action

NOTE: It is important that the description is complete and includes all components and activities associated with the action. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

2.1 Description of proposed action

This should be a detailed description outlining all activities and aspects of the proposed action and should reference figures and/or attachments, as appropriate.

The Calvert to Kagaru Project is proposed as an approximately 53 km long single-track dual-gauge railway, with crossing loops to accommodate double stack freight trains up to 1800 m long, between Calvert and Kagaru in Queensland.

At a point in time defined by demand, business needs, operational modelling and design, a future action may include additional infrastructure within the preferred alignment including freight track duplication and extension of crossing loops to accommodate 3600m freight trains.

Key components of the Calvert to Kagaru Project that constitute the project the subject of this referral include:

- A rail corridor approximately 60m wide, containing a single track dual gauge railway line with crossing loops for up to 1800 m long train
- The approximately 1.1 km Teviot Range tunnel, earthworks (cut and fill), bridges and viaducts to accommodate topography and project crossings of waterways and other infrastructure
- Tie-ins to the existing West Moreton Railway Line (Calvert) and the ARTC north-south Interstate Route (Kagaru) at the project boundaries
- Associated rail infrastructure including maintenance facilities, Advanced Train Management Systems (ATMS) and signalling infrastructure
- Ancillary works including road and public utility crossings and realignments
- Third party infrastructure requirements to be confirmed during future project stages
- Construction workspace, temporary accommodation (if required) and access roads

Elements not included as part of the proposed action the subject of this referral include the following:

- complementary infrastructure, such as metropolitan and regional freight terminals
- upgraded freight fleet / rolling stock
- complementary land use and freight precinct developments

The Concept Engineering and Environmental Assessment Phase of the Calvert to Kagaru Project have identified a Preferred Alignment and a Study Area for consideration in this EPBC Referral and the IAS submitted to the Queensland Coordinator-General as shown in **Attachment 3**. The coordinates of the Preferred Alignment and Study Area are included in **Attachment 2**. The Study Area will allow for route optimisation and other value engineering opportunities to be investigated during subsequent design development, community engagement, environmental assessment and approvals processes.

2.2 Alternatives to taking the proposed action

This should be a detailed description outlining any feasible alternatives to taking the proposed action (including not taking the action) that were considered but are not proposed (note, this is distinct from any proposed alternatives relating to location, time frames, or activities – see section 2.3).

Melbourne to Brisbane Inland Rail Programme

The Melbourne to Brisbane Inland Rail Programme has been under development for many years. This has included economic analysis, route studies and preliminary engineering analysis. The original North- South Rail corridor study was undertaken in 2006, followed by the Inland Rail Alignment Study released in 2010. A

concept business case was prepared in 2014, followed by the preparation of the Programme Business Case in 2015.
Various alternate scenarios to the overall Melbourne to Brisbane Inland Rail Programme have been considered, including:

- Do nothing: freight remains on the existing road network, regional development opportunities are not realised, and potential opportunities to reduce significant greenhouse gas emissions unlikely to be realised
- Increasing the size and number of trucks to facilitate forecast freight growth, which would increase road safety risk and also require investment in the road network for maintenance and capacity
- Reforms to delay or remove the need for infrastructure investment (demand management, productivity enhancement or deregulation)
- Progressive upgrades of the National Highway
- Upgrades of the existing coastal railway
- Alternate freight transport solutions including air freight (cost prohibitive) and coastal shipping (constrained by port access).

The Business Case concludes that the preferred way to achieve the programme objectives is to proceed with implementation. The Business Case Summary, 'The Case for Inland Rail' is included at **Attachment 4**.

Calvert to Kagaru Project

Alternate alignments have previously been investigated within the Study Area including:

- Maunsell Australia Pty Ltd (2005) Southern Infrastructure Corridor Study (SIC), Office of Urban Management. This study investigated at a broad level, potential routes for the SIC. The study focused on the feasibility of routes for a freight railway, as this infrastructure is more highly constrained by terrain (horizontal and vertical geometry) when compared to road and other utilities such as pipelines and powerlines. The Southern Infrastructure Corridor Study investigated eight route options in total (3 northern, 4 central and 1 southern) for connecting the West Moreton Rail Line to the Interstate Standard Gauge Route (SGR). All options included allowance for a potential Intermodal Freight Terminal (IFT) within the Purga Identified Growth Area and connected to the existing Western Railway via the Ebenezer rail loop. The presence of the Teviot Range was a major challenge for all options.
- Maunsell Australia Pty Ltd (2005) Purga Site Investigation Study. The Qld Coordinator-General. The Coordinator-General (CG) commissioned the Purga Site Investigation Study which investigated the pre-feasibility of the Purga Identified Growth Area, as identified in the SEQRP, for industrial land uses including an IFT and a possible extension of the proposed Amberley Aerospace Park.
- The 2006 North South Rail Corridor Study, commissioned by the Australian Government Department of Transport and Regional Services. This study assessed the high level viability of four north south freight corridors between Melbourne and Brisbane. The study was not designed to identify a preferred option but identified the most affordable and economic corridor within which to focus future investigation.
- Maunsell Australia Pty Ltd (2006-2010) Southern Freight Rail Corridor Study, Department of Transport and Main Roads (http://www.tmr.qld.gov.au/Projects/Name/S/Southern-Freight-Rail-Corridor-Study). The Southern Freight Rail Corridor study identified a future route connecting the West Moreton Rail line near Calvert to the interstate railway north of Beaudesert. The Preferred Alignment of the Calvert to Kagaru Project generally follows the Southern Freight Rail Corridor.
- 2010 Inland Rail Alignment Study (IRAS) undertaken by ARTC. This study set the blueprint for the development of an inland railway to meet the future freight demands of eastern Australia.
- 2015 Melbourne to Brisbane Inland Rail Business Case confirms the 2014 alignment decision and the 2016 ARTC Concept Assessment process proceeds in consultation with the Queensland Government on this basis.

The Preferred Alignment, shown in **Attachment 3**, is the result of further options refinement by ARTC's consultants in 2016 in consultation with the Queensland Government. The concept assessment included a review of previous options analyses, further preliminary engineering design and environmental assessment.

2.3 Alternative locations, time frames or activities that form part of the referred action

If you have identified that the proposed action includes alternative time frames, locations or activities (in section 1.10) you must complete this section. Describe any alternatives related to the physical location of the action, time frames within which the action is to be taken and alternative methods or activities for undertaking the action. For each alternative location, time frame or activity identified, you must also complete (where relevant) the details in sections 1.2-1.9, 2.4-2.7, 3.3 and 4. Please note, if the action that you propose to take is determined to be a controlled action, any alternative locations, time frames or activities that are identified here may be subject to environmental assessment and a decision on whether to approve the alternative.

The Preferred Alignment is shown in **Attachment 3**. The wider Study Area has been identified to enable community engagement, route optimisation and value engineering opportunities during subsequent Project phases and to accommodate utilities, road realignments and ancillary activities and potential construction areas.

The nominated construction and operational timeframes set out in **Section 1.8** are dependent upon funding by the Australian Government, approvals timeframes and detailed design.

2.4 Context, planning framework and state/local government requirements

Explain the context in which the action is proposed, including any relevant planning framework at the state and/or local government level (e.g. within scope of a management plan, planning initiative or policy framework). Describe any Commonwealth or state legislation or policies under which approvals are required or will be considered against.

The Melbourne to Brisbane Inland Rail Programme

ARTC has prepared a business case, examining the complex issue of freight movement and forecast freight demand along the east coast of mainland Australia. ARTC estimates that by 2030, more than 32 million tonnes of freight will be moved on highways between Melbourne and Brisbane.

Australia is heavily reliant on efficient supply chains to provide competitive domestic freight links and gateways for international trade. Freight transport services between major population centres, particularly our capital cities, deliver millions of tonnes of freight each year and provide for the distribution of goods throughout the country. Efficient and effective domestic supply chains that are internationally competitive against import chains, support economic growth and help keep down the cost of the products we buy. It is estimated the transport and logistics sectors of the Australian economy contribute 14.5 per cent of Gross Domestic Product (GDP), with Australia's supply chain worth an estimated $150 billion every year. Efficient transport of Australian exports to world markets maximises the economic returns to the Australian economy. Productive ports, freight networks and other critical infrastructure is the key to efficient supply chains and to Australia's competitiveness. Better infrastructure has a critical role in lifting our nation's wealth and prosperity and the effective operation of national freight is integral to the wellbeing of all Australians. Inefficient infrastructure networks are one of the key reasons why Australia's productivity has declined and a key driver of the cost of living pressures affecting Australians. Australia's east coast comprises 70 per cent of the country's population, 78 per cent of Australia's national employment and generates 75 per cent of the nation's GDP. With the population estimated to grow by 60 per cent over the next 40 years increasing pressure will be placed on freight infrastructure and services.

ARTC surmises the following:

- Relying on road for freight transport will result in increasing safety, environmental and community impacts
- The existing rail line between Melbourne and Brisbane is constrained by passing through Sydney and can't accommodate double stacking
- Our regional suppliers have limited transport options.

The Case for Inland Rail concludes:

The Business Case shows that Inland Rail:

- *Is compatible and interoperable with high productivity train operations in the east-west corridor, to Adelaide and Perth*
- *Uses and enhances existing rail infrastructure where possible, making the most of recent investments Bypasses the congested Sydney rail network*
- *Improves connections with regional and local rail and road networks*
- *Maximises value for money, while meeting market needs*
- *Delivers the service that rail customers want, at a price they are willing to pay*
- *Provides significant social and environmental benefits*
- *Will cover its ongoing operating and maintenance costs, once operational*
- *Is good for the country's economy – increasing Australia's GDP by an estimated $16 billion by 2050 Meets Australia's strategic, long-term needs.*

The Australian Government approved funding for the Melbourne to Brisbane Inland Rail Programme in the 2016 Federal Budget to progress the design and engineering development, commence primary planning and environmental approvals and property acquisition.

Queensland Planning Context

ARTC is seeking that the project be declared a 'coordinated project for which an EIS is required' under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971*.

In deciding whether to declare a project to be a coordinated project, the Coordinator-General considers:

- Detailed information about the project given by the proponent in an IAS
- Relevant planning schemes or policy frameworks of a local government, the State or the Commonwealth
- Relevant State policies and Government priorities
- A pre-feasibility assessment of the project, including how it satisfies an identified need or demand
- The capacity of the proponent to undertake and complete the EIS for the project
- Any other matter the Coordinator-General considers relevant.

The Calvert to Kagaru Project has also be referred under the *EPBC Act 1999* (this document) and if deemed a controlled action, it is anticipated that assessment of the Calvert to Kagaru Project will follow the Bilateral Assessment Agreement between the Australian and Queensland Governments.

The key reasons why ARTC are seeking the coordinated project declaration are:

- To provide the public with the opportunity to comment and provide input into the Terms of Reference for the EIS, and following its development, on the draft EIS,
- To have an independent and transparent social, economic and environmental assessment of the project undertaken by the Queensland Coordinator General; and
- For the opportunity of efficient assessment of EPBC Act matters in accordance with the Queensland and Commonwealth government EPBC Act assessment bilateral agreement.

Relevant Planning Schemes and Policy Frameworks

The Preferred Alignment traverses two local government areas (LGAs) including:

1. Scenic Rim Regional Council
2. Ipswich City Council

This means that the following planning schemes may apply to the Project:

- Boonah Shire Planning Scheme 2006
- Beaudesert Shire Planning Scheme 2007
- Ipswich Planning Scheme 2006.

The C2K Project aligns with the SFRC, which was gazetted as a future railway land under Section 242 of the *Transport Infrastructure Act 1994* (TI Act).

The South East Queensland Infrastructure Plan and Program 2009-2026 identifies the SFRC Study as key infrastructure that would connect emerging industrial precincts in the Ipswich area, particularly Ebenezer, with the standard gauge interstate rail line in the vicinity of the Bromelton Enterprise Precinct. Ebenezer and Bromelton have been identified as being strategically industrial development in the South East Queensland Infrastructure Plan and Program 2009-2026.

The SFRC Study and the Inland Rail Project are included within the City of Ipswich Transport Plan (iGO). The iGO is the masterplan for Ipswich's transport future. Within this plan the SFRC Study and Inland Rail Project form part of the strategic future for Ipswich's freight network.

The proposed action forms part of these projects and therefore is generally consistent with the planned strategic infrastructure for the area.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

If you have identified that the proposed action will be or has been subject to a state or territory environmental impact statement (in section 1.11) you must complete this section. Describe any environmental assessment of the relevant impacts of the Project that has been, is being, or will be carried out under state or territory legislation. Specify the type and nature of the assessment, the relevant legislation and the current status of any assessments or approvals. Where possible, provide contact details for the state/territory assessment contact officer.
Describe or summarise any public consultation undertaken, or to be undertaken, during the assessment. Attach copies of relevant assessment documentation and outcomes of public consultations (if available).

The Queensland *State Development and Public Works Organisation Act 1971* allows for the Queensland Coordinator-General to declare a project to be a 'Coordinated Project' requiring either an Environmental Impact Statement (EIS) or an Impact Assessment Report (IAR). When seeking the declaration of a coordinated project, proponents must apply to the Coordinator-General in writing through the preparation and submission of an IAS, a statement of the financial and technical capability to complete an EIS, and a separate statement assessing the technical and commercial feasibility of the project. An application has been submitted to the Coordinator-General for the Calvert to Kagaru Project, seeking declaration as a coordinated project.

If the Project is declared a coordinated Project and is also determined to be a controlled action under the EPBC Act it is anticipated that assessment may be progressed under the Bilateral Assessment Agreement between the Australian and Queensland Governments.

After the Coordinator-General's evaluation report, further approvals are likely to be required under separate approvals processes. It is anticipated that this might include approvals for waterway barrier works and vegetation clearing under the *Planning Act 2016* (which is expected to repeal and replace the *Sustainable Planning Act 2009* in July 2017), and other permits such as Protected Plant clearing permits and Species Management Programs under the *Nature Conservation Act 1992* and water permits under the *Water Act 2000*.

Offsets may be required as part of the Coordinator-General's imposed conditions, or through later State approvals. Other management plans and approvals may be required to progress implementation of the Project.

2.6 Public consultation (including with Indigenous stakeholders)

Your referral must include a description of any public consultation that has been, or is being, undertaken. Where Indigenous stakeholders are likely to be affected by your proposed action, your referral should describe any consultations undertaken with Indigenous stakeholders. Identify the relevant stakeholders and the status of consultations at the time of the referral. Where appropriate include copies of documents recording the outcomes of any consultations.

Community Infrastructure Designation (CID) Consultation during SFRC Studies

Extensive community consultation was undertaken as part of the CID process for the SFRC. The designation process provided two formal opportunities for the community to comment. The comments from these consultations were considered in delineating the alignment of the preferred alignment.

Consultation approach strategy

ARTC's values commit the organisation to active engagement with stakeholders and the community. All consultation will be undertaken in line with ARTC's Communication Strategy. A community engagement plan has been prepared for the Inland Rail Project that will guide the consultation activities for the proposed action.

Inland Rail consultation to date

As a result of the history of Inland Rail and previous consultation undertaken, the proposed action is generally known to stakeholders. Consultation undertaken for Inland Rail to date has included consultation with local councils, businesses, farming and mining exporters, motoring organisations, the general community and adjoining landholders.

ARTC has identified key stakeholders relevant to the proposed action including the respective councils.

Topics covered during the consultation workshops included:

- revisiting issues previously raised by the councils and other local stakeholders
- sharing technical data relevant to refinement of the alignment
- identifying lessons learnt from previous projects in the region
- seeking input regarding key local stakeholder groups to be engaged through future consultations
- identifying new opportunities and issues associated with the delivery of Inland Rail at a local level.
- Consultation with individual members of the community has been limited and has involved organising access to properties for environmental investigations.

Indigenous stakeholder consultation

Preliminary indigenous stakeholder consultation was undertaken as part of the Aboriginal cultural heritage investigation for the proposed action. Consultation on the options assessment for the SFRC was also

undertaken. The preliminary consultation was undertaken with the registered cultural heritage body for the proposed action, the Jagera Daran Pty Ltd and further consultation will occur as the Project progresses.

Proposed consultation

Formal consultation is ongoing and will be undertaken with the following key stakeholders:

- State and Federal representatives
- representative of the Council and executive management at the councils
- Australian and State government departments and agencies
- business and tourism stakeholders (e.g. local Chamber of Commerce)
- agricultural stakeholders
- freight stakeholders
- environment stakeholders
- service providers (e.g. community, medical, emergency)
- indigenous groups
- community groups
- Landholders.

2.7 A staged development or component of a larger Project

If you have identified that the proposed action is a component of a larger action (in section 1.12) you must complete this section. Provide information about the larger action and details of any interdependency between the stages/components and the larger action. You may also provide justification as to why you believe it is reasonable for the referred action to be considered separately from the larger proposal (e.g. the referred action is 'stand-alone' and viable in its own right, there are separate responsibilities for component actions or approvals have been split in a similar way at the state or local government levels).

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- associated sectoral and species policy statements available on the web site, as relevant.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The Minister has prepared four marine bioregional plans (MBP) in accordance with section 176. It is likely that the MBP's will be more commonly relevant where listed threatened species, listed migratory species or a Commonwealth marine area is considered.

Note that even if your proposal will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts). Consideration of likely impacts should include both direct and indirect impacts.

3.1 (a) World Heritage Properties

Description

No World Heritage Places are located within 5km of the Project.

Nature and extent of likely impact

The World Heritage Place identified closest to the Project was the Gondwana Rainforests of Australia located approximately 40km south of the Project. It is unlikely the Project would have any direct or indirect impacts on that area, owing to the separation distance and intervening land uses.

3.1 (b) National Heritage Places

Description

No National Heritage Places were identified within 5km of the Project.

Nature and extent of likely impact

The National Heritage Place identified closest to the Project was the Gondwana Rainforests of Australia located approximately 40km south of the Project. It is unlikely the Project would have any direct or indirect impacts on that area, owing to the separation distance and intervening land uses.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

Moreton Bay (Ramsar wetland) was identified on the PMST as being 30-40km from of the search area.

Nature and extent of likely impact

Address any impacts on the ecological character of any Ramsar wetlands.

Due to the significant distances between the Project and Moreton Bay, and the variety of land uses and urban development between the Project site and the Ramsar site, direct and indirect impacts are not expected.

3.1 (d) Listed threatened species and ecological communities

Description

A report from the EPBC Protected Matters Search Tool (PMST) was generated on 24/02/2017 for a 5km linear buffer along the centreline of the Preferred Alignment. **Attachment 5** provides the PMST report results.

The threatened species and ecological communities that may occur within the preferred alignment were identified through database searches and field surveys. The methods and results of the assessment are provided in the Calvert to Kagaru Flora and Fauna Technical Report (**Attachment 6**) and are described as follow.

Threatened Ecological Communities

A search of the Protected Matters Database identified four threatened ecological communities (TECs) that have the potential to occur in proximity to the preferred alignment. One of these TECs was confirmed present during recent field studies as documented in the Calvert to Kagaru Flora and Fauna Technical Report (**Attachment 6**), while the other three TECs were not recorded and are not considered likely to occur. These TECs are identified as follows:

- Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland, listed as critically endangered under the EPBC Act. The Department of Natural Resources and Mines (DNRM) Vegetation Management Supporting Map confirmed the presence of Regional Ecosystems within the Study Area that are analogous to this TEC, and the Maunsell (2008) study confirmed the presence of this TEC within the local landscape. The recent field survey confirmed that this TEC is present within the Study Area. The field survey ground-truthed four polygons of the Swamp Tea-tree TEC within the Study Area, one of which extends into the periphery of the preferred alignment, while the remaining polygons within the Study Area are located external to the preferred alignment. Further details regarding this TEC are provided in the Calvert to Kagaru Flora and Fauna Technical Report (**Attachment 6**), including a description of the composition, structure and condition of the community, as well as mapping of the extent.
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, listed as critically endangered under the EPBC Act. This community has not been mapped within the Study Area by DNRM, Maunsell (2008) or SRRC. The recent field survey confirmed that this TEC is not present within the areas subject to ground-truthing, and it is not considered likely to occur within the Study Area.
- Lowland Rainforest of Sub-tropical Australia, listed as critically endangered under the EPBC Act. This community has not been mapped within the Study Area by DNRM, Maunsell (2008) or SRRC. The recent field survey confirmed that this TEC is not present within the areas subject to ground-truthing, and it is not considered likely to occur within the Study Area.
- Brigalow (*Acacia harpophylla* dominant and co-dominant), listed as endangered under the EPBC Act. This community has not been mapped within the Study Area by DNRM. The SRRC mapping identifies this TEC within the broader landscape, but not within the Study Area. The recent field survey recorded the Brigalow TEC approximately 1 km from the preferred alignment, external to the Study Area. This TEC is not considered likely to occur within the Study Area.

Threatened species

A search of the Protected Matters Database identified 45 threatened species that have the potential to occur in proximity to the corridor, including:

- 13 bird species
- 8 mammal species
- 3 reptile species
- 1 insect species
- 1 fish species
- 19 flora species

One threatened species under the EPBC Act was recorded within the Study Area during the recent field survey, namely koala (*Phascolarctos cinereus*), listed as vulnerable under the EPBC Act. Koalas were confirmed present at nine locations within the Study Area. Specifically, one individual was observed during spotlighting, while the other records were confirmed from pellets. Records collected during the field survey were broadly distributed across the entire Study Area, with fresh pellets found at Lanefield, Mount Forbes, Willowbank, Peak Crossing and west of Kagaru.

The Koala Habitat Assessment Tool, contained in the *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (DotE, 2014) was applied to the project. A score of 5 or above indicates the habitat values are considered to represent 'habitat critical to the survival of the koala'. The assessment resulted in a score of 9, and is summarised as follows:

- High level of koala activity recorded in the vicinity (score of 2)
- High level of suitability of vegetation structure and composition (score of 2)
- High level of habitat connectivity (score of 2)
- Moderate level of existing threats (score of 1)
- High level of recovery value (score of 2)

Further details concerning the koala and its habitat within the Study Area, including the rationale for the attribution of scores in the Koala Habitat Assessment Tool are provided in the Calvert to Kagaru Flora and Fauna Technical Report. (**Attachment 6**).

A likelihood of occurrence assessment was undertaken for all threatened species identified as potentially occurring within the Study Area. This was based on historic records and a suitability assessment of habitat values. The methods and results of the likelihood of occurrence are provided in the Calvert to Kagaru Flora and Fauna Technical Report (**Attachment 6**). The assessment identified one threatened flora species, two threatened bird species and three threatened mammal species as likely to occur within the broader Study Area, namely:

- Austral toadflax (*Thesium australe*), listed as vulnerable under the EPBC Act
- Australasian bittern (*Botaurus poicilopterus*), listed as endangered under the EPBC Act
- Australian painted snipe (*Rostratula australis*), listed as endangered under the EPBC Act
- Brush-tailed rock-wallaby (*Petrogale penicillata*), listed as vulnerable under the EPBC Act
- Grey-headed flying fox (*Pteropus poliocephalus*), listed as vulnerable under the EPBC Act
- Greater glider (*Petauroides volans*), listed as vulnerable under the EPBC Act.

An additional nine flora species and 12 fauna species were rated as 'may occur' within the Study Area, and six flora species and seven fauna species were rated as 'unlikely to occur' within the Study Area. Further information regarding the likelihood of occurrence assessment is provided in the Calvert to Kagaru Flora and Fauna Technical Report (**Attachment 6**).

Nature and extent of likely impact

Address any impacts on the members of any listened threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat.

Threatened Ecological Communities

As identified above, one TEC was confirmed present within the corridor, namely Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland. The distribution of *M. irbyana* is geographically restricted, with the species occurring at a low number of locations from Gatton in south-east Queensland to near Casino in north eastern New South Wales.

The extent of this community that will be directly impacted by clearing for the Project is identified in **Table 1**. Additionally, impacts on adjacent areas of Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland TEC may occur as a result of:

- Importation and/or spread of weeds
- Habitat disturbance through introduction and/or proliferation of pest fauna
- Degradation through dust, sedimentation, erosion and/or altered hydrology.

Table 1 Extent of threatened ecological community within the Preferred Corridor

threatened ecological community	status	Extent
Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland	Critically endangered	0.63 hectares

Threatened species

As identified above, one threatened species was confirmed present within the corridor, namely koala, with an additional five threatened fauna species and one threatened flora species considered likely to occur. Impacts to known and likely threatened species that may occur as a result of the project include the following:

- Vegetation clearing and fragmentation

- Direct fauna injury and mortality during earthworks
- Disturbance to fauna
- Direct loss of breeding habitat
- Importation and/or spread of weeds
- Introduction and/or proliferation of pest fauna
- Degradation of habitat through dust, sedimentation and erosion
- Degradation of aquatic environments
- Impacts on adjacent bushland

Impacts of particular concern with regards to koala include the following:
- Loss and fragmentation of koala habitat
- Barrier effects due to reduced habitat connectivity and capacity for movement of individuals
- Mortality and injury of individuals and disruption of movement during vegetation clearing and construction

The location of habitat critical to survival of local populations of koala is mapped in the Calvert to Kagaru Flora and Fauna Technical Report (**Attachment 6**), and the extent that will be directly impacted by clearing for the preferred alignment identified in **Table 2** below. It is acknowledged that additional koala habitat trees occur at lower densities outside of this mapped area of habitat. Subsequent studies will confirm the total number of koala habitat trees that will be impacted by the proposed works.

Table 2 Extent of threatened species habitat within the Preferred Alignment

threatened species	status	Extent
Koala (*Phascolarctos cinereus*)	Vulnerable	86 hectares

The proposed action has the potential to impact upon the local koala population. Koalas are known to be widely distributed within the region (Bussey and Ellis 2016). The region is considered an important stronghold for koalas (Bussey and Ellis, 2016), and especially important for the species in the context of the broadscale loss of koala habitat that has been experienced in south-east Queensland in recent decades. The project will result in the loss of koala habitat that scored 9 using the EPBC koala habitat assessment toolkit and is therefore classed as 'critical habitat' under the guideline. According to the guidelines (DotE, 2014), actions affecting more than 20 hectares of habitat scoring greater than 8 points are considered significant. Loss of habitat, potential barrier effects and the potential for ongoing mortality due to collision with trains are considered the most significant threats to the local koala population posed by the project. Assessment of potential impacts to koala against the significant impact criteria is provided in **Table 3**.

Table 3 Assessment of potential impacts to koala (*Phascolarctos cinereus*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:**	
• Lead to a long term decrease in the size of an important population	• **Unlikely.** The project impacts approximately 86ha of potential habitat for the koala species. The project will also introduce the potential for mortality of koalas through collision with trains and has the capacity to create a barrier effect to local koala movement. Habitat fragmentation is likely to occur as a result of the Project; however connectivity will be maintained by the inherent design features and proposed fauna sensitive design of the project (e.g. tunnels, bridges, culverts). As the surrounding vegetation contains large areas of remnant vegetation comprising Koala habitat and crossing structures will be used to significantly reduce habitat fragmentation, the works are not expected to cause a long-term decrease in the size of an important Koala population. The proposed design minimises habitat fragmentation by avoiding large patches of vegetation where possible, and traversing vegetation in the vicinity of existing disturbance. Furthermore the works are not expected to cause a long-term decrease in the size of an important population as significant areas of habitat will remain adjacent to the preferred alignment, particularly within the Teviot Ranges in which large areas of intact remnant vegetation remain.
• Reduce the area of occupancy of	• **Likely.** Impacts anticipated from loss of habitat during construction are expected to be relatively localised and short-lived.

an important population	However, the project has the potential to create more permanent barrier effects, restricting movement of koalas and introducing local mortality pressures from potential collision with trains. Within the context of an increasingly fragmented landscape, the Project has the potential to contribute to a reduction in the local area of occupancy of the species, however connectivity will be maintained by the inherent design features and proposed fauna sensitive design of the project (e.g. tunnels, bridges, culverts).
• Fragment an important population into two or more populations	• **Likely**. The project has the potential to introduce a significant barrier effect, limiting the local movement of koalas. While koala fencing and koala crossing solutions will be incorporated in designs to reduce the potential barrier effects, the potential impact is considered significant.
• Adversely affect habitat critical to the survival of the species	• **Likely.** Loss of koala habitat has been reduced during the route selection process undertaken in the planning phase of the project. Despite this, the preferred alignment intersects approximately 86ha remnant vegetation that represents habitat critical to the survival of the koala. In accordance with the EPBC referral guidelines for the koala (DotE, 2014), this is likely to constitute a significant impact. (The guidelines suggest loss of greater than 20 hectares of habitat with a score of 8 or more is considered highly likely to have a significant impact for the purposes of the EPBC Act).
• Disrupt the breeding cycle of an important population	• **Unlikely**. The koala breeding season is generally between September and March, with females giving birth to a single young between October and May. Construction activities will be undertaken in a manner that minimises direct impacts to Koalas. For example, if a Koala is identified during pre-clearance surveys, an exclusion zone will be established to allow that animal to move from the area of its own accord, minimising disturbance and stress to the species. Clearing will be sequential and a fauna spotter catcher will be present for all clearing works. During the breeding season, males actively seek female koalas and Koala movement is more extensive. The Project could lead to an increase risk of vehicle (train) strike. The impact of train strike on Koalas is poorly understood, but it is known to occur (e.g. Dique et al. 2003). The frequency and speed of rail movement will affect that severity of this impact. Exclusion fencing of the preferred alignment is proposed for strategic locations and is known to effectively reduce vehicle strike on roads. Based on the mitigation measures described above, it is not expected that this Project will disrupt the breeding cycle of the local population.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely**. The Project requires the removal of 86ha of mapped regional ecosystems consistent with potential habitat for koala. Although clearing will cause fragmentation of habitat and reduce the area of available habitat, the Project is not likely to decrease the availability or quality of habitat available to the extent that the species will decline.
• Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	• **Unlikely.** Inspections of the study area corridor identified weeds including *Lantana camara, Opuntia spp*. and exotic grasses were noted to be dominant species at some sites. There is potential for such weeds to be spread through the construction phase, resulting in degradation of Koala habitat. Weed management will be undertaken through the construction and maintenance phases to minimise the impact of pest flora on Koala habitat. Invasive fauna, including predatory feral animals such as the fox (*Vulpes vulpes*) and dog (*Canis familiaris*) are likely to occur throughout the area. These species, among other pest fauna, were identified in the

	DEHP wildlife online search. These types of predatory species are drawn to areas of disturbance to prey upon mammals and reptiles that are moving away from the disturbance area, therefore, predation by feral animals is a risk to this species during and immediately after clearing activities. Predatory species are also attracted to the prey opportunities presented by cleared linear corridors. Mitigation and management measures will be implemented during the construction phase to minimise the potential for this to impact Koalas. This may include monitoring of relocating individuals, provision of refuge opportunities for relocating fauna (koala poles and furniture during clearing and construction phase works) and/or pest management initiatives. Given the existing invasive species occurrences across the Project area, it is considered unlikely that the preferred alignment will result in any new invasive species that are harmful to the Koala becoming established in habitat areas.
• Introduce disease that may cause the species to decline	• **Unlikely**. The koala is known to be susceptible to a number of diseases, including Chlamydia and Koala retrovirus. The spread and introduction of diseases and pathogens in koala populations is a potential risk associated with construction of infrastructure. Construction activities have the potential to result in increased stress in koalas through vegetation clearing, habitat fragmentation, increased noise levels, traffic and alteration to existing conditions. Increased levels of stress may cause the expression of disease symptoms in koalas. Stress can be minimised through appropriate construction stage management (e.g. spotter/catchers, temporary no-go zones around observed koalas).
• Interfere substantially with the recovery of the species	• **Unlikely**. Whilst the project will impact on koala habitat, significant areas of habitat will remain. The provision of tunnels, viaducts and bridge structures will allow for the movement of koalas between these areas. Consequently the potential for the project to interfere with the recovery of the species will be minimised through design and mitigation measures. Consequently the potential for the project to interfere with the recovery of the species will be minimised through design and mitigation measures.

No significant impacts of the project are expected to occur for the other threatened species that are considered likely to occur within the corridor, or for the TEC confirmed present within the corridor. Assessments to support this statement are provided in Table 6 to Table 12.

Table 4 Assessment of potential impacts to Australasian bittern (*Botaurus poicilopterus*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:**	
• Lead to a long-term decrease in the size of a population	• **Unlikely**. While the species has the potential to occur within the broader Study Area, habitats within the project alignment are generally unsuitable for the species. As such, the habitats within the corridor do not represent notable breeding, nesting or foraging resource for the species. The species typically requires permanent wetlands with dense sedges, reeds and rushes (Marchant and Higgins, 1990). The floodplain habitats present within the Study Area are highly ephemeral and have in most cases been extensively degraded by vegetation clearing and cattle grazing. Fringing riparian vegetation along larger order streams represent limited habitat value given their small extent and generally fragmented nature. Given the absence of suitable habitat within the project area, the Project is unlikely to have an adverse impact on the size of the population.
• Reduce the area	• **Unlikely.** As detailed above, the Project is unlikely to impact

of occupancy of the species	notable habitat for the Australasian bittern. As a result, the Project will not lead to a reduction in the area of occupancy of the population.
• Fragment an existing population into two or more populations	• **Unlikely.** The Project will not result in the fragmentation of habitat. Furthermore, although the species is generally relatively sedentary, the preferred alignment is unlikely to present a barrier to the species local movements.
• Adversely affect habitat critical to the survival of the species	• **Unlikely**. While the species has the potential to occur within the broader Study Area, habitats within the preferred alignment are generally unsuitable for the species. As such, the Project is unlikely to have an adverse impact on habitat for the Australasian bittern. Nevertheless, riparian habitats should be protected and reinstated wherever possible.
• Disrupt the breeding cycle of a population	• **Unlikely**. There are no suitable breeding sites within or adjacent to the preferred alignment. As such, there is negligible potential for direct or indirect impact to breeding, nesting and fledging success of Australasian bitterns as a result of the Project.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely**. As detailed above, habitats within the preferred alignment are of limited value for the Australasian bittern due to their ephemeral nature and lack of reeds and sedges.
• Result in invasive species that are harmful to an endangered species becoming established in the endangered species habitat	• **Unlikely**. Feral predators such as cats and foxes represent a threat to the Australasian bittern. These should be managed as part of construction and operation phase mitigation measures. However, the Project has limited potential to facilitate an increase in predation pressure on the Australasian bittern, given the general absence of suitable habitat for that species on or adjacent to the preferred alignment
• Introduce disease that may cause the species to decline	• **Unlikely**. Disease is not considered to be a key threat to the Australasian bittern. Given that most potential vectors for disease spread will be controlled through weed hygiene protocols and feral animal control measures, the Project is expected to have negligible impact on the species in this regard.
• Interfere substantially with the recovery of the species	• **Unlikely**. As detailed above, the Project is unlikely to impact on habitats that are important for the species, disrupt breeding or foraging behaviour or otherwise affect the Australasian bittern. Accordingly, the Project is unlikely to interfere with the long term recovery of the species.

Table 5 Assessment of potential impacts to Australian painted snipe (*Rostratula australis*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:**	
• Lead to a long-term decrease in the size of a population	• **Unlikely**. Floodplains within the preferred alignment represent potentially suitable foraging habitat for the Australian painted snipe. However, these areas are likely to represent a temporary, opportunistic resource. Limited potential breeding habitat has been observed within the Study Area. Linear infrastructure projects have the potential to affect the quality of ephemeral wetlands by altering overland flows. However, the potential for habitat degradation will be mitigated by accommodating overland flows in detailed design and implementing sediment and erosion

	control measures during construction. The Project is therefore expected to have negligible impact on the quality or extent of habitat available for the Australian painted snipe.
• Reduce the area of occupancy of the species	• **Unlikely**. The Project will not remove or degrade floodplain habitats to the extent that the species is unable to utilise them for foraging. Breeding habitats for the species have not been observed within the Study Area. Given the anticipated benign impact on potential foraging habitat and absence of impact on breeding habitat, the Project is unlikely to affect the species local likelihood of occurrence and the area of occupancy of the species.
• Fragment an existing population into two or more populations	• **Unlikely.** The Australian painted snipe is known to make localised and regional movements to move to flooded areas (Marchant and Higgins, 1993). The species has a relatively high capacity for movement. The Project is therefore unlikely to represent a barrier to the local or regional movement of the Australian painted snipe. Given the ongoing capacity for movement, the Project is unlikely to result in the fragmentation of habitat for the species.
• Adversely affect habitat critical to the survival of the species	• **Unlikely.** Habitats associated with floodplains within the preferred alignment represent temporary foraging habitat that is unlikely to be important for breeding at a population level. Suitable ephemeral foraging habitat is widely available within the region. Given the small, localised nature of impact, the project is unlikely to affect habitat critical to the survival of the species.
• Disrupt the breeding cycle of a population	• **Unlikely**. Floodplains within the preferred alignment have limited value as breeding habitat for the Australian painted snipe, given their ephemeral nature. The species typically nests in small islands in shallow freshwater wetlands (Rogers et al., 2005). While the species can utilise flooded grazing lands, they typically do not breed in such habitats (DotE, 2016). As such, the Project is unlikely to have a direct or indirect impact on breeding habitat and is therefore unlikely to disrupt the breeding cycle of the population.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely**. The Project has the potential to cause indirect impact to small areas of floodplain habitat within grazing land through changes to overland flow and local hydrology. Importation and spread of weeds during construction could also degrade the quality of floodplain foraging habitats. These potential impacts will be mitigated during design and construction. Residual impacts are therefore anticipated to be negligible. Given the localised nature of impact, the widespread availability of similar habitats and the mitigation measures to be enacted during design and construction, the Project is expected to have negligible impact on the viability of the population due to any decline in the availability of foraging habitat.
• Result in invasive species that are harmful to an endangered species becoming established in the endangered species habitat	• **Unlikely.** The Australian painted snipe is potentially susceptible to predation by foxes and cats (Marchant and Higgins, 1993). While construction projects have the potential to increase local predation pressures by increasing accessibility of areas to cats, foxes and other feral predators, the project area is already heavily disturbed and likely to be accessible by foxes, cats and wild dogs. While measures should be taken to deter feral predators during the construction process, the Project is considered unlikely to facilitate an increase in local feral predator densities. Introduction and spread of weeds can degrade the quality of foraging habitat for the Australian painted snipe (Rogers et al., 2005). Weed hygiene protocols will be implemented to control the introduction and spread of weeds

	during construction. Residual impacts attributed to weed incursion are expected to be negligible.
• Introduce disease that may cause the species to decline	• **Unlikely**. Disease is not considered to be a key threat to the Australian painted snipe. Given that most potential vectors for disease spread will be controlled through weed hygiene protocols and feral animal control measures, the project is expected to have negligible impact on the species in this regard.
• Interfere substantially with the recovery of the species	• **Unlikely**. As detailed above, impacts on habitat are expected to be negligible and limited to small-scale, localised impact on areas of foraging habitat that are widely available within the surrounding landscape. Impacts on breeding habitat are considered unlikely. As such, the Project is unlikely to interfere with the long-term recovery of the species.

Table 6 Assessment of potential impacts to brush-tailed rock wallaby (*Petrogale penicillata*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:**	
• Lead to a long term decrease in the size of an important population	• **Unlikely.** Important populations of the brush-tailed rock-wallaby have not been identified during preliminary surveys. Although the species has the potential to occur within the Study Area, the species is restricted to rocky habitats associated with steep escarpments. Proposed works in the rocky escarpment areas are generally avoided or passed under primarily via tunnelling, thereby minimising potential impacts on this species.
• Reduce the area of occupancy of an important population	• **Unlikely.** The Project is unlikely to reduce the area of occupancy of the brush-tailed rock-wallaby population. Although the species has the potential to occur within the Study Area, the species is restricted to rocky habitats associated with steep escarpments. Proposed works in the rocky escarpment areas are primarily via tunnelling, thereby minimising potential impacts on this species. Loss of habitat is considered minimal and as such, impact on the area of occupancy is likely to be negligible.
• Fragment an important population into two or more populations	• **Possible**. Populations of the brush-tailed rock-wallaby are typically restricted to isolated rocky outcrops and therefore have a naturally fragmented distribution. However, the lack of movement between populations is considered one of the greatest natural threats to existing populations (DotE, 2016), and the Project has the potential to fragment habitat. Fauna movement opportunities should be provided for in detailed design.
• Adversely affect habitat critical to the survival of the species	• **Unlikely.** As detailed above, impact to habitat critical to the survival of the brush-tailed rock-wallaby (i.e. rocky escarpments) will be highly localised as proposed works in areas of rocky escarpments are primarily via tunnelling.
• Disrupt the breeding cycle of an important population	• **Unlikely**. Breeding habitat is restricted to rocky escarpments. Impact to breeding habitats will be highly localised as proposed works in areas of rocky escarpments are primarily via tunnelling, and therefore impacts on breeding activities are considered negligible.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely.** As detailed above, impacts to core habitat for the species will be highly localised as proposed works in areas of rocky escarpments will primarily be via tunnelling. As such, the Project is unlikely to cause a population decline due to habitat loss, modification, isolation or degradation
• Result in invasive	• **Unlikely.** Feral animals, particularly foxes and to a lesser extent

species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	wild dogs and cats represent significant predators of the brush-tailed rock-wallaby (Eldridge and Close, 1998). Fox densities can indirect impact habitat use by the brush-tailed rock-wallaby by limiting their foraging movements and reducing their home range (Kinnear et al., 1988). Feral predators typically move along areas of disturbance, associated with roadsides and other man-made features. Through the creation of new access tracks construction projects have the potential to increase predation pressures on native animals by increasing accessibility to feral predators. Despite this, the Project is unlikely to have a significant effect on predator densities, since the study area is already highly disturbed and accessible to feral predators.
• Introduce disease that may cause the species to decline	• **Unlikely.** Impacts of disease on the brush-tailed rock wallaby are generally unknown. However, there are suggestions the species may be susceptible to toxoplasmosis infection carried by feral cats (Lobert, 1988). As detailed above, the Project is unlikely to increase feral cat densities given the disturbed nature of the alignment.
• Interfere substantially with the recovery of the species	• **Unlikely**. Given the highly localised direct and indirect impact on habitat, the Project is unlikely to interfere with the long term recovery of the species.

Table 7 Assessment of potential impacts to grey-headed flying fox (*Pteropus poliocephalus*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:**	
• Lead to a long term decrease in the size of an important population	• **Unlikely.** No roosting camps of the grey-headed flying fox occur within or immediately adjacent to the corridor. The species forages widely throughout woodland habitats in south-east Queensland, including highly altered suburban and agricultural areas (van der Ree et al., 2005). The species is likely to forage actively within the preferred alignment. Despite this, the Project is considered unlikely to affect the size of the local population. Although the Project will result in clearing of vegetation containing food trees including Eucalyptus, Corymbia and Angophora spp., given the relative abundance of suitable foraging habitat within the region, the impact of the Project on the grey-headed flying fox population is likely to be negligible.
• Reduce the area of occupancy of an important population	• **Unlikely.** As detailed above, the Project will result in localised losses of foraging habitat and will not impact on breeding camps. Given the wide distribution and broad availability of suitable foraging habitat within the surrounding region, the Project is unlikely to affect the area of occupancy of the species.
• Fragment an important population into two or more populations	• **Unlikely.** The grey-headed flying fox is highly mobile and has the capacity to fly over infrastructure within suburbia and other large built up areas. The Project will therefore not create a barrier to the movement of the species. While overhead powerlines associated with rail infrastructure create a mortality risk for individuals, the impact of this at a population level is insufficient to represent a barrier to movement that would fragment populations.
• Adversely affect habitat critical to the survival of the species	• **Unlikely**. The Project will impact on foraging habitat. However, the magnitude of impact is such that this would not affect the availability of foraging habitat at a local or regional level.
• Disrupt the breeding cycle of an important	• **Unlikely**. No flying fox breeding colonies occur within or immediately adjacent to the corridor. As such, the Project's impacts on the breeding dynamics of the grey-headed flying fox are likely

population	to be negligible.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely**. Foraging habitats for the grey-headed flying fox are broadly distributed in south-east Queensland. Impacts on foraging habitat will be relatively localised and, given the abundance of suitable foraging habitat within the region, unlikely to cause a decline in the grey-headed flying fox population.
• Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	• **Unlikely**. The grey-headed flying fox is generally not susceptible to predation by feral predators or competition or exclusion by introduced species. As a result, the Project is unlikely to have an adverse impact on the grey-headed flying fox as a result of invasive species.
• Introduce disease that may cause the species to decline	• **Unlikely**. The grey-headed flying fox is potentially susceptible to pathogens including the Australian Bat Lyssavirus (ABL), Bat Paramyxovirus and Menangle Pig virus (Hoar et al., 1998). However, the Project is unlikely to have any impact on vectors that could exacerbate the spread of these diseases. Standard hygiene protocols will be used during construction and are considered likely to reduce disease risks to the grey-headed flying fox to negligible levels.
• Interfere substantially with the recovery of the species	• **Unlikely**. As detailed above, the impacts on the species are likely to be limited to small, scale localised loss of foraging habitat. In the context of the broader landscape, this will have negligible impact on the species viability and potential for long term recovery.

Table 8 Assessment of potential impacts to greater glider (*Petauroides volans*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:**	
• Lead to a long term decrease in the size of an important population	• **Possible**. Important populations of the greater glider have not been explicitly identified, therefore further detailed studies are proposed. The greater glider is susceptible to declines as a result of broad-scale clearance of vegetation, particularly losses of old-growth forest containing hollows on which the species depends for den sites (Woinarski et al., 2014). Woodland habitats within the preferred alignment, particularly areas that contain large hollow-bearing trees represent important habitat resources for the species. Clearance of hollow-bearing trees for the Project may have localised impact on the species and should be avoided where possible.
• Reduce the area of occupancy of an important population	• **Unlikely**. The Project will result in localised losses of foraging habitat and the potential loss of den sites in mature hollow-bearing vegetation during construction. Occasional mortality is also possible throughout the Project's operational phase due to train collision. Despite this, the magnitude of impact is expected to be relatively localised and insufficient to reduce the area of occupancy of the local population.
• Fragment an important population into two or more populations	• **Unlikely**. Linear infrastructure has the potential to fragment populations of the greater glider by creating a barrier to movement. The greater glider has the ability to glide across gaps of up to 100 m between patches of vegetation (McKay, 1995). In many circumstances, the greater glider is therefore likely to be able to overcome the gaps created by the preferred alignment.

	Provision of glider poles at strategic locations along the alignment (i.e. areas of high habitat value) will maintain opportunities for movement. The residual impacts on movement of the greater glider are expected to be minimal and insufficient to result in fragmentation at a population level.
• Adversely affect habitat critical to the survival of the species	• **Unlikely.** Vegetation along the preferred alignment will be subject to localised loss of foraging habitat and potential loss of some den sites. The abundance of suitable foraging habitat in the surrounding landscape is such that the Project is unlikely to adversely affect habitat value in the long term.
• Disrupt the breeding cycle of an important population	• **Unlikely**. The Project has the potential to cause local loss of den sites in mature hollow-bearing trees. Clearing of potential den sites will be avoided wherever possible to limit impacts on breeding within the local population. Clearing for construction is expected to affect a small number of individuals at most and is unlikely to have an impact at the population level.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely**. The Project will result in the loss and fragmentation of potentially suitable foraging habitat for the greater glider, particularly in more intact forested areas at the east of the preferred alignment. In that area, suitable foraging habitat is locally abundant. Localised losses of potential foraging habitat likely to result from the project are considered unlikely to lead to a decline in the local population.
• Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	• **Unlikely**. Eucalypt forests that provide habitat for the greater glider are susceptible to Phytophthora root fungus (Woinarski et al., 2014). Hygiene protocols will be required during construction to limit the potential introduction of plant and machinery previously exposed to areas subject to Phytophthora. These precautions will limit the potential impact on habitat for the greater glider during construction. The Project is therefore considered unlikely to result in invasive species that may be harmful to the greater glider.
• Introduce disease that may cause the species to decline	• **Unlikely.** Disease is not considered to be a key threat to the greater glider. Given that most potential vectors for disease spread will be controlled through weed hygiene protocols and feral animal control measures, the Project is expected to have negligible impact on the species in this regard.
• Interfere substantially with the recovery of the species	• **Unlikely**. Impacts on foraging habitat and potential breeding sites for the greater glider are expected to be relatively localised. Impacts resulting from the Project will be predominantly limited to construction phase and are likely to be of insufficient magnitude to interfere with the long term viability or recovery of the species.

Table 9 Assessment of potential impacts to Austral toadflax (*Thesium australe*) as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:**	
• Lead to a long term decrease in the size of an important population	• **Possible.** Important populations of Austral toadflax have not been formally identified. Further detailed studies are proposed. Any population within the corridor is not likely to constitute an important population as it is not identified in a recovery plan, is not likely to support characteristics of a key source population for breeding or dispersal, and it not near the limit of the species range. Given the extent of similar habitat in the landscape surrounding the preferred alignment, together with the species' resilience to disturbance (DotE, 2016), no long term decrease in population size is expected.
• Reduce the area	• **Unlikely.** Important populations of Austral toadflax have not been

of occupancy of an important population	formally identified. Further detailed studies are proposed. Any population within the corridor is not likely to constitute an important population as it is not identified in a recovery plan, is not likely to support characteristics of a key source population for breeding or dispersal, and it not near the limit of the species range. Given the extent of similar habitat in the landscape surrounding the preferred alignment, together with the species' resilience to disturbance (DotE, 2016), no reduction in the area of occupancy is expected.
• Fragment an important population into two or more populations	• **Unlikely**. Important populations of Austral toadflax have not been formally identified. Further detailed studies are proposed. Any population within the corridor is not likely to constitute an important population as it is not identified in a recovery plan, is not likely to support characteristics of a key source population for breeding or dispersal, and it not near the limit of the species range.
• Adversely affect habitat critical to the survival of the species	• **Unlikely.** Habitat critical to the survival of Austral toadflax has not been formally defined. Further detailed studies are proposed. As the preferred alignment is not likely to support an important population (as detailed above), habitat within the preferred alignment is not likely to constitute habitat critical to survival of the species. Given the extent of similar habitat in the landscape surrounding the preferred alignment, no significant impacts are expected.
• Disrupt the breeding cycle of an important population	• **Unlikely**. Austral toadflax flowers and fruits throughout the year. No impact on breeding cycle dynamics is predicted to occur as a result of the Project.
• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent the species is likely to decline	• **Unlikely.** Given the extent of similar habitat in the landscape surrounding the preferred alignment, together with the species' resilience to disturbance (DotE, 2016), the Project is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
• Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	• **Unlikely.** Weed infestation is recognised as a threat to Austral toadflax. Impact mitigation strategies will need to be implemented to avoid introduction, establishment and/or spread of invasive species.
• Introduce disease that may cause the species to decline	• **Unlikely.** Disease is not considered to be a key threat to Austral toadflax. Given that most potential vectors for disease spread will be controlled through hygiene protocols, the Project is expected to have negligible impact on the species in this regard.
• Interfere substantially with the recovery of the species	• **Unlikely.** Potential impacts to this species may occur on a local scale, and taking in to consideration the extent of similar habitat in the adjoining landscape, interference with the recovery of the species is not predicted to occur as a result of the Project.

Table 10 Assessment of potential impacts to Swamp tea-tree TEC as a result of the project

• **Criteria**	• **Response**
• **An action is likely to have a significant impact on a critically endangered ecological community if there is a real chance or possibility that it will:**	
• Reduce the extent of an ecological	• **Possible**. Although the Project will result in

community	a reduction in the extent of the TEC, only a very minor extent along the periphery of one regrowth polygon will be impacted. This is not expected to constitute a significant impact to the TEC.
• Fragment or increase fragmentation of an ecological community	• **Unlikely.** No fragmentation of polygons of the TEC will occur as a result of the project.
• Adversely affect habitat critical to the survival of an ecological community	• **Unlikely.** No habitat critical to the survival of the TEC has been formally identified during preliminary surveys. The area impacted by the project is a small extent on the periphery of a regrowth polygon and as such is unlikely to constitute habitat critical to the survival of the TEC.
• Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	• **Possible**. Impact mitigation strategies will need to be implemented to avoid modification of abiotic factors for this TEC in the local landscape, particularly with regards to any potential alteration of surface water drainage patterns.
• Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	• **Unlikely.** One small area of this TEC is proposed for removal. No change in species composition of remaining polygons is expected to occur as a result of the Project.
• Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: • assisting invasive species, that are harmful to the listed ecological community, to become established, or • causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community	• **Possible**. Impact mitigation strategies will need to be implemented to introduction, establishment and/or spread of invasive species. • No fertilisers, herbicides, chemicals or other pollutants are expected to impact the TEC as a result of the Project.
• Interfere with the recovery of an ecological community	• **Unlikely**. The area impacted by the Project is a small extent on the periphery of a regrowth polygon and as such is unlikely to result in interference with the recovery of the TEC. Several more extensive polygons are known to occur in the surrounding landscape and will not be impacted by the Project.

3.1 (e) Listed migratory species

Description

A search of the Protected Matters Database identified 13 migratory species that have the potential to occur in proximity to the preferred alignment, including:

Two species that are listed as migratory under the EPBC Act were recorded within the Study Area during the field

survey. These species are identified as follows:

- The rainbow bee-eater (*Merops ornatus*) was recorded from three locations within riparian woodland and woodland on rocky hillsides. The rainbow bee-eater is a seasonal migrant, commonly encountered within south-east Queensland. The species is widely distributed throughout open woodland and grassland areas of south-east Queensland and is likely to occur in most of the Study Area. The species constructs nesting tunnels directly in loamy soil within open paddocks and feeds selectively on aerial insects
- The cattle egret (*Ardea ibis*) was recorded within cleared agricultural land in the eastern portion of the Study Area. The cattle egret is a partial migrant and is commonly encountered within south-east Queensland. The species occurs in grasslands, wooded lands and is likely to occur in most of the Study Area.

All migratory species that are likely to occur within the Study Area are regionally common within south-east Queensland, and are not considered likely to occur within the preferred alignment in significant numbers. Additionally, the migratory species that are likely to occur within the preferred alignment are not dependent on a localised breeding or foraging resource, and no 'important habitat' as defined in the EPBC significant impact guidelines (DotE, 2013) occurs within the preferred alignment for migratory species.

Eighteen species listed as marine under the EPBC Act were recorded within the Study Area during the field survey:

- Australasian pipit (*Anthus novaeseelandiae*)
- Black-faced cuckoo-shrike (*Coracina novaehollandiae*)
- Brown goshawk (*Accipiter fasciatus*)
- Cattle egret (*Ardea ibis*)
- Fan-tailed cuckoo (*Cacomantis flabelliformis*)
- Horsfield's bronze-cuckoo (*Chalcites basalis*)
- Magpie-lark (*Grallina cyanoleuca*)
- Nankeen kestrel (*Falco cenchroides*)
- Rainbow bee-eater *(Merops ornatus)*
- Shining bronze-cuckoo (*Chalcites lucidus*)
- Silvereye (*Zosterops lateralis*)
- Southern boobook (*Ninox novaeseelandiae*)
- Spangled drongo (*Dicrurus bracteatus*)
- Spotted nightjar (*Eurostopodus argus*)
- Straw-necked ibis (*Threskiornis molucca*)
- Tree martin (*Petrochelidon nigricans*)
- Welcome swallow (*Hirundo neoxena*)
- Whistling kite (*Haliastur sphenurus*).

Similar to the migratory species, all marine species that were recorded during the field survey are regionally common within south-east Queensland and are likely to be spread throughout most of the Study Area and beyond. The marine species that are likely to occur within the preferred alignment are not dependent on a localised breeding or foraging resource, and no important habitat for marine species occurs within the preferred alignment.

Nature and extent of likely impact

Address any impacts on the members of any listed migratory species, or their habitat.

Given the widespread nature of potential habitat and the unlikely occurrence of significant impacts on migratory species, the habitat extent was not quantified. Impacts to migratory species that may occur as a result of the Project include the following:

- Vegetation clearing and fragmentation
- Direct fauna injury and mortality during earthworks
- Disturbance to fauna
- Direct loss of breeding habitat
- Importation and/or spread of weeds
- Introduction and/or proliferation of pest fauna
- Degradation of habitat through dust, sedimentation and erosion
- Degradation of aquatic environments
- Impacts on adjacent bushland.

The Project is not likely to have a significant impact upon migratory species. Assessment to support this conclusion is provided in Table 13.

Table 11 Assessment of potential impacts to migratory species as a result of the project

CRITERIA	RESPONSE
An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:	
Substantially modify (including by fragmentation, altered fire regimes, altering nutrient cycles, or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	The migratory species known or considered likely to occur within the preferred alignment are all widely distributed and regionally common in south-east Queensland, occurring in a broad range of woodland, agricultural and suburban habitats. These species do not breed specifically in a localised area of 'important habitat' (such as a wetland) that supports a substantial proportion of the local population and is therefore susceptible to significantly elevated risks due to localised impact. The Project will cause localised losses of woodland vegetation and grassland that provides nesting and foraging resources for these species. However, given the wide availability of suitable habitat within the surrounding landscape, the Project is unlikely to have a significant adverse impact on important habitat for the species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	No 'important habitat' as defined in the EPBC significant impact guidelines (DotE, 2013) occurs within the preferred alignment for the migratory species known or considered likely to occur. The relevant species do not rely on a communal breeding site that supports a significant proportion of the local population and all species are regionally common (i.e. not near the limit of the species range). Some ground-dwelling migratory species are susceptible to predation by cats and foxes. While construction activities can increase predation pressures by increasing accessibility to feral animals, the project area is already heavily altered by agricultural activities and likely to support high densities of feral predators. The

	Project is therefore unlikely to exacerbate the impact of feral predators
Seriously disrupt the lifecycle (breeding, feeding, migration and resting behaviour) of an ecologically significant proportion of the population of a migratory species	The migratory species known or considered likely to occur within the preferred alignment are not dependent on a localised breeding or foraging resource. The species nest and forage over a broad area of woodland and agricultural habitat. While the Project will have localised impacts on nesting and foraging habitat for the species listed above, the impacts will be localised and restricted in extent and will not adversely impact a significant proportion of the population.

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

No Commonwealth Marine Areas were identified within the PMST search area. The Commonwealth Marine Area identified closest to the Project, the Exclusive Economic Zone and Territorial Sea, was approximately 75km east of the Project.

Nature and extent of likely impact

Due to the significant distances between the Study Area and the nearest Commonwealth Marine Area, direct impacts are not expected and there is limited potential for indirect impacts from the Project.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description

If the action will affect Commonwealth land also describe the more general environment. The Policy Statement titled *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* provides further details on the type of information needed. If applicable, identify any potential impacts from actions taken outside the Australian jurisdiction on the environment in a Commonwealth Heritage Place overseas.

A search of the EPBC Act Protected Matters Database (refer **Attachment 5**) identified that two Commonwealth areas that are located in proximity to the search extent. These are identified as follows:

- Defence - Amberley - AP3 Remote Receivers Site, located approximately 10 km to the north of the preferred alignment
- Defence - Amberley - AP90 Small Arms Range (Purga), located approximately 5 km to the north-east the preferred alignment.

Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth land. Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

Given the separation distance between the preferred alignment and the Defence sites, the proposed action will not impact on any Commonwealth areas.

3.1 (h) The Great Barrier Reef Marine Park

Description
Not applicable

Nature and extent of likely impact

Not applicable

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description
Not applicable

Nature and extent of likely impact

Not applicable

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

You must describe the nature and extent of likely impacts (both direct & indirect) on the whole environment if your Project:
- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef marine Park.

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:
- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	**Is the proposed action a nuclear action?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	✓	No The ARTC is not a Commonwealth agency for the purposes of the EPBC Act following the amendment of the Environment Protection and Biodiversity Conservation Regulation 2000 on 14 November 2009 to exclude ARTC from the definition of a "Commonwealth agency" under the EPBC Act.
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	✓	No

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

Provide a description of the Project area and the affected area, including information about the following features (where relevant to the Project area and/or affected area, and to the extent not otherwise addressed above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

3.3 (a) Flora and fauna

The preferred alignment traverses a landscape that has largely been subject to historic clearing, predominantly for agricultural and rural residential purposes. The western portion of the Study Area primarily traverses a quaternary alluvial floodplain that has been subject to extensive clearing, and remaining vegetation occurs as small and fragmented communities that are generally subject to ongoing disturbances that include cattle grazing. The eastern portion of the Study Area traverses Cainozoic and Mesozoic sediments and supports relatively larger areas of remnant vegetation, particularly on steep rocky hillsides. Flora species within the Study Area were locally common species that area characteristic of the Eucalypt-dominated vegetation communities of the south-east Queensland bioregion (refer Section 3.3(e)). *Melaleuca irbyana* is present in the study area.

A total of 143 terrestrial fauna species were recorded within the Study Area during the recent field survey. This comprised the following groups of species:

- A total of 99 bird species were recorded from the Study Area. This included a mix of forest-dependent species, ubiquitous woodland birds and generalist species adapted to open grazing land. Bird species richness was high in structurally complex habitat types (i.e. riparian woodland and swamp tea tree forest), moderate in habitats lacking complexity in the shrub and understorey layer (i.e. woodland and open woodland), and low to moderate in habitats that have been cleared for grazing (i.e. open grassland). Palustrine wetlands also attracted high numbers of bird species as these represent important local foraging sites within the landscape.
- A total of 23 mammal species were recorded from the Study Area in the field survey. Three species of arboreal mammals were recorded from scats and visual observations at numerous locations, namely, the common brushtail possum (*Trichosurus vulpecula*), squirrel glider (*Petaurus norfolcensis*) and EPBC Act listed koala (Phascolarctos cinereus). All three species are likely to be widely distributed in woodland habitats throughout the Study Area. Three macropod species were recorded within the Study Area, namely, the eastern grey kangaroo (*Macropus giganteus*), whiptail wallaby (*Macropus parryi*) and red-necked wallaby (Macropus rufogriseus). Large mobs of eastern grey kangaroos were observed within lowland areas, while the two wallaby species were recorded in more densely vegetated habitats along rocky hillsides. Ground mammals including the northern brown bandicoot (*Isoodon macrourus*), short-beaked echidna (*Tachyglossus aculeatus*) and yellow-footed antechinus (*Antechinus flavipes*) were recorded from riparian woodland and woodland on rocky hillsides.
- A total of 17 terrestrial reptile species were recorded from the Study Area during the field survey. This comprised nine species of skinks, two geckos, two dragons, two elapid snakes, one python and one monitor. In general, reptile diversity was highest in habitats which retained higher microhabitat complexity at ground level (i.e. riparian woodland and woodland on rocky hillsides). Grazing is likely to have reduced reptile diversity within the broader landscape by reducing the abundance and diversity of ground-level refuges and microhabitats available to reptiles.
- Four (4) amphibian species were recorded within the Study Area during the field survey. The feral cane toad (*Rhinella marina*) was widely distributed and abundant, with individuals often found sheltering beneath rocks and logs within woodland in areas some distance from water. Native frog species observed included the broad-palmed rocket frog (*Litoria latopalmata*), green tree frog (*Litoria caerulea*) and emerald spotted tree frog (*Litoria peronii*). These species typically occur in close proximity to water sources such as farm dams and ephemeral watercourses.

Further information regarding the flora and fauna values of the Study Area is details in the Calvert to Kagaru Technical Flora and Fauna Report, attached as **Attachment 6**).

3.3 (b) Hydrology, including water flows

A hydrology investigation has been undertaken to inform the design of the proposed action. The investigation relied upon supplied reports, data and models from the previous SFRC Hydraulic Study, which focused upon major waterways only (Warrill Creek, Bremer River, Western, Purga, Sandy, Woolooman and Wild Pig creeks, Teviot Brook).

The proposed action includes waterway crossings and multiple culvert structures and cross drainage bridges.

Construction and operation of the proposed action has the potential to affect the water quality and physical integrity of waterways that are crossed by the alignment. Although it is inevitable that some changes would occur to the watercourses because of construction and operation, it is unlikely that this would cause an identifiable negative impact on each waterway as a whole.

Potential water quality impacts of the proposed action include:

- Increased sediment in runoff from construction sites
- Contamination of receiving waters from accidental release of fuels, oils or other chemicals
- Increased sediment in runoff from the edges of the railway line if surrounding soils are exposed
- Contamination of receiving water from the accidental release of liquid substances or bulk solids if there were to be a derailment of a freight train
- Maintenance of the rail corridor through the application of pesticides.

Potential riparian zone impacts of the proposed action include:

- Introduction or the spread of weeds or pests carried to the area on construction vehicles
- Disturbance of the streambed and bank in areas where the proposed action crosses a watercourse.

Construction of the proposed action may potentially result in increased peak flood levels upstream of proposed waterway crossings due to constriction of the waterway. However, the hydraulic modelling undertaken for the SFRC Study indicates that the estimated increases are not expected to result in a significant adverse impact to existing infrastructure or land uses. Further detailed hydrological studies will be undertaken during later phases of the project.

3.3 (c) Soil and Vegetation characteristics

The Study Area is a sub-coastal area of southern Queensland. The landscape of the corridor can be divided into three main areas; the Beaudesert Basin to the east, the central ranges and the western lowlands. The topography of these major landscape features are a reflection of the underlying geology, which consists of a central anticline, forming rugged sandstone hills, while the flanking synclines containing coal, sedimentary and igneous rocks, give rise to gently undulating lowlands.

Soil mapping indicates that parent material strongly influences soil development in the area. Podzolics and solodics are confined to areas of coarse-grained quartzose sediments, acid igneous rocks and areas of sandy alluvium. Prairie soils, black earths, and grey clays have developed on the finer-grained sediments, the more basic igneous rocks, and the main development of valley alluvium. Lithosols are dependent on topography and are found only on the steepest slopes; however, parent material differences are evident in the texture of the soil.

Along the western boundary of the Logan valley deep quartz-rich sands occur where the stream gradients have suddenly decreased, depositing thick layers of coarse sediments. Such soils are too immature to reflect soil-forming processes. Preliminary field observations highlighted evidence of erosion on some riparian banks throughout the referral area, primarily due to stock movement and access.

3.3 (d) Outstanding natural features

There are no outstanding natural features within the corridor or in its immediate vicinity.

3.3 (e) Remnant native vegetation

The field survey confirmed the presence of remnant vegetation within the Study Area, including endangered Regional Ecosystems, of concern Regional Ecosystems and least concern Regional Ecosystems under the *Vegetation Management Act 1999*. A summary of Regional Ecosystems confirmed present within the preferred alignment is provided in **Table 12**. Further details concerning remnant Regional Ecosystems are provided in the Calvert to Kagaru Technical Flora and Fauna Report (attached as **Attachment 6**).

Table 12 Regional Ecosystems within the corridor

Regional Ecosystem	Status	Description
12.3.3d	Endangered	*Eucalyptus moluccana* woodland. Other frequently occurring species include *Eucalyptus tereticornis*, E. crebra, E. siderophloia and Corymbia intermedia.
12.3.7	Least concern	*Eucalyptus tereticornis*, *Casuarina cunninghamiana subsp. cunninghamiana* +/- Melaleuca spp. fringing woodland.

Regional Ecosystem	Status	Description
12.9-10.2	Least concern	*Corymbia citriodora subsp. variegata +/- Eucalyptus crebra* open forest on sedimentary rocks.
12.9-10.17a	Least concern	*Lophostemon confertus* or *L. suaveolens* dominated open forest usually with emergent *Eucalyptus* and/or *Corymbia* species.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The general topography of the corridor comprises relatively flat land, with large areas of flood plain up to chainage 30 km (Peak Crossing), from which point the land becomes moderately undulating before becoming hilly at around chainage 37 km to 45km (Washpool through Teviot Range) until becoming relatively flat toward chainage 53 km (Kagaru).

3.3 (g) Current state of the environment

Include information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The corridor passes through a combination of rural and agricultural areas comprising of private, government and business properties and land holdings. Large proportions of the Study Area have been cleared for grazing. Habitats, particularly areas in the western half of the Study Area, have been extensively cleared for grazing. Remaining habitats have been extensively fragmented and often remain in linear remnants along watercourses and floodplains. Areas subject to cattle grazing have experienced substantial degradation of understorey and ground level habitats through vegetation removal, weed incursions, trampling, and associated soil compaction and erosion. The diversity of microhabitats available to wildlife in these areas is significantly diminished. Creek lines retain value for wildlife habitat and provide corridors for movement. Several larger areas of remnant vegetation persist along the preferred alignment. These areas retain higher localised value for native flora and fauna.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

No Commonwealth Heritage Places were identified in the Protected Matters Search for the Project. Nevertheless, a number of impacts upon European cultural heritage and unknown heritage values have the potential to result from the construction and operation of the proposed action.

There is a moderate potential for unidentified historical heritage places to be present including the following:

- Sites relating to the early pastoral history of the region, such as farmhouses, gardens, shedding, fencing, wells, stockyards, and cattle runs
- Unidentified buildings/houses dating from the 19th to early 20th centuries
- Archaeological deposits associated with the early non-Aboriginal occupation of the area, such as household debris, farming remnants or campsites

The assessment conducted for the SFRC Study identified one historical heritage place that was at potential risk of impact from the Project, namely Undullah Station Homestead, Undullah Road, Undullah. It is located at least 200 m from the corridor.

Recent assessment identified a total of 29 properties as containing potential historical heritage features. A targeted field survey was undertaken from 16 to 19 May 2016. Nineteen of the 29 properties were investigated and seven have been identified as being of potential historical heritage significance. Of the seven potential historical heritage places, five are located within the proposed action corridor, one is adjacent to the corridor, and one within 100 m from the corridor.

Heritage places may be subject to direct or indirect impacts These potential impacts include the introduction of new environmental elements such as noise, altered visual aspects, and alterations to land use patterns in the area as a result of the proposed action. The impact of these changes is considered to be manageable.

3.3 (i) Indigenous heritage values

An Aboriginal cultural heritage investigation has been undertaken for the proposed action (proposed action corridor and a two km buffer), which comprised an initial desktop assessment (register searches and literature review) and preliminary Aboriginal consultation. No archaeological survey has been conducted.

The register searches identified 58 Aboriginal cultural heritage sites within the two km buffer surrounding the proposed action. A further 25 Aboriginal cultural heritage sites were also identified during a previous field survey for the SFRC study. Site types within the two km buffer surrounding the proposed action are dominated

by artefact scatters but also include landscape features, resource areas, grinding grooves and scarred / culturally modified trees, waterholes and a rock shelter.

Eight Aboriginal cultural heritage sites are currently recorded within the two km buffer surrounding the proposed action, all comprising stone artefact scatters. Aboriginal cultural heritage site FW 14 intersects the centreline of the proposed action. The next closest Aboriginal cultural heritage site to the alignment is KB:J99, which was located 19 m south of the centreline of the proposed action. However, as the size and extent of the sites are not known, this site and other sites may occur closer to the centreline.

A predictive model was developed, which indicated that artefact scatters would be located within one km of a fresh water source, such as Western Creek, Warrill Creek, Purga Creek, Sandy Creek and Woolooman Creek and Bremer River as other studies have found. With the exception of the mountainous range between Woolooman and Kagaru, the proposed action is generally located on land 40-80 m above sea level and the majority of previously identified Aboriginal cultural heritage sites are in this area. There are also numerous creeks and rivers which intersect with the proposed action.

Based on the predictive model, 61 per cent of the proposed action is of high cultural sensitivity, 21 per cent of moderate cultural sensitivity and 18 percent of low cultural sensitivity. Due to the culturally sensitive areas in the region and previous archaeological investigations, there is considered to be moderate to high potential for Aboriginal cultural heritage to be present in the proposed action. However, ground disturbance which may affect the preservation of Aboriginal sites along the proposed action has not been considered in this assessment.

Consultation has been conducted with local government (ICC and SRRC) to discuss the proposed action. Preliminary consultation has also been undertaken with the registered cultural heritage body for the Inland Rail Project, the Jagera People in order to provide an overview of the proposed action, outline the assessment process and ascertain any particular areas of cultural and archaeological sensitivity that might be present in the proposed action which was not identified in the database searches and background literature review.

The Indigenous heritage survey report for the SFRC Study (Thomas 2008) recommended the development of a Cultural Heritage Management Plan (CHMP) in conjunction with the registered cultural heritage body (Jagera Daran Pty Ltd).

3.3 (j) Other important or unique values of the environment

Describe any other key features of the environment affected by, or in proximity to the proposed action (for example, any national parks, conservation reserves, wetlands of national significance etc.).

The Purga Nature Reserve is located approximately 150 m to the north of the corridor. This reserve supports the largest area of remnant Swamp tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland TEC. Recreation activities catered for include bushwalking, interpretive boardwalks and picnic facilities.

Two Queensland-listed species were confirmed present along the preferred alignment during preliminary field surveys, including the following:

- Swamp tea-tree (*Melaleuca irbyana*), listed as an endangered species under the *Nature Conservation Act 1992*
- Glossy black-cockatoo (*Calyptorhynchus lathami*), listed as an endangered species under the *Nature Conservation Act 1992*

3.3 (k) Tenure of the action area (e.g. freehold, leasehold)

The area on which the proposed action will be undertaken is located largely within the Queensland Government's previously gazetted 2010 SFRC, however changes may occur during the EIS process as a result of detailed studies.

3.3 (l) Existing land/marine uses of area

The proposed action is to be undertaken within an existing greenfield rail corridor. The corridor is primarily characterised by rural and rural-residential land uses on a variety of allotment sizes.

3.3 (m) Any proposed land/marine uses of area

Most of the work associated with the proposed action would be undertaken within the gazetted greenfield rail corridor. During construction, there may be temporary changes in land use from the existing use of the referral area (for example, from rural uses, proposed transport corridor) to construction purposes. During operation, direct land uses impacts would result from any change in use associated with the operation of the proposed action and its associated facilities.

As discussed in Section 2.4 the proposed action is included within the iGO Masterplan for Ipswich's transport future and within the South East Queensland Infrastructure Plan and Program.

4 Environmental outcomes

Provide descriptions of the proposed environmental outcomes that will be achieved for matters of national environmental significance as a result of the proposed action. Include details of the baseline data upon which the outcomes are based, and the confidence about the likely achievement of the proposed outcomes. Where outcomes cannot be identified or committed to, provide explanatory details including any commitments to identify outcomes through an assessment process.

If a proposed action is determined to be a controlled action, the Department may request further details to enable application of the draft *Outcomes-based Conditions Policy 2015* and *Outcomes-based Conditions Guidance 2015* (http://www.environment.gov.au/epbc/consultation/policy-guidance-outcomes-based-conditions), including about environmental outcomes to be achieved, details of baseline data, milestones, performance criteria, and monitoring and adaptive management to ensure the achievement of outcomes. If this information is available at the time of referral it should be included.

General commitments to achieving environmental outcomes, particularly relating to beneficial impacts of the proposed action, CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, and conditions of approval, if your proposal proceeds to these stages).

To date, endeavours to avoid and reduce impacts to matters of national environmental significance and other environmental values have been a key factor in option assessment and route selection processes for the Project and across the Melbourne to Brisbane Inland Rail Programme. As the Project progresses, impact avoidance and reduction will remain key drivers in design development.

The Project will undergo environmental assessment in line with Commonwealth and Queensland legislative requirements, likely under the bilateral agreement between the Australian Government and the State of Queensland. This process will provide further detail regarding environmental outcomes, and the data upon which these assessments and proposed outcomes are based. This includes the completion of further studies and design development. Key aspects to be addressed include:

- Further definition of habitat and vegetation impacts, through iterative design and environmental assessment
- Confirmation of the location of MNES and Matters of State Environmental Significance (MSES) habitat and species presence, and significance of populations, through targeted ecological investigations, in accordance with relevant State and Commonwealth survey guidance
- Confirmation of other environmental values in the Project area
- Design development to avoid, reduce or manage impacts to identified environmental values
- Determination of environmental offset requirements for MNES and MSES impacts. A Programme-wide approach to biodiversity offset management is currently being considered.

The Project's environmental outcomes should also be considered in the context of the overall intent and outcomes of the ultimate Melbourne to Brisbane Inland Rail Programme. The establishment of a freight rail route that provides a comparable level of service to road freight is expected to negate or delay the need for progressive upgrades of the National Highway and associated environmental impacts.

5 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities for the proposed action at Section 2.3 you will need to complete this section in relation to each of the alternatives identified.

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

For any measures intended to avoid or mitigate significant impacts on matters protected under the EPBC Act, specify:

- what the measure is,
- how the measure is expected to be effective, and
- the time frame or workplan for the measure.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

Provide information about the level of commitment by the person proposing to take the action to achieve the proposed environmental outcomes and implement the proposed mitigation measures. For example, if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner), you should state that, that is the case.

Note, the Australian Government Environment Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:

- clearly form part of the referred action (eg be identified in the referral and fall within the responsibility of the person proposing to take the action),
- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected, and
- must be realistic and practical in terms of reporting, auditing and enforcement.

If a proposed action is determined to be a controlled action, the Department may request further details to enable application of the *Outcomes-based Conditions Policy 2016* (http://www.environment.gov.au/epbc/publications/outcomes-based-conditions-policy-guidance), including information about the environmental outcomes to be achieved by proposed avoidance, mitigation, management or offset measures, details of baseline data, milestones, performance criteria, and monitoring and adaptive management to ensure the achievement of outcomes. If this information is available at the time of referral it should be included in the description of the proposed measures.

More general commitments (e.g. preparation of management plans or monitoring), commitments to achieving environmental outcomes and measures aimed at providing environmental offsets, compensation or off-site benefits CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, if your proposal proceeds to these stages).

At the time of referral, preliminary information is available regarding measures to avoid or reduce impacts. Further baseline data, design information and confirmation of suitable management approaches will be developed in the next stage of the Project.

Design

All of the Projects that are part of the Inland Rail Programme will be designed and assessed in a consistent way, guided by an overarching Environmental Strategy. Environmental assessment during the design phase will address design, construction and operational phase impacts and management measures. Detailed requirements for environmental assessment and design will also be specified in Project tender documentation. This information is still under development, and will also incorporate any assessment requirements provided by the Queensland and Australian governments, if relevant and available at the time of tender release.

Opportunities to minimise earthwork extents, avoid significant impacts to creeks and watercourses through sensitive design, avoid or reduce impacts to areas of sensitive habitat (including habitat loss, habitat fragmentation and mortality) will be key considerations throughout design. Opportunities to minimise amenity impacts (noise, air quality, visual) will also be key drivers of subsequent design processes.

Construction

An Environmental Management Plan will be developed to ensure management and mitigation measures and conditions of approval are clearly documented, and are implemented during the construction phase of the Project. This will include definition of no-go zones, requirements for post-works rehabilitation, and scheduling of works where necessary to minimise impacts during breeding periods or times of heightened environmental sensitivity.

Operation

ARTC have established an environmental process that applies to operations on their network. This includes an environmental policy, an environmental management system and a pollution incident response management plan.

In all their activities, ARTC commits to:

- Taking prompt action in response to non-compliance and other environmental complaints
- Having effective relationships with all environmental agencies and regulators
- Ensuring agreements between contractors and rail operators comply with our Environmental Management System
- Ensuring employees are inducted so they can perform their duties.

Project-specific environmental management or monitoring requirements identified through future stages of design and impact assessment will be incorporated into the relevant operational management documentation. These management and monitoring measures will be determined based on current guidelines and scientific knowledge, with input from relevant government agencies. At this stage of the process the exact nature of this documentation is yet to be determined, however the existing ARTC Environmental Protection Licences for operations in New South Wales and South Australia provide an example of how this is addressed in these jurisdictions. A Project specific example is the ARTC operational environmental management plan for the Southern Sydney Freight Line, which was developed in accordance with the conditions of approval from the New South Wales Department of Planning.

6 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (ie. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

6.1 Do you THINK your proposed action is a controlled action?

	No, complete section 5.2
✓	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act.

N/A

6.3 Proposed action IS a controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
✓	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.

The Project will result in impacts to habitat for listed threatened species, in particular the Koala and potential habitat for the swamp tea tree (*Melaleuca irbyana*). Management and mitigation measures will be further developed as the Project progresses.

7 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** ARTC are a national rail operator. ARTC operate in New South Wales and South Australia under Environmental Protection Licences, and as such are accountable to the respective Environmental Protection Agencies for their operations. Through implementation of ARTC's Environmental Policy, Environmental Management System, and Project specific environmental management plans and licences for construction and operation, ARTC has maintained a satisfactory record of responsible environmental management.	✓	
7.2	**Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?** **If yes, provide details**		✓
7.3	**If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?** **If yes, provide details of environmental policy and planning framework** ARTC's Environmental Policy is attached (**Attachment 8**). ARTC also operates an environmental management system, and has a state based (NSW) code of practice for assessing the impact of Projects.	✓	
7.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?**	✓	

Provide name of proposal and EPBC reference number (if known)		
2017/7882 Inland Rail Gowrie to Helidon Project (16 February 2017)		
2017/7883 Inland Rail Helidon to Calvert Project (16 February 2017)		
2016/7729 – Australian Rail Track Corporation Ltd/Transport - Land/Narrabri to North Star/New South Wales/Narrabri to North Star Section of Inland Rail, NSW (22 June 2016)		
2016/7731 – Australian Rail Track Corporation Ltd/Transport - Land/Parkes to Narromine/New South Wales/Parkes to Narromine Section Inland Rail, NSW (22 June 2016)		
2009/4897 – Upgrade of approx. 32km of Main Northern Railway, including construction of 3rd track, Main Northern Railway between Maitland Junction and Minimbah (NSW) (18 May 2009)		
2009/4783 – Melbourne to Sydney Rail Upgrade Project – Passing Lane 2, Near Hume Highway, between Donnybrook Road and Beveridge Road (VIC) (06 March 2009		
2008/4500 – Northern East Rail Revitalisation, Glenrowan Station (VIC) (08 October 2008) 2007/3795 – Passing Land 2 between Donnybrook Road and Beveridge Road level crossings, Melbourne to Sydney Rail Corridor (VIC) (22 October 2007)		
2005/2393 – South Sydney Freight Rail Line, Sefton Park to Macarthur (NSW) (18 November 2005)		
2005/1948 – Sandgate Rail Grade Separation, Newcastle (NSW) (13 January 2005)		

8 Information sources and attachments

(For the information provided above)

8.1 References

- List the references used in preparing the referral.
- Highlight documents that are available to the public, including web references if relevant.

Aecom (2010). Southern Freight Rail Corridor Study, Final Assessment Report, prepared for the Department of Transport and Main Roads.

Bussey J. and W. Ellis (2014). The koalas of Ipswich: Opportunities, threats and future viability. School of Agriculture and Food Sciences, University of Queensland.

Department of Environment and Resource Management (DERM) (2009). Decline of the Koala Coast koala population: population status in 2008. [Online]. Brisbane, QLD: Queensland Department of Environment and Resource Management. Available from: http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/koalas/koala_plan/decline_of_the_koala_coast_koala_population_population_status_in_2008.html

Department of the Environment (2016) Species Profile and Threats (SPRAT) Database species descriptions.

Department of Transport and Main Roads (2010). Southern Freight Rail Corridor Study, Revised Assessment Report.

Eldridge, M.D.B. and R.L. Close (1998). 'Brush-tailed Rock-wallaby, Petrogale penicillata'. R Strahan, ed. The Mammals of Australia (rev. edn). NSW: New Holland Publishers Pty Ltd.

Hoar B.R., B.B. Chomel, F.J.A. Rodrigues and P.A.Colley (1998). Zoonoses and potential zoonoses transmitted by bats. Journal of the American Veterinary Medicine Association. 212:1714-1720.

Kinnear, J.E., M.L. Onus and R.N. Bromilow (1988). Fox control and rock-wallaby population dynamics. Australian Wildlife Research. 15:435-450.

Lee, T., K.R. Zenger, R.L. Close, M. Jones and D.N. Phalen (2010). Defining spatial genetic structure and management units for vulnerable koala (Phascolarctos cinereus) populations in the Sydney region, Australia. Wildlife Research. 37:156-165.

Lobert, B. (1988). The Brush-tailed Rock-wallaby (Petrogale penicillata) in the Grampians National Park and the Black range, Victoria. Part 1 - Survey, Technical Report. Series. 64. Victoria: Department of Conservation, Forests and Lands.

Marchant, S. and P.J. Higgins, eds. (1990). Handbook of Australian, New Zealand and Antarctic Birds. Volume One - Ratites to Ducks. Melbourne, Victoria: Oxford University Press.

Marchant, S. and P.J. Higgins, eds. (1993). Handbook of Australian, New Zealand and Antarctic Birds. Volume 2 - Raptors to Lapwings. Melbourne, Victoria: Oxford University Press.

Maunsell (2008) Southern Freight Rail Corridor Study Draft Assessment Report: Technical Paper 2 Nature Conservation. Report prepared by Maunsell Australia on behalf of Queensland Transport.

McKay, G. M. (2008). Greater Glider Petauroides volans. In The Mammals of Australia. Third edition. (Eds S. Van Dyck & R. Strahan), pp. 240-242. Reed New Holland, Sydney.

Melzer, A., F. Carrick, P. Menkhorst, D. Lunney and B.S. John (2000). Overview, critical assessment, and conservation implications of koala distribution and abundance. Conservation Biology. 14:619-628.

Rogers, D., I. Hance, S. Paton, C. Tzaros, P. Griffioen, M. Herring, R. Jaensch, L. Oring, A. Silcocks and M. Weston (2005). The breeding bottleneck: breeding habitat and population decline in the Australian Painted Snipe. In: Straw, P., ed. Status and Conservation of Seabirds in the East Asian-Australasian Flyway. Pp. 15-23.

van der Ree, R., J. McDonnell, I. Temby, J. Nelson and E. Whittingham (2005). The establishment and dynamics of a recently established urban camp of flying foxes (Pteropus poliocephalus) outside their geographic range. Journal of Zoology. 268:177-185. The Zoological Society of London.

Woinarski, J. C. Z., Burbidge, A. A., and Harrison, P. L. (2014). The Action Plan for Australian Mammals 2012. CSIRO Publishing, Collingwood.

8.2 Reliability and date of information

For information in section 3 specify:

- source of the information;
- how recent the information is;

- how the reliability of the information was tested; and
- any uncertainties in the information.

Information used in the preparation of this referral is based on a number of reports and studies previously developed to inform compliance with Queensland and local government approval processes. These studies have been undertaken by professional consultants who are qualified ecologists with practical experience in surveying and monitoring the local environment. Methods followed during field surveys were in accordance with relevant guidelines published by State and Commonwealth departments.
References that have been cited in preparation of this referral and supporting documentation include databases and documents that have been produced and maintained by State and Commonwealth departments, and as such are considered highly reliable. Other documents included manuscripts in scientific journals that have been subject to peer-review prior to publication, and are therefore also considered as reliable sources of information.

8.3 Attachments

Indicate the documents you have attached. All attachments must be less than three megabytes (3mb) so they can be published on the Department's website. Attachments larger than three megabytes (3mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the Project locality (section 1)	✓	
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the Project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		
	copies of any flora and fauna investigations and surveys (section 3)	✓	
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

9 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action[1].

Project title: Calvert to Kagaru Inland Rail Project

9.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act[2], this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action[3].

1. Name and Title:	Simon Thomas, Project Director
2. Organisation (if applicable):	Australian Rail Track Corporation
3. EPBC Referral Number (if known):	
4: ACN / ABN (if applicable):	081 455 754 / 75081455754
5. Postal address	11 Sir Donald Bradman Drive, Keswick Terminal, South Australia
6. Telephone:	(08) 8217 4366
7. Email:	enquiries@artc.com.au
8. Name of proposed proponent (if not the same person at item 1 above and if applicable):	

[1] *If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.*

[2] *If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A,* EPBC Act*). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.*

9. ACN/ABN of proposed proponent (if not the same person named at item 1 above):

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

□ an individual; OR

□ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR

□ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

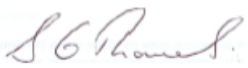
COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:

□ not applicable.

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature  Date 10 May 2017

9.2 Person preparing the referral information (if different from 8.1)

Individual or organisation who has prepared the information contained in this referral form.

Name	John Herron
Title	Environment Manager
Organisation	Australian Rail Track Corporation
ACN / ABN (if applicable)	
Postal address	Level 12/40 Creek Street, Brisbane 4000

Telephone	0733648919
Email	jherron@artc.com.au
Declaration	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.
Signature	 Date 10 May 2017

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ❑ Completed all required sections of the referral form?
- ❑ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ❑ Provided a map showing the location and approximate boundaries of the Project area?
- ❑ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ❑ Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- ❑ Provided complete contact details and signed the form?
- ❑ Provided copies of any documents referenced in the referral form?
- ❑ Ensured that all attachments are less than three megabytes (3mb)?
- ❑ Sent the referral to the Department (electronic and hard copy preferred)?

Attachment A

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
    - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
    - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license (http://creativecommons.org/licenses/by/3.0/au/)