CHAPTER 04

Assessment Methodology

INLAND RAIL—BORDER TO GOWRIE ENVIRONMENTAL IMPACT STATEMENT

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

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4. Assessment Methodology

4.1 Introduction

This chapter describes the methodology used to assess potential impacts and opportunities as a result of the Inland Rail—Border to Gowrie Project (the Project) in accordance with the Terms of Reference (ToR). The methodology has been established to provide a structured and objective approach to identifying environmental, social and economic impacts and opportunities, develop effective mitigation and management measures, and maximise the benefits of the Project.

During the corridor selection process, multi-criteria analyses (MCAs) and comparative cost estimates were used to assess potential impacts associated with a range of route options for the Project. The methodology adopted for the corridor selection process is discussed separately in Chapter 2: Project Rationale.

4.2 Approach

4.2.1 Overview

The first step in the impact assessment process was to prepare a Project description, in accordance with Section 10 of the ToR. Chapter 5: Project Description includes information on the scale, type, duration and location of Project elements that were assessed.

Then, for each specific matter identified in Section 11 of the ToR:

- The impact assessment area was defined. The impact assessment area defines the geographical extent of the impact assessment for each specific matter. The impact assessment area is defined based on the nature of the specific matter, and the scale, type and duration of Project elements that may impact on that matter.
- The impact assessment method was selected (refer Section 4.2.2).
- A desktop review of existing reports, studies and spatial datasets was undertaken to establish existing conditions and sensitive receptors relevant to the specific matters being assessed.
- Fieldwork was undertaken to identify and/or ground truth existing environmental conditions and sensitive receptors. Further detail on desktop reviews and fieldwork is provided in Chapter 7 to Chapter 20.
- Potential impacts and opportunities were identified in accordance with the selected impact assessment method and assessed using criteria set out in legislation, statutes, guidelines or policies. Where such criteria do not exist, the assessment was based on industry standards and professional judgement. In each instance, the impact assessment was conducted as follows:
  - The impact assessment considered the construction and operation phases of the Project. The decommissioning of the Project cannot be foreseen at this point in time and therefore has not been considered as a Project phase in this EIS
  - The impact assessment considered short-term, long-term and cumulative impacts
  - Reference design phase mitigation measures were factored into the initial impact assessment using the methods described in Sections 4.2.2.1 to 4.2.2.3
  - Additional mitigation and management measures were proposed to further avoid or minimise impacts and enhance potential benefits (refer Section 4.2.3). These measures were factored into the assessment of residual impacts
  - The need for offsets to compensate for significant adverse residual impacts were assessed using the methods described in Sections 4.2.2.1 to 4.2.2.3.
- Mitigation and management measures were documented in in Chapter 7 to Chapter 20 and consolidated in Chapter 22: Outline Environmental Management Plan (refer Section 4.2.4).

The role of community and stakeholder consultation in the impact assessment process is discussed in Section 4.3.

4.2.2 Impact assessment methods

Three methods were used to assess potential impacts and opportunities for the Project:

- Compliance assessment (quantitative)
- Risk assessment (qualitative)
- Significance assessment (qualitative).

A general explanation of each assessment method and how it was applied is provided in Sections 4.2.2.1 to Section 4.2.2.3, with further details specific to each matter included in Chapter 7 to Chapter 20.

For each specific matter, the decision tree shown in Figure 4.1 was followed to select an appropriate impact assessment method.

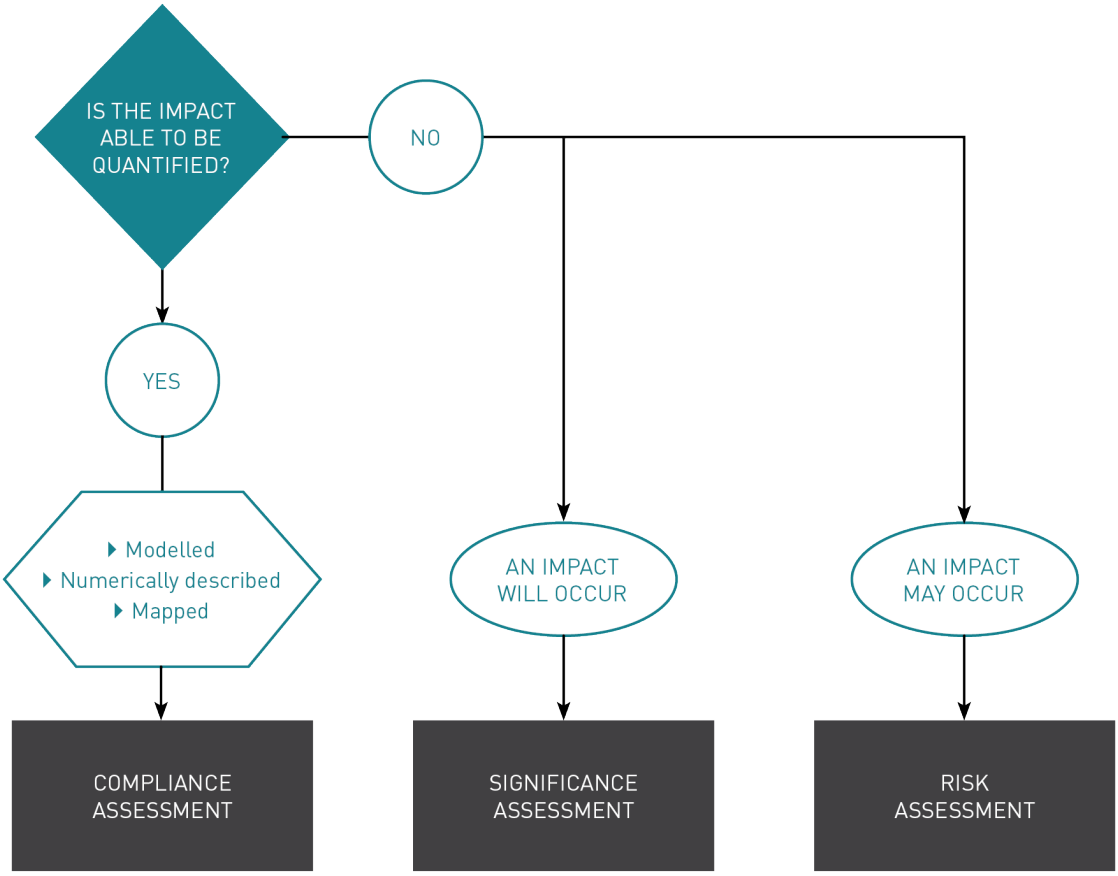

FIGURE 4.1 ASSESSMENT METHOD DECISION TREE

The assessment methods and the specific matters they have been applied to, are summarised in Table 4.1. In some cases, the assessment method was adapted to meet the needs of a particular matter. For example, construction-phase air-quality impacts were assessed using the risk assessment method due to the complex, dynamic and multi-faceted nature of construction activities. On the other hand, operation-phase air-quality impacts were assessed using the compliance assessment method because confidence around operational parameters for the Project enabled emission sources to be modelled for comparison against adopted performance criteria.

TABLE 4.1 ASSESSMENT METHODS

Method	Type	Relevance	Specific matters[1]
Compliance assessment	Quantitative	Used where compliance with a known guideline or standard (e.g. published limits or thresholds) can be quantitatively assessed	Land use and tenure Land resources (soil properties only) Air quality (operation phase) Hydrology and flooding Noise and vibration Traffic Economics
Risk assessment	Qualitative	Used where an impact may occur	Land resources Transport and access Hazard and risk Waste management
Significance assessment	Qualitative	Used where an impact will occur to assess the sensitivity or the vulnerability of the environmental value to the impact	Landscape and visual amenity Flora and fauna Air quality (construction phase) Surface water Groundwater Social Indigenous cultural heritage Non-Indigenous cultural heritage

Table note:
1. As per Section 11 of the ToR

This EIS also includes a cumulative impact assessment (CIA). The CIA considers the combined effects of the Project and relevant existing and proposed developments on specific matters. The CIA method is described in Chapter 21: Cumulative Impacts.

4.2.2.1 Compliance assessment

The compliance assessment method was applied to specific matters with quantifiable impacts (e.g. emissions and discharges from Project infrastructure and activities). Mapping, modelling and data (publicly available and field verified) were used to assess compliance with performance criteria adopted from applicable legislation, statutes, guidelines or policies.

Compliance with the adopted performance criteria was initially assessed based on the application of reference design phase mitigation measures. Additional mitigation and management measures were then proposed for implementation in future phases of the Project. These additional mitigation and management measures were nominated to:

- Achieve compliance with the adopted performance criteria, if required
- Demonstrate ARTC's commitment to avoiding or minimising potential impacts, regardless of compliance with adopted performance criteria, as far as is reasonably practicable.

Following the identification of appropriate mitigation and management measures, the need for offsets to compensate for residual impacts was assessed.

4.2.2.2 Risk assessment

The risk assessment method was applied to specific matters that might be impacted by the Project where impacts could not be quantified. This includes unknown or unpredictable impacts. Potential impacts are assessed in terms of how likely they are to occur, and the consequences if they do occur.

Likelihood and consequence criteria, and the resulting risk matrix are set out in Table 4.2, Table 4.3 and Table 4.4. These criteria have been established to be consistent with the intent of *AS ISO 13000:2018 Risk Management—Guidelines* (Standards Australia, 2018b). Risk assessments have been documented in tabular form in the relevant EIS chapters.

TABLE 4.2 LIKELIHOOD CRITERIA

Likelihood	Description	Frequency of occurrence
Almost certain	Is expected to occur in most circumstances	Once per month
Likely	Will probably occur in most circumstances	Between one a month and once a year
Possible	Might occur at some time	Between once a year and once in five years
Unlikely	Could occur at some time	Between once in 5 years and once in 20 years
Rare	May occur in exceptional circumstances	Once in more than 20 years

TABLE 4.3 CONSEQUENCE CRITERIA

		Consequence				
Risk category		**Not significant**	**Minor**	**Moderate**	**Major**	**Extreme**
Safety	Impact to people	No medical treatment required	Lost-time injury or medical treatment required	Serious injury	Single fatality	Multiple, but localised, fatalities
Assets	Engineering impacts and satisfying objectives	Up to 6 hours of track closure	>6 hours to 24 hours of track closure	>24 to 48 hours of track closure	>48 hours to 5 days of track closure	>5 days of track closure
Financial	Total outturn cost impact	Up to 0.05% of program budget (i.e. up to $5m in $10b)	>0.05% to 0.5% of program budget (i.e.>$5m to $50m in $10 b)	>0.5% to 1.5% of program budget (i.e.>$50m to $150m in $10b)	>1.5% to 5% of program budget (i.e.>$150m to $500m in $10b)	>5% of program budget (i.e. > $500m in $10b)
		Up to 0.1% of Project budget (i.e. up to $100,000 (k) in $100m)	>0.1% to 0.5% of Project budget (e.g. >$100k to $500k in $100m)	>0.5% to 2.5% of Project budget (e.g. >$500k to $2.5m in $100m)	>2.5% to 10% of Project budget (e.g. >$2.5m to $10m in $100m)	>10% of Project budget (e.g. >$10m in $100m)
Environment	Environmental impact, heritage impact, flora and fauna, impact on archaeology and Indigenous cultural heritage, pollution and amenity (public)	Contained environmental damage—fully recoverable, no cost or ARTC action required	Isolated environmental damage—minimal ARTC remediation required	Localised/clustered environmental damage—requiring remediation	Considerable environmental damage—requiring remediation	Widespread long-term or permanent environmental damage—remediation required
Regulatory	Regulatory/legislative exposure, non-compliance and 'Licence to Operate'	Minimal or no regulatory involvement	Notice to produce information	Improvement notice or threatened action	Prohibition notice or fines	Prosecution of the company and/or its office holders
Reputation	Reputational exposure, customer dissatisfaction, stakeholder support, service, quality and reliability, public image and stakeholder attitudes	Isolated event able to be resolved (up to 7 days)	Management intervention required (>7 days to 3 months)	Tactical (business unit/divisional intervention required (>3 months to 18 months)	Strategic intervention required (>18 months to 3 years)	Corporate loss of shareholder and/or customer support—tangible business impact lasting > 3 years

		Consequence				
Risk category		**Not significant**	**Minor**	**Moderate**	**Major**	**Extreme**
Schedule	Time-based impacts	Influences schedule up to 1% of program-approved schedule period	Influences schedule >1% to 2.5% of program-approved schedule period	Influences schedule >2.5% to 5% of program-approved schedule period	Influences schedule >5% to 10% of program-approved schedule period	Influences schedule >10% of program-approved schedule period
		Influences schedule up to 2% of Project-approved schedule period	Influences schedule >2% to 5% of Project-approved schedule period	Influences schedule >5% to 10% of Project-approved schedule period	Influences schedule >10% to 20% of Project-approved schedule period	Influences schedule >20% of Project-approved schedule period

TABLE 4.4 RISK MATRIX

Likelihood/consequence	Not significant	Minor	Moderate	Major	Extreme
Almost certain	Medium	Medium	High	Very high	Very high
Likely	Low	Medium	High	Very high	Very high
Possible	Low	Low	Medium	High	High
Unlikely	Low	Low	Low	Medium	Medium
Rare	Low	Low	Low	Low	Medium

4.2.2.3 Significance assessment

The significance assessment method was applied to specific matters that will be impacted by the Project, and those impacts cannot be quantified. The significance of a potential impact is assessed in terms of the sensitivity or vulnerability of the environmental aspect, and the magnitude of the potential impact. The sensitivity criteria, magnitude criteria, significance matrix and significance classifications applicable to this method are presented in Table 4.5, Table 4.6, Table 4.7 and Table 4.8.

TABLE 4.5 SENSITIVITY CRITERIA

Sensitivity	Description
Major	▸ The environmental value is listed on a statutory State, national or international register as being of conservation significance ▸ The environmental value is entirely intact and wholly retains its intrinsic value ▸ The environmental value is unique to the environment in which it occurs. It is isolated to the affected system/area, which is poorly represented in the region, State, country or the world. ▸ It has not been exposed to threatening processes, or they have not had a noticeable impact on the integrity of the environmental value ▸ Project activities would have an adverse effect on the value.
High	▸ The environmental value is listed on a statutory State, national or international register as being of conservation significance ▸ The environmental value is intact and retains its intrinsic value ▸ The environmental value is unique to the environment in which it occurs. It is isolated to the affected system/area, which is poorly represented in the region. ▸ It has not been exposed to threatening processes, or they have not had a noticeable impact on the integrity of the environmental value ▸ Project activities would have an adverse effect on the value.
Moderate	▸ The environmental value is recorded as being important at a regional level, and may have been nominated for listing on recognised or statutory registers ▸ The environmental value is in a moderate to good condition despite it being exposed to threatening processes. It retains many of its intrinsic characteristics and structural elements. ▸ It is relatively well represented in the systems/areas in which it occurs but its abundance and distribution are exposed to threatening processes ▸ Threatening processes have reduced its resilience to change. Consequently, changes resulting from Project activities may lead to degradation of the prescribed value. ▸ Replacement of unavoidable losses is possible due to its abundance and distribution.
Low	▸ The environmental value is not listed on any statutory register. It might be recognised locally by relevant suitably qualified experts or organisations (e.g. historical societies) ▸ The environmental value is in a poor to moderate condition as a result of threatening processes, which have degraded its intrinsic value ▸ It is not unique or rare and numerous representative examples exist throughout the system/area ▸ It is abundant and widely distributed throughout the host systems/areas ▸ There is no detectable response to change or change does not result in further degradation of the environmental value ▸ The abundance and wide distribution of the environmental value ensures replacement of unavoidable losses is achieved.
Negligible	▸ The environmental value is not listed on any statutory register and it is not recognised locally by relevant suitable qualified experts or organisations ▸ It is not unique or rare and numerous representative examples exist throughout the system/area ▸ There is no detectable response to change or change does not result in further degradation of the environmental value.

TABLE 4.6 MAGNITUDE CRITERIA

Magnitude	Description
Major	An impact that is widespread, permanent and results in substantial irreversible change to the environmental value. Avoidance through appropriate design responses or the implementation of environmental management controls are required to address the impact.
High	An impact that is widespread, long lasting and results in substantial and possibly irreversible change to the environmental value. Avoidance through appropriate design responses or the implementation of site-specific environmental management controls are required to address the impact.
Moderate	An impact that extends beyond the area of disturbance to the surrounding area but is contained within the region where the Project is being developed. The impacts are short term and result in changes that can be ameliorated with specific environmental management controls.
Low	A localised impact that is temporary or short term and either unlikely to be detectable or could be effectively mitigated through standard environmental management controls.
Negligible	An extremely localised impact that is barely discernible and is effectively mitigated through standard environmental management controls.

TABLE 4.7 SIGNIFICANCE MATRIX

Magnitude/sensitivity	Major	High	Moderate	Low	Negligible
Major	Major	Major	High	Moderate	Low
High	Major	Major	High	Moderate	Low
Moderate	High	High	Moderate	Low	Low
Low	Moderate	Moderate	Low	Negligible	Negligible
Negligible	Moderate	Low	Low	Negligible	Negligible

TABLE 4.8 SIGNIFICANCE CLASSIFICATIONS

Magnitude	Description
Major	Arises when an impact will potentially cause irreversible or widespread harm to an environmental value that is irreplaceable because of its uniqueness or rarity. Avoidance through appropriate design responses is the only effective mitigation.
High	Occurs when the proposed activities are likely to exacerbate threatening processes affecting the intrinsic characteristics and structural elements of the environmental value. While replacement of unavoidable losses is possible, avoidance through appropriate design responses is preferred to preserve its intactness or conservation status.
Moderate	Results in degradation of the environmental value due to the scale of the impact or its susceptibility to further change even though it may be reasonably resilient to change. The abundance of the environmental value ensures it is adequately represented in the region, and that replacement, if required, is achievable.
Low	Occurs where an environmental value is of local importance and temporary or transient changes will not adversely affect its viability provided standard environmental management controls are implemented.
Negligible	Does not result in any noticeable change and the proposed activities will have negligible effect on environmental values. This typically occurs where the activities are located in already disturbed areas.

4.2.2.4 Cumulative impact assessment

Approach

Chapter 7 to Chapter 20 of this EIS each include a CIA for the specific matter of the Project they are assessing. These assessments have then been collated into Chapter 21: Cumulative Impacts.

The approach used to identify and assess potential cumulative impacts of this Project is summarised as follows:

- A review of the potential impacts identified within the EIS assessments. The status of the natural, built and social environment at the time of the ToR being issued is considered to be the baseline.
- A register of assessable projects has been collated with timelines to demonstrate the temporal relationship between projects. This included:
  - Only 'State significant' or 'strategic' projects (i.e. coordinated projects under the SDPWO Act) that are in the public domain as being planned, constructed or operated at the time of the ToR have been considered
  - Additional projects have been considered where they have been deemed to be of local significance, as occurring through consultation with community groups and stakeholders. These included:
    - Projects listed in Goondiwindi Regional Council (GRC) and Toowoomba Regional Council (TRC) development application databases
    - Development within Priority Development Areas and State Development Areas
    - Economic Development Queensland (EDQ) development projects
    - Community Infrastructure Designation projects
    - Projects within the public register of environmental authorities
    - Department of Transport and Main Roads (DTMR) infrastructure projects
    - Private infrastructure facilities
    - Development in accordance with Regional Planning Interests
  - The Inland Rail projects immediately adjacent to the Project, being the North Star to NSW/Queensland Border and Gowrie to Helidon projects.
- Identification and mapping of the assessable projects and the area of influence of the aspect being considered. Current operational projects and commercial or agricultural operations that are in the area of influence around the Project are accounted for in the corresponding technical baseline studies (e.g. air, noise, social, economic, etc.).
- Where there is a potential overlap in impacts (either spatially or temporally), a CIA has been undertaken to determine the nature of the cumulative impact. This includes:
  - Where possible, the assessment method has been quantitative in nature however qualitative assessment has also been undertaken for some specific matters
  - Where quantitative assessment has been possible, the significance of impact has been assessed in comparison to the same criteria or guidelines as adopted by the relevant specific matter assessments
  - Where impacts are expressed qualitatively, the probability, duration, and magnitude/intensity of the impacts have been considered as well as the sensitivity and value of the receiving environmental conditions.
- An assessment matrix method (further detailed in Table 4.10 and Table 4.11) has been used to determine the significance of cumulative impacts with respect to beneficial or detrimental effects.
- Where cumulative impacts are deemed to be of 'medium' or 'high' significance, additional mitigation measures are proposed, beyond those already proposed by the relevant specific matter assessments.

Discipline approach to cumulative impact assessment

A summary of the assessment approach adopted by each discipline in assessing cumulative impacts for the Project is presented in Table 4.9.

TABLE 4.9 DISCIPLINE APPROACH TO CUMULATIVE IMPACT ASSESSMENT

Discipline	Assessment approach	Assessment matrix
Land use and tenure	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Land resources	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Landscape and visual amenity	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Flora and fauna	Quantitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Air quality (construction only)[1]	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Surface water	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Hydrology	Quantitative	Nil—included in assessment of Project impacts
Noise and vibration	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Groundwater	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Indigenous heritage	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Non-Indigenous heritage	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Traffic, transport and access	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Hazard and risk	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Waste management	Qualitative	Inland Rail assessment matrix (refer Table 4.10 and Table 4.11)
Social	Qualitative	NSW Department of Planning and Environment *Social Impact Assessment Guideline* for State significant mining, petroleum production and extractive industry development and SIA Scoping Tool (DP&E, 2017) (refer Table 4.12 and Table 4.13)
Economics	Qualitative	Nil—assessed via qualitative discussion due to the potential fluidity of future economic scenarios

Table note:
1. Operation-phase air-quality cumulative impacts included in assessment of Project impacts (refer to Chapter 11: Air Quality)

The following sections provide a description of the assessment matrices, as referenced in Table 4.9, that have been adopted by the various disciplines when undertaking the CIA for this EIS.

Inland Rail assessment matrix

Following the identification of each potential cumulative impact, a relevance factor score of low, medium or high has been determined in consideration of the impacts, in accordance with the assessment matrix shown in Table 4.10.

The significance of the impact has been determined by using professional judgement applied by discipline-specific teams to select the most appropriate relevance factor for each aspect in Table 4.10. The sum of the relevance factors determines the impact significance and consequence, which are summarised in Table 4.11. For example, if an environmental value such as groundwater is considered to have a probability of impact of 2, duration of impact of 3, magnitude/intensity of impact of 1 and a sensitivity of receiving environment of 1, the significance of impact would be Medium (2+3+1+1 = 7).

TABLE 4.10 ASSESSMENT MATRIX

Aspect	Relevance factor		
	Low	Medium	High
Probability of impact	1	2	3
Duration of impact	1	2	3
Magnitude/intensity of impact	1	2	3
Sensitivity of receiving environment	1	2	3

TABLE 4.11 IMPACT SIGNIFICANCE

Impact significance	Sum of relevance factors	Consequence
Low	1–6	Negative impacts need to be managed by standard environmental management practices. Monitoring to be part of general Project monitoring program.
Medium	7–9	Mitigation measures likely to be necessary and specific management practices to be applied. Targeted monitoring program required, where appropriate.
High	10–12	Alternative actions should be considered and/or mitigation measures applied to demonstrate improvement. Targeted monitoring program required, where appropriate.

Full details of the CIA, including projects considered as part of the assessment, are presented in Chapter 21: Cumulative Impacts.

NSW Social Impact Guidelines assessment matrix

The Queensland *Social Impact Assessment Guideline* (Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP), 2018a) does not include a significance or risk assessment matrix, so the social risk matrix from the NSW *Social Impact Assessment Guideline for State significant mining, petroleum production and extractive industry development* (DP&E, 2017) as shown in Table 4.12 has been applied in the assessment of cumulative social impacts.

The likelihood of social impacts and opportunities occurring has been assessed with reference to the social baseline (e.g. findings regarding community vulnerabilities), stakeholder inputs and EIS technical findings.

'Consequence', as defined in Table 4.13, has been assessed based on how the social impact may be experienced by the relevant stakeholders, considering the:

- Duration of impacts and benefits, being either short term (during construction) or long term (during operation)
- Sensitivity, including specific vulnerabilities and resilience to impacts
- Severity of potential effects on stakeholders and magnitude of potential benefits.

TABLE 4.12 RISK ASSESSMENT RATINGS, NSW DP&E SOCIAL IMPACT ASSESSMENT GUIDELINES

Likelihood		Consequence levels				
		1 Minimal	2 Minor	3 Moderate	4 Major	5 Catastrophic
A	Almost certain	A1 (High)	A2 (High)	A3 (Extreme)	A4 (Extreme)	A5 (Extreme)
B	Likely	B1 (Moderate)	B2 (High)	B3 (High)	B4 (Extreme)	B5 (Extreme)
C	Possible	C1 (Low)	C2 (Moderate)	C3 (High)	C4 (Extreme)	C5 (Extreme)
D	Unlikely	D1 (Low)	D2 (Low)	D3 (Moderate)	D4 (High)	D5 (High)
E	Rare	E1 (Low)	E2 (Low)	E3 (Moderate)	E4 (High)	E5 (High)

Source: DP&E 2017.

TABLE 4.13 CONSEQUENCE DEFINITIONS

Rating	Impact (-)	Benefit (+)
Minimal	Local, small-scale, easily reversible change on social characteristics, or the values of the community of interest or communities can easily adapt or cope with change	Local small-scale opportunities emanating from the Project that the community can readily pursue and capitalise on
Minor	Short-term recoverable changes to social characteristics and values of the communities of interest, or the community has substantial capacity to adapt and cope with change	Short-term opportunities emanating from the Project
Moderate	Medium-term recoverable changes to social characteristics and values of the communities of interest, or the community has some capacity to adapt and cope with change	Medium-term opportunities emanating from the Project
Major	Long-term recoverable changes to social characteristics and values of the communities of interest, or the community has limited capacity to adapt and cope with change	Long-term opportunities emanating from the Project
Catastrophic	Irreversible changes to social characteristics and values of the communities of interest, or the community has no capacity to adapt and cope with change	N/A

Source: Adapted from *Department of State Development, Infrastructure and Planning (Qld) Social impact assessment guideline July 2013* (DSDIP, 2013a).

4.2.3 Mitigation and management measures

Mitigation and management measures are designed to protect specific matters and sensitive receptors, achieve established performance objectives, and enhance positive impacts as a result of the Project. Initial and additional mitigation and management measures have been incorporated into all three assessment methods, as summarised in Figure 4.2.

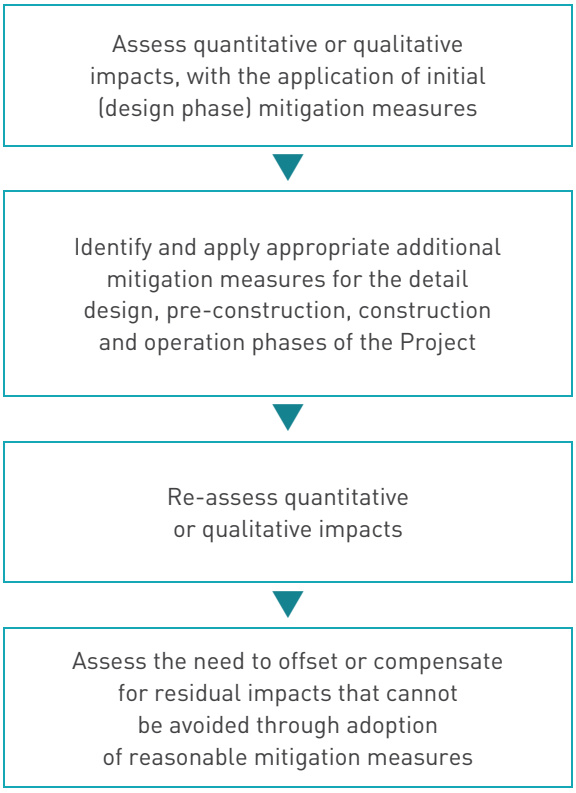

FIGURE 4.2 PROCESS FOR THE ASSESSMENT OF IMPACTS AND THE STAGED APPLICATION OF MITIGATION MEASURES

Initial mitigation measures are the controls incorporated into the planning and reference design phases of the Project to avoid or minimise potential impacts.

Additional mitigation and management measures are proposed to further avoid or minimise impacts through future Project phases, being:

- Detail design
- Pre-construction
- Construction
- Operation.

In some instances, significant residual impacts are anticipated after the application of additional mitigation and management measures. In these cases, the need for offsets to compensate for significant adverse residual impacts has been assessed.

Mitigation and management measures (initial and additional) have been documented in tabular form in the relevant EIS chapters.

4.2.4 Outline environmental management plan

Chapter 22: Outline Environmental Management Plan (EMP) identifies the specific matters potentially affected by the Project and establishes a framework for continuous management, monitoring, reporting and training. The Outline EMP provides a consolidation of mitigation and management across all aspects assessed in the EIS.

The Outline EMP has been prepared to establish the minimum requirements of environmental management plans and sub-plans for future phases of the Project.

4.3 Community and stakeholder consultation

This Section provides an overview of community and stakeholder consultation undertaken for the Project. A detailed consultation report outlining stakeholders, consultation strategies, program and outcomes is provided in Appendix C: Stakeholder Engagement Report.

A project of this size and significance requires a far-reaching communication and stakeholder engagement approach. The planning phase provides numerous opportunities for involvement at many levels and requires inputs from a variety of key stakeholders and community members to understand constraints, values and impacts.

The overarching purpose of the community and stakeholder engagement program is to:

- Raise awareness about the Project, including the need for the Project, its benefits and the process undertaken to develop the reference design and EIS
- Verify the appropriateness of assessment methodologies adopted for the EIS (refer Section 4.2.2)
- Provide stakeholders with opportunities to inform investigations being undertaken for the reference design and EIS about local values and issues
- Inform government agencies, stakeholders and the community about the progress of the Project and to seek their input into the development of the reference design and EIS
- Understand stakeholder and community issues and where possible address any issues raised.

The assessment methodologies adopted for the purpose of this EIS have been presented to, and discussed with, relevant regulatory agencies. A summary of these consultations is presented in Table 4.14.

TABLE 4.14 SUMMARY OF ASSESSMENT METHODOLOGY CONSULTATIONS WITH REGULATORY AGENCIES

Subject	Government agencies	Location and date
Approach to the assessment of terrestrial and aquatic ecology	DES	Toowoomba, 30 February 2019
Approach to the traffic impact assessment	DTMR	Toowoomba, 23 May 2019
Assessment of matter of national environmental significance	Department of Agriculture, Water and Environment (DAWE)	Canberra, 1 July 2019

Subject	Government agencies	Location and date
Approach to the assessment of: ▸ Terrestrial and aquatic ecology ▸ Surface water ▸ Groundwater ▸ Land resources ▸ Landscape and visual amenity ▸ Air quality ▸ Noise and vibration ▸ Indigenous and non-Indigenous cultural heritage ▸ Land use and tenure ▸ Waste management ▸ Cumulative impact	Department of Natural Resources, Mines and Energy (DNRME) DTMR Department of Agriculture and Fisheries (DAF) Department of State Development, Tourism and Innovation (DSDTI) Department of Education and Training (DET)	Toowoomba, 15–16 August 2019
Approach to the assessment of: ▸ Terrestrial and aquatic ecology ▸ Surface water ▸ Groundwater ▸ Land resources ▸ Landscape and visual amenity ▸ Air quality ▸ Indigenous and non-Indigenous cultural heritage ▸ Land use and tenure ▸ Waste management ▸ Cumulative impact	DNRME DTMR DAF DSDTI DET	Brisbane, 9 October 2019
Assessment of matter of national environmental significance	DAWE	Teleconference, 18 March 2020

Stakeholder feedback has informed the preparation of the EIS including:

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

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

- Stakeholder groups with specific interests in the Project, such as Traditional Owners and industry associations
- Queensland Government agencies, GRC and TRC, including those with either a regulatory or an advisory role in the design, construction or operation of the Project.

Feedback and community enquiry channels established for the Project include:

- Freecall 1800 number (1800 732 761)
- Project email (inlandrailenquiries@artc.com.au)
- Postal address:
  - Toowoomba:
    Australian Rail Track Corporation
    Inland Rail
    65–67 Neil Street,
    PO Box 3093,
    Toowoomba QLD 4350
  - Brisbane:
    Australian Rail Track Corporation
    Inland Rail
    GPO Box 2462,
    Brisbane QLD 40010