APPENDIX

INLAND RAIL

F

Proponent commitments

GOWRIE TO HELIDON ENVIRONMENTAL IMPACT STATEMENT

IR_1536

ARTC

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

Contents

Tables

F1. Proponent commitments

This appendix sets out the Proponent commitments for the design, construction, commissioning, and operation of the Gowrie to Helidon Project (the Project), as per the Terms of Reference (ToR) in Table F1.1.

TABLE F1.1 RELEVANT EIS TERMS OF REFERENCE

EIS Terms of Reference requirements	
7.4	Include a consolidated description of all the proponent's commitments to implement management measures (including monitoring programs).

The Proponent commitments described in this appendix are categorised as:

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

F2. Project-wide commitments

The commitments listed in Table F2.1 will apply across the Project, or to multiple delivery phases.

TABLE F2.1 PROJECT WIDE COMMITMENTS

Matter	ID	Commitments
General	P1	The Project design will align with the Gowrie to Grandchester future state transport corridor where applicable and will not preclude the use of the future state transport corridor for a high-speed passenger service at a future date.
	P2	Design allows for interoperability between the Australian Rail Track Corporation (ARTC) and Queensland Rail (QR) networks, including ensuring the existing rail traffic can operate on the new alignment with access into and out of Toowoomba. ARTC will continue to engage with Queensland Rail (QR) and the Department of Transport and Main Roads (DTMR) about potential connections and interfaces between the two networks, along with identifying relevant operational considerations.
Acquisition	P3	The Proponent will continue to engage with the State of Queensland to protect and acquire the rail corridor and land required to facilitate the Project works and operations, including maintenance.
	P4	Where practicable and feasible, the Project will use existing government-owned land, and minimise acquisition of private land.
	P5	The Proponent will not seek to register new vacant residential lots as part of the Project.
Environmental offsets	P6	Environmental offsets will be provided where Project works have a quantified significant residual impact on Matters of National Environmental Significance (MNES) and/or Matters of State Environmental Significance (MSES).
	P7	A Project-specific Environmental Offset Proposal will be developed for ecological receptors prior to commencement of Project works. The Environmental Offset Proposal will be consistent with Commonwealth and Queensland Government environmental offset regulation, policy and guidelines and will detail those offset matters at a Commonwealth and state level (as a result of quantified significant residual impacts), upper disturbance limits, outlining the preferred offset approach or mechanism including legal instruments, identifying offset site availability and timing (milestones) for offset delivery.

Matter	ID	Commitments
Flora and fauna	P8	Ecological surveys are being undertaken and will continue to be undertaken within the Project disturbance footprint the with the aim of: ▸ Verifying previous surveys and assessments (noting that some of the surveys are no longer considered valid) ▸ Address changes to the Project alignment subsequent to the previous surveys ▸ Verify and delineate vegetation mapping, including threatened ecological communities and regional ecosystems ▸ Confirm habitat extents for threatened species and where applicable consideration significance species ▸ Further describe the flora and faunal assemblages inhabiting the area ▸ Describe the condition and identify threats to the existing vegetation communities and habitats ▸ Refine potential offsets ▸ Inform siting of infrastructure and disturbance limits. The additional surveys are being undertaken in accordance with relevant Commonwealth and State surveys guidelines. The Flora and fauna surveys will support secondary approvals and establish baseline conditions against which relevant outcomes of the Reinstatement and Rehabilitation Plan and monitoring activities can be compared.
	P9	The siting of ancillary areas (e.g. access tracks and laydown areas) will, where practical, avoid the clearing of sensitive environments including known threatened species populations and habitat (especially Collared Delma (*Delma torquata*) and Koala (*Phascolarctos cinereus*), riparian and wetland habitats, Endangered and Of Concern regional ecosystems.
	P10	Restrict clearing of vegetation to the minimum level required to enable the safe construction, operation and maintenance of the railway line and supporting infrastructure.
	P11	A Fauna Crossing Strategy will be developed to guide the design, construction and monitoring of fauna crossing infrastructure. This includes the retention of vegetation under the viaducts and fencing within these sections, along with complementing the design with existing fauna sensitive design on the Toowoomba Bypass.
Project approvals	P12	Obtain all required planning and environmental approvals and permits for the construction and operation of the Project and comply with associated conditions.
	P13	Undertake ongoing consultation with relevant regulatory agencies throughout detailed design, construction and operation.
Flooding	P14	ARTC will continue to work with: ▸ Landholders concerned with hydrology and flooding throughout the detailed design, construction and operational phases of the Project ▸ Directly impacted landowners landholders affected by the alignment throughout the detailed design, construction and operational phases of the Project ▸ Local councils, state departments and local flood specialists throughout the detailed design, construction and operational phases of the Project. Acceptable localised impacts will ultimately be determined during detailed design on a case-by-case basis, in consultation with stakeholders and landholders using the flood impact objectives as a guide (refer to A.1.1 and A1.2 in Annexure A).
Groundwater	P15	ARTC plan to rectify impairments (e.g. water level decline impairing the bore's ability to provide a reasonable quantity or quality of water for the bore's authorised use or purpose) resulting from the construction and/or operation of the Project on a case by case
	P16	Any groundwater supply and /or monitoring bores that are decommissioned will be undertaken in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee, 2020)
Cultural Heritage	P17	The Project will be delivered in accordance with the approved Cultural Heritage Management Plans with the Western Wakka Wakka People and Yuggera Ugarapul People (CLH017009).
	P18	Archaeological investigations will be undertaken by personnel qualified and experienced in Aboriginal heritage, in consultation with the registered Aboriginal stakeholders, in accordance with the approved Cultural Heritage Management Plans (CLH017009).

Matter	ID	Commitments
Operational noise and vibration	P19	The operational railway noise and vibration levels will be verified through a program of noise and vibration monitoring once the Project is operational. The monitoring program would be undertaken within the initial six months post-commencement of railway operations (Inland Rail freight train movements) on the Project.
Economic	P20	The Project will work with tourism associations and local councils to develop a strategy to help mitigate both property-specific and generalised impacts on tourism values.
Environmental Monitor	P21	The Proponent will engage an Environmental Monitor for the duration of Project works.
	P22	The Environmental Monitor will be: ▸ An independent, appropriately skilled and experienced entity ▸ Same entity engaged for the Project as to the Calvert to Kagaru project and the Helidon to Calvert project (unless agreed otherwise) ▸ Be a separate entity to the Community Relations Monitor.
	P23	The Proponent will ensure that the Environmental Monitor has reasonable site access (subject to safety and approved land access) and access to all relevant information (subject to confidentiality and intellectual property) required to perform its functions, including, without limitation: ▸ All approvals ▸ Relevant plans and procedures ▸ The Construction Environmental Management Plan (CEMP) (and relevant sub-plans) ▸ Results of relevant monitoring required under the imposed conditions, including monitoring required by the CEMP ▸ Relevant information relating to complaints, including access to the complaints register.
	P24	The Proponent will engage the Environmental Monitor to: ▸ Monitor and independently assure compliance with the imposed conditions during Project works ▸ Monitor and independently assure compliance with the CEMP ▸ Review the Monthly Reports and the Annual Reports and provide advice to the Coordinator-General and the Proponent on the contents and adequacy of those reports ▸ Review the results of monitoring, which may be verified by the Environmental Monitor, including by independent monitoring (as agreed to by the Proponent) ▸ Provide advice to the Proponent about compliance with the Imposed Conditions, including by providing the results of independent monitoring where required ▸ Provide advice to the Proponent about issues raised in complaints and the response to complaints, incorporating advice from the Community Relations Monitor where appropriate ▸ Endorse the CEMP.
Community Relations Monitor	P25	A Community Relations Monitor will be engaged for the duration of Project works.
	P26	The Community Relations Monitor will be: ▸ An independent, appropriately skilled and experienced entity ▸ Same entity engaged for the Calvert to Kagaru project and the Helidon to Calvert project (unless agreed otherwise) ▸ Be a separate entity to the Environmental Monitor.
	P27	The Proponent will engage the Community Relations Monitor to: ▸ Review and provide advice to the Environmental Monitor on the Community and Stakeholder Engagement Plan ▸ Review the Monthly Report with respect to complaints and provide independent and timely advice to the Coordinator-General and the Proponent on the contents and adequacy of those reports ▸ Provide advice to the Environmental Monitor in relation to complaints, community engagement and consultation on management measures ▸ Be available to members of the community in accordance with the Community and Stakeholder Engagement Plan.

Matter	ID	Commitments
Social Impact Management Plan	P28	The following action plans within the Social Impact Management Plan (SIMP) will be implemented during design and Project works: ▸ Community and Stakeholder Engagement Action Plan ▸ Workforce Management Action Plan ▸ Housing and Accommodation Action Plan ▸ Health and Community Wellbeing Action Plan ▸ Local Business and Industry Action Plan. The SIMP action plan commitments will be implemented and monitored consistent with the SIMP monitoring framework during the relevant delivery phase.
	P29	Review of the SIMP will be undertaken by an independent third party at the end of year 1 of Project works, prior to commissioning the Project and during year 3 of operation.
Community and stakeholder engagement	P30	The Community and Stakeholder Engagement Plan will be developed to guide and monitor engagement activities, in accordance with the Community and Stakeholder Engagement Action Plan within the SIMP. The Community and Stakeholder Engagement Plan will: ▸ Establish and maintain engagement mechanisms that build relationships between the Proponent and its stakeholders, and enable adaptive management of impacts on amenity, connectivity and community values during construction ▸ Support adaptive management of impacts on amenity, connectivity and values during construction ▸ Support mitigation of impacts on amenity, community cohesion and local character through stakeholder engagement and in partnership with community and government stakeholders ▸ Enable implementation of the measures identified in the SIMP to address: ▸ Cultural landscapes, land acquisition, amenity and lifestyle, disadvantage and community cohesion, connectivity and pedestrian safety during detailed design ▸ Amenity and lifestyle, connectivity and sense of place during pre-construction ▸ Residential amenity, cultural landscapes, connectivity and pedestrian traffic safety, sense of place/local character during construction.
Sustainability	P31	A Sustainability Management Plan will be prepared and implemented for the Project.
	P32	The future sustainability opportunities identified in Chapter 7: Sustainability will be investigated and implemented as appropriate. This will enable the key deliverables identified in the Inland Rail Sustainability Strategy to be achieved.
Cumulative impacts	P33	The proposed delivery approach for the Gowrie to Helidon, Helidon to Calvert and Calvert to Kagaru projects and where applicable the other Inland Rail projects provides opportunities to coordinate the management of cumulative impacts generated as a result of construction traffic movements, workforce requirements (including accommodation requirements), spoil management and reuse, and strategic identification and provision of environmental offsets (for ecological receptors). These aspects will be considered collectively across these three projects in future delivery stages.
	P34	An Accommodation Management Plan (AMP) will be prepared by the delivery organisation and submitted to the Proponent, subject to cumulative labour force demands resulting from the construction of the Gowrie to Helidon, Helidon to Calvert and Calvert to Kagaru Projects being constructed in the region.
	P35	To support consistency across project delivery: ▸ Environmental Monitor will be the same entity engaged for the Calvert to Kagaru Project and Helidon to Calvert Project (unless otherwise agreed) ▸ Community Relations Monitor will be the same entity engaged for the Calvert to Kagaru Project and Helidon to Calvert Project (unless otherwise agreed).

F3. Detailed design phase

The commitments described in Table F3.1 will apply to the design processes undertaken during the detailed design phase.

The commitments described in Table F3.1Table F3. relate to investigations, surveys, development of the Outline Construction Environmental Management Plan (Outline CEMP) and other plans identified for preparation during the detailed design phase.

TABLE F3.1 COMMITMENTS—DETAILED DESIGN ACTIONS

Matter	ID	Commitment
General	D1	The Project will be designed to meet the environmental outcomes identified in the Draft Outline Environmental Management Plan (Draft Outline EMP), through achieving the performance criteria, by implementation of the proposed design mitigation and management measures, or alternate mitigation measures that achieve comparable outcomes.
	D2	The implementation of proposed or alternate mitigation measures relevant to design will be documented to demonstrate the Project design's compliance with the relevant environmental outcomes in the Draft Outline EMP.
Land use and tenure	D4	Ongoing consultation with Department of Resources and the relevant landholder and, where applicable, the quarry operator of Key Resource Area Number 8 to verify, required approvals, acquisition processes including compensation and appropriate mitigations measures.
	D5	Ongoing consultation with Withcott Seedlings regarding the design within the vicinity of the dams
	D6	Continue to work with APA to confirm requirements and timing for treatment of clashes and asset protection measures for the Roma Brisbane Gas Pipeline
	D7	Continue to inform the landholders above the tunnel on changes to the design and construction methodology and potential impacts from these changes, including the volumetric resumption processes to the land
	D8	Continue to work with services and utility providers to confirm requirements for treatment of clashes and asset protection measures and, where required, the timing of any relocation works (independent of, and separate to, the Environmental Impact Statement (EIS) (i.e. works that are not Project works).
	D9	Undertake an assessment of native title in accordance with the *Native Title Act 1993* (Cth) and Native Title Work Procedures to identify land where native interests and rights still exist. Engage with the registered Native Title parties and relevant government agencies to obtain the relevant authorisations under the *Native Title Act 1993*, including whether native rights and interest above the tunnel will be retained.
	D10	ARTC will work with individual landholders and businesses to accommodate the reasonable continuation of current property management activities and legal access to and across properties
Land resources	D11	Soil conditions across the Project disturbance footprint will be appropriately characterised at a suitable scale by a suitably qualified soil practitioner through additional geotechnical surveys during the detailed design phase of the Project, to inform design of structures, embankments, erosion control, soil treatment, soil reuse, as well as rehabilitation works. Subject to land access, the soil sampling will be of an intensity to enable mapping at a 1:10,000 scale.
	D12	Soil investigations will be conducted under the supervision of a suitably qualified soil practitioner, in accordance with the *Guidelines for Surveying Soil and Land Resources* (McKenzie et al., 2008), the *Australian Soil and Land Survey Field Handbook* (National Committee on Soil and Terrain, 2009) and the *Guidelines for Soil Survey along Linear Features* (Soil Science Australia, 2015).
	D13	This includes identification of potential/actual acid sulfate soils (ASS), acid rock, reactive soils, erosive soils, dispersive soils, salinity, acidic soils, alkaline soils, wetness, depth and liberation of contaminants.

Matter	ID	Commitment
Land resources [continued]	D14	Additional geotechnical investigations along the tunnel are planned to confirm the characteristics of material to assist in determining the following: ▸ Amount of material of excavated material in particular basalt as a stabilised structural fill and/or capping layers in accordance with ARTC's Earthworks Material Specification ▸ The amount and characteristics (e.g. contaminated or structurally unsuitable) of excavated material that may not meet the specifications for reuse ▸ The viability of the reuse of excavated material as high-quality general fill or structural fill to minimise the import of rock amour ▸ The viability of the reuse of dispersive and sodic soils as generally fill in embankments and/or formations ▸ The viability of the material within the Project disturbance footprint for reuse as per the ARTC Earthworks Material Specification and the Earthworks and Material Management Framework, including extent of material that may need treatment (e.g. soil sampling and where applicable additional contaminated land surveys in accordance with relevant guidelines and procedures) ▸ Risk of environmental harm (e.g. contamination, acid rock) from the stockpile at the western poral and level of treatment (If any) ▸ Spoil characteristics will be appropriately monitored as excavation commence.
	D15	▸ Review cut-and-fill balance for the Project based on the detail design, to minimise the external sourcing of fill. Based on reviewed cut-and-fill balance, determine the number of borrow pits and volumes from each that is required to supply the confirmed material demand for the Project.
	D16	▸ Review and update the draft Spoil Management Strategy for the Project to reflect anticipated cut-and-fill quantities at the end of the detail design process.
Landscape and visual amenity	D17	The design of rail infrastructure and associated landscape treatments (including slope and stabilisation measures) will respond to the natural and rural landscape, topography and landform, to the greatest extent possible, while complying with engineering design standards and legislative requirements.
	D18	The Project landscape design will develop appropriate treatments, landscaping and stabilisation at: ▸ The viaducts and at waterway crossings ▸ Key view-points identified in the EIS ▸ Embankments ▸ Cuttings and tunnel approaches ▸ Ecologically sensitive areas identified in the EIS.
Flora and fauna	D19	ARTC will also finalise the location and design of fauna movement structures across the Project alignment, targeting key locations (for example, in the Toowoomba Range). ARTC will work with the relevant stakeholders including DTMR, local councils, DES and where applicable local environmental groups to finalise the location and design of any crossing structures. This will be especially important in areas of future development or complementary to any ecological corridor strategies within the MNES study area, including those associated with the *South East Queensland Koala Conservation Strategy (2020–2025)* (Department of Environment and Science, 2020).
	D20	Restrict clearing of vegetation to the minimum level required to enable the safe construction, operation and maintenance of the railway line and supporting infrastructure.
Surface water	D21	Project works will be designed to minimise the use of water resources and maximise the opportunities for re-use of suitable water captured from construction sites.
	D22	In consultation with the Department of Environment and Science and the Department of Regional Development, Manufacturing and Water (DRDMW) develop site-specific water quality objectives for the discharge of water into Lockyer Creek catchment and, where applicable Gowrie Creek. Confirm what level of treatment is required for groundwater inflow during construction and operations and whether the water can be discharged into the surrounding environment.
	D23	Undertake an on-ground assessment of unmapped waterways to confirm the features status under the *Fisheries Act 1994* (Qld), including where applicable the colour coding relative to fish passage. This will inform temporary and permanent work activities and approval requirements

Matter	ID	Commitment
Surface water [continued]	D24	Undertake an on-ground assessment of unmapped watercourse to confirm the features status under the *Water Act 2000* (Qld). This will inform temporary and permanent work activities and approval requirements.
Flooding	D25	The Project design will continue to be refined in response to hydraulic modelling outcomes, and respond to the Project hydraulic design criteria in Table F5.1. When finalised, positions of infrastructure elements (e.g. abutments/piers) are confirmed and detailed soil studies are complete, geomorphological assessment of identified risk locations, and appropriate design treatments will be undertaken.
	D26	Relevant outcomes from the Independent International Flood Panel Report and from further consultation with stakeholders including landowners, QR, TRC, LVRC and Queensland Government departments will inform and refine the Project design.
	D27	The impact of the Project on the existing flood regime will be compared against the flood impact objectives in Table A1.2. Acceptable localised impacts with respect to flood sensitive receptors and land uses will ultimately be determined on a case-by-case basis with interaction with stakeholders/landholders through the community engagement process using these objectives as guidance.
Groundwater	D28	ARTC will continue to consult with DRDMW about groundwater resources relevant to the Project, including the water authorisation required under the existing water plans as related to the proposed Project activities, groundwater modelling and recommended mitigation and management measures. DRDMW has noted the complexities of the groundwater resources in the area and the overarching legislation, and further consultation is required to confirm the approval process. The Project will comply with all legislative requirements under the *Water Act 2000* (Qld) and associated water plans, without adversely impacting existing water users and groundwater resources.
	D29	Investigate solutions to reduce the potential volume of groundwater inflow during construction and operations of the Toowoomba Range Tunnel, with Project design considering (where appropriate and applicable) the following: ▸ Probe drilling ahead of the tunnel face ▸ Identification of high permeability features ▸ Installation of grout curtains ▸ Use of gaskets in areas of high inflow to minimise seepage to the tunnel ▸ Tanking of the western portal below the average groundwater table.
	D30	Outcomes of additional hydrogeological investigation and groundwater monitoring activities will inform and refine the Project design with a focus on cuttings and the tunnel.
	D31	Ground truthing of registered and unregistered groundwater bores will be conducted during the detailed design phase of the Project.
	D32	Undertake a landholder bore survey to identify the location and source aquifer of licensed groundwater extraction in areas potentially impacted by the Project (e.g. near cuttings and bridges).
	D33	The groundwater outcomes will be reassessed and, where applicable, the groundwater model refined, once the construction methodology and tunnel design is confirmed.
	D34	Where the productivity of an established bore is identified as being impacted by Project activities, potential 'make good' measures will be developed in consultation with the potentially affected landowner.
	D35	Where a groundwater bore is expected to be decommissioned or have access to it impaired as a result of the Project, 'make good' measures will be agreed, where reasonable, in consultation with the affected landowner.
	D36	Where a groundwater bore is expected to have access to it impaired as result of the Project, 'make good' measures will be agreed, where feasible, in consultation with the potentially affected landowner.

Matter	ID	Commitment
Groundwater [continued]	D37	Use the results of ongoing geological and hydrogeological data to review, assess, and refine (where required) the with the tunnel dewatering plans based on available data and additional structural geology conditions. These works will be based on the detailed design and consider items such as, but not necessarily limited to, construction work methodologies, timing, tunnel diameter and proposed lining methods.
	D38	Potential steady state and transient groundwater impacts will be considered from both potential direct dewatering and potential indirect induced flow impacts.
	D39	Water budgets will be determined from groundwater ingress from varying hydrostratigraphic units—with consideration to potential drawdown impact to existing registered groundwater bores (type and location).
	D40	The groundwater prediction refinement works will be undertaken in collaboration with key stakeholders.
	D41	The interpretation, reporting and recommendations (avoidance, mitigation and/or management options) will be incorporated into the Final EIS.
	D42	Further groundwater assessment will be undertaken to inform the design and management plans for the Toowoomba Range tunnel water treatment plant, regarding anticipated volumes and treatment and release regime, for both the construction and operation phases.
Operational noise and vibration	D43	The operational railway noise and vibration assessment will be reviewed, and if necessary, updated to reflect/inform the detailed design.
	D44	The operational road traffic noise assessment will be reviewed and if necessary updated to reflect/inform the detailed design.
	D45	The Project will aim to minimise potential operational noise and vibration impacts.
	D46	Where reasonable and practicable (or feasible), the Project's operational noise design goals at sensitive receptors will be applied at existing sensitive receptors existing at the time of draft EIS public notification as shown in Table A1.3 and Table A1.4.
	D47	Further investigations of operational noise will be undertaken to determine what reasonable and practical (or feasible) mitigation measures are required. This will also include consultation with QR and, where applicable, DTMR regarding proposed operations on the West Moreton System concurrent with the Project.
	D48	Prior to finalising any required operational noise mitigation measures, the Proponent will consult with the relevant owners/occupiers at sensitive receptors where potential triggers of the Project's operational noise design goals in Table A1.3 and Table A1.4 may occur.
Construction noise and vibration	D49	The construction noise and vibration assessment will be reviewed prior to commencement of construction to reflect/inform the final location of construction sites, construction activities and construction scheduling to inform the development of the Noise and Vibration Management Sub-plan in the CEMP.
	D50	The assessment will also identify requirements for building condition surveys and confirm if there are any heritage structures assessed as subject to potential vibration impacts.
	D51	The ground-borne noise levels will be remodelled once the construction methodology is confirmed.
	D52	Ongoing engagement with the community, in particular residents where impacts from construction noise (airborne and ground-borne) are predicted. This includes timing of the works duration of the impacts, mitigation measures on a case-by-case basis such as respite periods and temporary relocations, noting that some of the impacts may not occur until three years after construction.
	D53	Owners of buried pipework predicted to be affected by likely vibration impacts will be consulted as part of design development and construction planning.
Heritage	D54	Project works will be designed, located and managed to avoid or minimise impacts or disturbance of Aboriginal, historic and natural heritage items.

Matter	ID	Commitment
Traffic	D55	Road safety audits will be undertaken for all road designs in accordance with the *Guide to Traffic Management: Part 3 Traffic Studies and Analysis* (Austroads, 2017).
	D56	The EIS traffic impact assessment, including road pavement impact assessment and resultant mitigation measures. will be reviewed and updated where necessary to reflect the detailed design, construction methodology (including material handling) and final haul routes. These works will be undertaken in consultation with DTMR, TRC, LVRC and, where applicable, QR
	D57	A safety assessment will be undertaken in accordance with the *Guide to Traffic Impact Assessment* (DTMR, 2017). The safety assessment will determine where road safety audits are required. These works will be undertaken in consultation with DTMR, QR, TRC, LVRC and where applicable emergency services.
	D58	A travel demand management awareness campaign will be developed and implemented to inform the community and create public awareness of the Project works and potential impacts on the local road network.
	D59	Continue to work with QR and DTMR in relation to co-location of rail infrastructure within the existing rail corridor, along with proposed connections between the ARTC and QR networks and the two grade separations.
	D60	Continue to work with QR and TRC in relation to the closure of the existing level crossing over the West Moreton System at Gowrie Junction Road, along with the under pass linking East Paulsens Road and Morris Road. QR will also be consulted regarding any potential impacts on existing level crossings as a result of construction activities.
	D61	Continue to work with DTMR regarding the design of the rail over road bridge proposed over the Toowoomba Bypass and Murphys Creek Road.
	D62	Continue to work TRC in relation to the proposed network changes in the Gowrie Junction area.
	D63	Continue to work with LVRC regarding the proposed network changes on roads for which they are the road authority.
Hazard and risk	D64	The ARTC Safety Policy (ARTC, 2020) and the ARTC Fatal & Severe Risk Program (ARTC, 2017) will be fully implemented.
	D65	Continue to work with DTMR and QR in relation to the proposed connections and interfaces between the ARTC and QR networks.
	D66	Tunnel design will incorporate fire and life safety mitigation measures including limiting the amount of combustible materials used in construction, air quality monitors, preventing derailed trains from entering the tunnel, and preventing trains that are on fire from stopping in the tunnel.
Waste and resource management	D67	Cut and fill balance and minimisation of spoil transport will be further refined during detailed design.
	D68	Identify opportunities for beneficial reuse of spoil and other materials during detailed design and construction.
	D69	Further liaison with operators of landfill and waste management facilities will be undertaken during the detailed design process to inform the construction approach regarding staging of works and the assignment of waste disposal destinations from construction work fronts.

TABLE F3.2 COMMITMENTS— OTHER DETAILED DESIGN PHASE ACTIONS

Matter	ID	Commitment
Environmental management	D70	At least two months before the commencement of Project works, the Proponent will submit an Outline CEMP to the Coordinator-General.
	D71	The Outline CEMP will further develop the construction related elements of the Draft Outline Environmental Management Plan (Outline EMP) and include: ▸ An overview of the following Construction EMP (CEMP) sub-plans: ▸ Land use and tenure ▸ Land resources including erosion and sediment control, soil management, contaminated and hazardous materials management ▸ Landscape and visual amenity, with reference to the Reinstatement and Rehabilitation Plan and the Landscape and Rehabilitation Management Plan ▸ Flora and fauna, including species management plans or programs, dewatering strategy and biosecurity management, and documentation required to support secondary approvals ▸ Air quality, including construction goals ▸ Surface water, including water quality objectives for receiving waters ▸ Groundwater, with reference to the Groundwater Monitoring and Management Plan ▸ Noise and vibration, including construction goals ▸ Cultural heritage ▸ Traffic, transport and access, including a Road Use Management Plan (RUMP) in accordance with DTMR's *Guide to Traffic Impact Assessment* (GTIA) (September 2017) ▸ Hazard and risk ▸ Waste and resource management, including construction spoil management and waste reduction targets ▸ Community engagement, including complaints management ▸ The environmental outcomes and performance criteria for each CEMP sub-plan ▸ Proposed mitigation measures for CEMP sub-plans to achieve the environmental outcomes ▸ Incidents, notifications and emergencies ▸ Monitoring requirements ▸ Auditing and reporting requirements. The Outline CEMP will identify the relationship/interface with other plans or strategies developed in response to measures identified in the Draft Outline EMP or other documentation required to support secondary approvals.
	D72	The MNES components of the Outline CEMP will be developed in consultation with the Commonwealth Regulator.
Flora and fauna	D73	Flora, fauna and habitat condition surveys will be undertaken to: ▸ Verify prior surveys and assessments ▸ Refine potential offset calculations ▸ Inform micro-siting of infrastructure ▸ Inform development of the Post-construction Matters of National Environmental Significance Monitoring Plan ▸ Inform criteria against which relevant outcomes of the Reinstatement and Rehabilitation Plan can be evaluated.
	D74	A Post-construction Matters of National Environmental Significance Monitoring Plan will be developed for implementation post-construction. The Post-construction Matters of National Environmental Significance Monitoring Plan will define the location, reference condition, assessment framework, and completion criteria.
Landscape and visual amenity	D75	A Reinstatement and Rehabilitation Plan will be developed and implemented for areas within the disturbance footprint that do not form part of the Project landscape design/ permanent works.
	D76	A Landscape and Rehabilitation Management Plan will be developed to define progressive establishment, maintenance and monitoring requirements, and completion criteria for areas defined in the landscape design and/or identified in the Reinstatement and Rehabilitation Plan.

Matter	ID	Commitment
Surface water quality	D77	A preconstruction surface water quality monitoring program will establish baseline water quality conditions and provide a suitable dataset to establish water quality goals and inform the development of the Outline CEMP and the Landscape and Rehabilitation Management Plan.
	D78	A treatment and discharge plan will be developed for implementation at the tunnel dewatering facility. The treatment and discharge plan will identify the approach for scheduling release periods to minimise changes in hydrological regime, physical and chemical characteristics and ecological processes as far as is reasonable and practical.
Groundwater	D79	Baseline groundwater monitoring data (levels and quality) will be collected to inform detail design, the Outline CEMP and development of a construction phase Groundwater Monitoring and Management Plan (GMMP). This will involve landholder bore survey and where applicable bore assessments within the modelled drawdown extents
	D80	The GMMP will define criteria for post-construction groundwater monitoring. If required, post-construction monitoring requirements will be incorporated into corridor operating procedures.
Land resources	D81	An Erosion and Sediment Control Plan (ESCP) will be prepared by a Certified Professional in Erosion and Sediment Control (CPESC) and be in accordance with the *Best Practice Erosion and Sediment Control* (International Erosion Control Association, 2008).
	D82	Where practicable, problematic soils associated with the proposed Project works will be avoided, modified, treated or appropriately managed.
	D83	The additional soil data will be incorporated into the design of structures, embankments and erosion control measures (temporary and permanent). The additional soil data will allow soil treatment/management and site rehabilitation planning to be tailored for site-specific soil conditions. The characterisation is to be used within the ESCP to identify problematic soils.
	D84	A Contaminated Land Management Strategy will be developed and implemented by a suitably qualified professional, incorporating relevant outcomes from consultation with landholders and stakeholders. The Contaminated Land Management Strategy will determine the need for the development of subsequent Contaminated Site Management Plans.
	D85	Continue to engage with Defence Housing Australia and, where applicable, the Department Defence regarding Unexploded Ordnance (UXOs) as part of the development of the Contaminated Land Management Strategy. If the risk of encountering known or possible UXOs is identified during the development of the Contaminated Land Management Strategy, assessment and identification of management options shall be carried out by a suitably qualified person.
Construction water	D86	Licences, approvals, agreements, entitlements and/ or allocations to access water from sources identified in the Construction Water Strategy will be obtained. These may include temporary water permits under the *Water Act 2000* (Qld) or access agreements with bulk water suppliers or private landholders.
	D87	Requirements for construction water (volumes, quality, demand curves, access, location (relative to need), approvals requirements and lead times) will be in a Construction Water Strategy. This strategy will include identification of opportunities to utilise dewatered artificial impoundments (where impacted along the alignment) for construction water purposes.
	D88	The selection and potential use of construction water sources will adopt the following hierarchy (subject to demand and quality requirements): ▸ Public surface water storages ▸ Recycled water ▸ Permanently flowing watercourses ▸ Privately held storage ▸ Under private agreement ▸ Existing registered and licensed bores ▸ Mains water. The approach will confirm the suitability of water sources, with a focus on using existing sustainable allocated water entitlements in the first instance.

Matter	ID	Commitment
Social Impact Management Plan	D89	The Proponent will engage with the delivery organisation and stakeholders, as identified in the action plans, to review the measures outlined in the SIMP. This will inform the delivery organisation's implementation of SIMP commitments and ARTC's social performance program delivery including: ▸ Partnerships and projects to support mitigation and enhancement of benefits ▸ The respective responsibilities of the Proponent and other stakeholders ▸ The program for implementation ▸ SIMP monitoring.
Hazard and risk	D90	Continue to engage with Abandoned Mines Program in the Department of Resources to identify potential risk and management actions in the event that the Project disturbance footprint interacting with abandoned or disused mines or underground collieries.

F4. Project works commitments

The commitments described in Table F4.1 will apply to Project works, including pre-construction, construction and commissioning.

TABLE F4.1 COMMITMENTS—PROJECT WORKS

Matter	ID	Commitment
Environmental Management	W1	Prior to commencement of Relevant Project Works, the Proponent will prepare a CEMP. The CEMP will be developed to include sub-plans in accordance with the draft Outline Environmental Management Plan as submitted to the Coordinator-General.
	W2	The CEMP must be submitted to the Environmental Monitor to be endorsed.
	W3	The Environmental Monitor must endorse the CEMP if it: ▸ Describes the Relevant Project Works ▸ Is based on predictive studies and assessments of construction impacts which have regard to the scale, intensity, location and duration of construction works, and the location of sensitive receptors ▸ Is generally consistent with the Outline CEMP as submitted to the State Regulator and incorporates the environmental outcomes and performance criteria identified in the Outline CEMP ▸ Incorporates and responds to relevant Imposed Conditions, EPBC Act approval conditions and relevant secondary approval conditions ▸ Describes how the relevant Imposed Conditions will be complied with ▸ Incorporates any detailed plans required by the Imposed Conditions, EPBC Act approval conditions, secondary approval conditions and/or as identified in the Outline CEMP ▸ Details mitigation measures to achieve the environmental outcomes, where predictive studies indicate impacts beyond those provided for in the performance criteria ▸ Contains a program and procedures for ongoing monitoring to identify the effectiveness of mitigation measures to achieve the environmental outcomes ▸ Includes a process for regular review, and updating of the CEMP if required, including a process to review, endorse and implement additional or different mitigation measures in response to monitoring results.
	W4	The Endorsed CEMP will be provided to the State Regulator at least 10 business days prior to the commencement of relevant Project works.
	W5	Project works will be managed in accordance with the endorsed CEMP and ESCP.
	W6	The current version of the endorsed CEMP will be available on the Project website for the duration of the construction and commissioning phase.

Matter	ID	Commitment
Environmental Management [continued]	W7	The CEMP will also describe requirements for air quality monitoring and reporting, including: ▸ Visual monitoring of dust generation (visible plumes) ▸ Monitoring of weather conditions during construction ▸ Investigation and appropriate response to air quality complaints.
	W8	The CEMP will specify performance criteria for water use in construction to minimise the risk of adverse water quality, environmental or health impacts, and avoid the use of potable water where non-potable sources can be applied.
	W9	The environmental outcomes in the CEMP will be met through achievement of the performance criteria or the implementation of proposed mitigation and management measures relevant to pre-construction, construction and commissioning, or via alternate mitigation measures which target comparable outcomes.
Adaptive management	W10	Where it is found that the proposed mitigation measures are not sufficient to achieve the performance criteria identified in the Outline CEMP at sensitive receptors, additional mitigation measures will be investigated and implemented.
	W11	Where the effectiveness of proposed mitigation measures is unknown, and compliance with the performance criteria identified in the Outline CEMP cannot be demonstrated, additional monitoring will be investigated and implemented.
Erosion and sediment control	W12	Appropriate erosion and sediment control measures are to be implemented and the ESCPs will be continually reviewed and updated for effectiveness and to reflect changing site conditions as construction progresses.
Reporting	W13	During construction, a Monthly Construction Compliance Report will be prepared. This will include: ▸ A summary of relevant monitoring data and interpretation of the results ▸ Details of any verified Non-Compliance Event, including a description of the incident, resulting effects, corrective actions, revised practices to prevent a recurrence, responsibility and timing ▸ Reporting of formal complaints, including the number of complaints, description of issues, responses and corrective actions.
	W14	For the duration of Construction, an Annual Construction Report will be prepared that includes: ▸ A compliance evaluation table detailing the relevant Imposed Condition, whether compliance with the Imposed Condition was achieved and how compliance was evaluated ▸ An evaluation of compliance with the CEMP ▸ A summary of any Non-Compliance Events during the reporting period ▸ A summary of any verified non-compliance events during the previous reporting period, with details of site Construction Works, remediation relevant local activities, corrective actions taken or to be taken and revised practices implemented or to be implemented (as relevant) ▸ Relevant trends and interpretation as related to environmental outcomes and performance criteria for each environmental element (all periods to date).
Community engagement	W15	A Community Engagement Sub-plan will be prepared as part of the CEMP, and in accordance with the requirements established under the Community and Stakeholder Engagement Plan and the Outline CEMP.
	W16	The Construction Community Engagement Sub-plan will be given to the Community Relations Monitor for advice at least 10 business days prior to the Construction Environmental Management Plan being provided to the Environmental Monitor for endorsement.

Matter	ID	Commitment
Community engagement [continued]	W17	The Community Engagement Sub-plan will provide for: ▸ Sensitive receptors to be consulted prior to commencement of relevant construction works and then during construction works about predicted impacts and mitigation measures ▸ Sensitive receptors to be consulted about possible mitigation measures ▸ Local communities near construction works to be informed about the nature of construction, including the timing, duration and predicted impacts of the works in advance of their commencement ▸ Information to be provided to stakeholders about the predicted effects of construction works on road, rail and pedestrian and cycle network operations, in advance of their commencement ▸ Specific community consultation plans for identified key stakeholders ▸ A process for advance notification to local communities of construction works, including the timing, duration, predicted impacts and mitigation measures which is available on the project website and through other media.
	W18	The Community Engagement sub-plan will incorporate a complaints management system, which is established prior to the commencement of Relevant Project Works and maintained for the duration of construction.
	W19	The complaints management system will deliver a prompt response to community concerns with relevant information, action where required, and reporting of incidents. The complaints management system will include: ▸ A procedure for receiving complaints on a 24-hour, seven days a week basis, during construction ▸ A mechanism for notifying the community of the complaints procedure and how it may be accessed ▸ A process for registering and handling complaints received, including a database for tracking of complaints and actions taken in response (Complaints Database) ▸ A procedure for complaints to be notified to the Community Relations Monitor, including information about the complaint and its resolution ▸ Access by the community to the Community Relations Monitor ▸ Regular reporting via the monthly report to the community about complaints and corrective actions, maintaining appropriate confidentiality.
	W20	The Complaints Database will be made available to the Community Relations Monitor.
	W21	A Community Reference Group (CRG) will be established for the duration of construction. Project representatives will meet regularly with the purpose of providing timely, open advice, representation of community issues and concerns arising from the works
SIMP	W22	SIMP implementation will be reported to the CRG at each CRG meeting.
	W23	A report against SIMP performance measures will be presented to the CRG annually during construction.
	W24	The Proponent will review the SIMP not less than annually during construction and where necessary update based on monitoring results and stakeholder feedback. Reports on the annual SIMP review will be submitted to the Office of Coordinator-General and Project CRG.
	W25	Prior to commissioning, a SIMP for the operational phase will be developed in accordance with ARTC's established management frameworks for rail operation, including rail noise management, safety management, workforce development and stakeholder engagement. This will be informed by the monitoring undertaken during the construction phase, which includes stakeholder engagement in monitoring impacts and the effectiveness of mitigation measures.
Project works hours	W26	Project works will be undertaken within the hours set out in Table A2.1.

Matter	ID	Commitment
Flora and fauna	W27	Fauna fencing, and fauna passage structures will be installed in accordance with the detailed design and in consultation with DTMR to ensure fencing and structure complement works on the Toowoomba Bypass.
	W28	Following determination of clearing requirements, undertake pre-clearance studies by a suitably qualified person (i.e. ecologist or spotter catcher) in accordance with the relevant guidelines and standards.
	W29	Clearing activities including extents and types (i.e. MNES, MSES, or habitat for MNES or MSES) will be monitored and reported with reference to the results of pre-clearing surveys.
	W30	Monitor and report clearing activities in accordance with approval conditions.
	W31	Prepare and implement relevant management plans (e.g. Species Management Plan and Biodiversity Management Plan) as required for the management of biodiversity and ecological values. Biosecurity management plans will be developed in consultation with the Department of Agriculture and Fisheries, local councils and other stakeholders and will aim to complement existing biosecurity measures for the area.
Groundwater	W32	Opportunities to re-use/recycle groundwater water drawn from the tunnel and cuttings where encountered will be identified and implemented where feasible during construction.
	W33	Continue to monitor and manage groundwater accordance with the GMMP, requirements for groundwater level monitoring during operation will be incorporated into corridor management procedures where relevant and appropriate.
	W34	Any groundwater supply and /or monitoring bores that are decommissioned will be undertaken in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee, 2020).
Heritage	W35	Project works that involve excavation, construction or other activities that may cause harm to Aboriginal cultural heritage will be undertaken in accordance with the approved Cultural Heritage Management Plans in accordance with the *Aboriginal Cultural Heritage Act 2003* (Qld).
	W36	Building condition/dilapidation surveys will be undertaken at all heritage structures identified during detailed design investigations as being subject to potential vibration impacts. Surveys will occur before and after undertaking intensive vibration generating works (e.g. pile-driving), with the potential for monitoring during the construction activities as per the CEMP.
Vibration	W37	Vibration monitoring will be undertaken at locations where the potential for building/structural damage risk is identified in the EIS reporting, further surveys during the detailed design phase or as part of pre-construction dilapidation surveys. Vibration monitoring will be undertaken by a suitably qualified person, in accordance with relevant standards and guidelines. Where monitoring is required to occur at a listed heritage structure, placement of equipment will be carried out on advice from a suitably qualified person (heritage practitioner).
Traffic	W38	Project construction traffic will be managed to avoid or minimise and mitigate adverse impacts on road safety and traffic flow, public transport, school bus routes, property access and existing road pavements.
	W39	Workforce parking will be provided within the disturbance footprint and managed to avoid or minimise and mitigate adverse impacts to the local community.
	W40	Traffic access for emergency services to construction worksites and adjoining properties and wider road network is maintained throughout the construction phase.
	W41	Reasonable access will be maintained to properties throughout Project works.
	W42	A Construction Traffic Management Plan will be developed, implemented and reviewed periodically for effectiveness by relevant stakeholders including councils, DTMR, police, emergency services and, where applicable, QR.
Waste and resource management	W43	All wastes generated during Project works will be stored, handled, treated, reused, recycled and/or disposed of lawfully and to avoid environmental harm.

F5. Operations

When operational, the Project will become part of the existing ARTC national rail network, and will be subject to the laws, policies and procedures that already apply to that network. Internal ARTC policies and procedures will be reviewed to include any special operational requirements of the Project. Table F5.1 outlines the specific commitments to be addressed during the operational phase.

TABLE F5.1 COMMITMENTS—OPERATIONS

Matter	ID	Commitments
Groundwater	01	Continue to monitor and manage groundwater infiltration into the Toowoomba Range Tunnel, including ensuring that any discharge into the receiving environment is in line with relevant approval conditions and water quality objectives.
	02	Should requirements for ongoing groundwater monitoring be identified under the GMMP, requirements for groundwater level monitoring during operation will be incorporated into corridor management procedures, where relevant and appropriate.
	03	ARTC will continue to engage with groundwater users regarding any potential impairments during either detailed design and or Project works, including where applicable verifying impacts and implementing agreed impairments.
Surface water	04	Should requirements for ongoing surface water monitoring be identified (i.e. release of water from the tunnel portal or the tunnel), requirements for water monitoring during operation will be incorporated into corridor management procedures.
Operational noise and vibration	05	The Proponent will investigate reasonable and practicable (or feasible) mitigation measures where monitored noise and or vibration levels at sensitive receptors are confirmed to be above the adopted Project operational noise design goals criteria (refer A.1.3 in Annexure A).
Tunnel	06	Subsidence (settlement and/or cracking) and vibration emissions to be monitored and, where required, appropriately managed, including matters related to existing: ▸ Ancillary structures/utilities/services (in active use) ▸ Landowner property ▸ Ecological receptors (e.g. MNES) ▸ Transport infrastructure. These works are to be undertaken for locations directly above the final volumetric take for the as-built tunnel within the initial 12 months after the commencement of railway operations (Inland Rail freight train movements) on the Project.
SIMP	07	The SIMP for operations will be implemented during the first three years of operation. Any need for a SIMP following Year 3 of operations will be identified in consultation with the State Regulator.
	08	The SIMP for operations will include a Community and Stakeholder Engagement Plan for the operational phases.
Air quality	09	Before commencement of operational activities involving coal transport, engagement will be undertaken with existing stakeholders and members of the South West Supply Chain with regards to coal dust management and monitoring practices.
Offsets	10	ARTC will continue comply with the requirements of the approved Environmental Offset Delivery Plan, including monitoring and reporting

References

Australian Rail Track Corporation (2020d). *Safety Policy - COR-PO-001*. Available at: **artc.com.au/uploads/COR-PO-001.pdf**. [Accessed 2020].

Austroads. (2017). *Guide to Traffic Management Part 3: Traffic Studies and Analysis*. Available at: **austroads.com.au/publications/traffic-management/agtm03.** [Accessed 2020].

Department of Environment and Science (2020m). *South East Queensland Koala Conservation Strategy (2020–2025).* Queensland Government. Available at: **environment.des.qld.gov.au/__data/assets/pdf_file/0016/211732/seq-koala-conservation-strategy-2020-2025.pdf**. [Accessed 2020].

Department of Transport and Main Roads. (2017). *Guide to Traffic Impact Assessment.* Queensland Government. Available at: **tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment**. [Accessed 2020].

International Erosion Control Association. (2008). *Best Practice Erosion and Sediment Control Document.* Available at: **austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document.** [Accessed 2020].

McKenzie, N.J., Grundy, M.J., Webster, R. & Ringrose-Voase, A.J. (2008). *Guidelines for Surveying Soil and Land Resources, 2nd edition*. Commonwealth Scientific and Industrial Research Organisation.

National Committee on Soil and Terrain. (2009). A*ustralian Soil and Land Survey Field Handbook, 3rd edition*. Commonwealth Scientific and Industrial Research Organisation.

National Uniform Drillers Licensing Committee. (2020). *Minimum Construction Requirements for Water Bores in Australia – Fourth Edition*. Available at: **adia.com.au/wp-content/uploads/2020/09/Minimum-Construction-Requirements-Edition-4.pdf**. **[Accessed 2020].**

Soil Science Australia. (2015). *Guidelines for Soil Survey along Linear Features*. Available at: **nla.gov.au/nla.obj-1203473164/view.** [Accessed 2020].

Annexure A

A.1 Project Design Goals

A.1.1 Project hydraulic design criteria

The Project will adopt the criteria set out in Table A1.1.

TABLE A1.1 PROJECT HYDRAULIC DESIGN CRITERIA

Performance criteria	Requirement
Flood immunity	Rail line—1% Annual Exceedance Probability (AEP) flood immunity (without climate change) allowing for up to 300 mm freeboard to formation level. Tunnel portals—1 in 10,000 AEP event flood immunity in the portal catchments. Run off from the portal and approach cuttings is not to be directed through tunnels.
Hydraulic analysis and design	Hydrologic and hydraulic analysis and design to be undertaken based on *Australian Rainfall and Runoff: A Guide to Flood Estimation* (ARR, 2016).
Scour protection of structures	All bridges and culverts should be designed to reduce the risk of scour with events up to 1% AEP (without climate change). Mitigation to be achieved through providing appropriate scour protection or energy dissipation or by changing the drainage structure design.
Structural design	1 in 2,000 AEP event to be modelled for bridge design purposes.
Extreme events	Damage resulting from overtopping to be minimised.
Flood flow distribution	Locate structures to maintain efficient conveyance and spread of floodwaters.
Sensitivity testing	Consider climate change and blockage in accordance with ARR 2016. Understand risks posed and Project design sensitivity to climate change and blockage of structures.

A.1.2 Flood impact objectives

TABLE A1.2 FLOOD IMPACT OBJECTIVES

Parameter	Objectives				
Change in peak water levels[1]	Existing habitable and/or publicly used commercial structures, buildings/ premises	Existing habitable residential or publicly used commercial properties/lots where flooding does not impact dwellings/ buildings	Existing non-habitable structures or industrial buildings/ premises	Existing roadways and rail lines (currently in use)	Existing agricultural and grazing land
	⩽ 10 mm	⩽ 50 mm	⩽ 100 mm	⩽ 100 mm	⩽ 200 mm with localised areas up to 400 mm
	Changes in peak water levels are to be assessed against the above proposed limits. It is noted that changes in peak water levels can have varying impacts upon different infrastructure/land and flood impact objectives were developed to consider the flood sensitive receptors in the vicinity of the Project. For peak water levels assessed at any structure, the change in peak water level is considered at the top of the existing floor level.				
Change in duration of inundation[1]	Identify changes to time of inundation through determination of time of submergence (ToS). For roads, determine Annual Average Time of Submergence (AAToS) and consider accessibility during flood events.				
Flood flow distribution[1]	Aim to minimise changes in natural flow patterns and minimise changes to flood flow distribution across floodplain areas. Identify any changes through assessment of risk with a focus on land-use and flood sensitive receptors.				
Velocities[1]	Maintain existing velocities where practical. Identify changes to velocities and impacts on external properties. Determine appropriate scour protection or energy dissipation considering existing soil conditions.				

Table note:
1 These flood impact objectives apply for events up to and including the 1% AEP event

A.1.3 Project operational noise design criteria

TABLE A1.3 AIRBORNE NOISE ASSESSMENT LEVELS FOR RESIDENTIAL RECEPTORS

Type of development	Noise trigger levels (most exposed external façade, habitable room)	
New rail line development line[1]	Day (7:00 am–10:00 pm)	Night-time (10:00 pm– 7:00 am)
	Predicted Project rail noise levels exceed:	
	$L_{Aeq(15hour)}$ 60 dBA	$L_{Aeq(9\ hour)}$ 55 dBA
	$L_{AFmax\ 80}$ dBA	$L_{AFmax\ 80}$ dBA
Redevelopment of existing rail line[2]	Project increases existing L_{Aeq} (period) rail noise levels by 2dB or more, and existing L_{Amax} rail noise levels by 3dB or more and predicted rail noise levels exceed	
	$L_{Aeq(15\ hour)}$ 65 dBA	$L_{Aeq\ (9\ hour)}$ 60 dBA
	L_{AFmax} 85 dBA	L_{AFmax} 85 dBA

Table notes:
Airborne noise management levels applied the most exposed external façade of an existing habitable room at an existing Sensitive Place
1 A new rail line development is a rail infrastructure project on land that is not currently an operational rail corridor.
2 A redeveloped line is a development on land that is within an existing operational rail corridor, where a line is or has been operational or is immediately adjacent to an existing operational rail line which may result in the widening of an existing rail corridor.

TABLE A1.4 AIRBORNE NOISE MANAGEMENT LEVELS FOR OTHER SENSITIVE RECEPTORS.

	Noise management levels (when receptor premises are in use)	
	New rail line development[1]	Redevelopment of existing rail line[2]
Type of development	Resulting rail noise levels exceed:	Development increases existing rail noise levels by 2 dBA or more in L_{Aeq} for that period, and resulting rail noise levels exceed:
Schools, educational institutions and childcare centres	$L_{Aeq(1\ hour)}$ 40 dBA (internal)	$L_{Aeq(1\ hour)}$ 45 dBA (internal)
Places of worship	$L_{Aeq\ (1\ hour)}$ 40 dBA (internal)	$L_{Aeq(1\ hour)}$ 45 dBA (internal)
Hospital wards	$L_{Aeq\ (1\ hour)}$ 35 dBA (internal)	$L_{Aeq(1\ hour)}$ 40 dBA (internal)
Hospital other uses	$L_{Aeq\ (1\ hour)}$ 60 dBA (external)	$L_{Aeq(1\ hour)}$ 65 dBA (external)
Open space—passive use (e.g. parkland, bush reserves)	$L_{Aeq\ (15hour)}$ 60 dBA (external)	$L_{Aeq(15hour)}$ 65 dBA (external)
Open space—active use (e.g. sports field, golf course)	$L_{Aeq\ (15hour)}$ 65 dBA (external)	$L_{Aeq(15hour)}$ 65 dBA (external)

Table notes:
Internal noise management levels applied during loudest period, at the centre of exposed internal habitable room (where applicable and relevant, facades open sufficiently to allow for natural ventilation)
1 A new rail line development is a rail infrastructure project on land that is not currently an operational rail corridor.
2 A redeveloped line is a development on land that is within an existing operational rail corridor, where a line is or has been operational or is immediately adjacent to an existing operational rail line which may result in the widening of an existing rail corridor.

A.2 Construction hours

TABLE A2.1 CONSTRUCTION HOURS

Description of works	Hours of work
Surface works (other than works set out below)	Monday–Friday 6.30 am–6.00 pm Saturday 6.30 am–1.00 pm No work on Sundays or public holidays If the Project works comply with established Performance Criteria: Monday–Friday 6.00 pm–10.00 pm Saturday 1.00 pm–5.00 pm
Tunnelling activities	24-hours a day, 7 days a week
Spoil haulage	24-hours a day, 7 days a week

Description of works	Hours of work
Transport, assembly or decommissioning of oversized plant, equipment, components or structures	24-hours a day, 7 days a week
Delivery of 'in time' materials such as concrete, hazardous materials, large components and machinery	24-hours a day, 7 days a week
Works that require continuous construction support, such as continuous concrete pours, pipe-jacking or other forms of ground support necessary to avoid a failure or construction incident	24-hours a day, 7 days a week
Materials and equipment delivery	24-hours a day, 7 days a week
Works in a rail corridor (track possessions)	24-hours a day, 7 days a week and in accordance with the hours of work prescribed by the rail infrastructure manager.
Works in a road	In accordance with the hours of work prescribed by the road authority in any permit under a local law (for a local government) or a permission under s.33 of the *Transport Infrastructure Act 1994* (Qld), or if no hours of work are prescribed, then works may be undertaken Monday–Saturday (not public holidays) 6.00 am–6.00 pm.
Works carried out in an emergency to avoid the loss of life, damage to property or to prevent environmental harm	At any time
Blasting	Monday–Friday 7.30 am–4.30 pm Saturday 7.30 am–1.00 pm No blasting on Sundays or public holidays. Blasting will not be conducted outside standard hours. If blasting outside of standard hours is required, approval from the Department of Environment and Science will be obtained prior to blasting. Reduced limits may be required to be achieved.