

***Caloundra South Rail Corridor Realignment
Study***

Environmental Impact Study

Terms of Reference

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Attachment A: Study Location Map

1 Background

CAMCOS is a proposal for a heavy rail passenger service incorporating an upgrade of the North Coast rail line from Caboolture to Landsborough and a new line from the upgraded North Coast line at Beerwah to Maroochydore. This new line will provide a public transport spine serving the Sunshine Coast and providing a link from the coastal urban area to Brisbane. An alignment has been agreed by government and is being protected. The current timetable for implementation is for construction from Beerwah to Caloundra by 2015 and from Caloundra to Maroochydore by 2020.

The Sunshine Coast is experiencing very high growth rates which generate significant demand for expansion of urban services and infrastructure. The South East Queensland Regional Plan (SEQ Regional Plan) identifies Caloundra City as one of the few local government areas with significant new "greenfield" land potentially available for urban purposes.

The SEQ Regional Plan designates Caloundra South, including the aerodrome site, as one area that could accommodate substantial future population growth in Caloundra City. In response to this designation, Caloundra City Council (the Council) has prepared a draft Local Growth Management Strategy (LGMS). The draft LGMS indicates a CAMCOS corridor in Caloundra South that differs from the currently-protected alignment.

In parallel with the Council's LGMS, the government undertook a review of general aviation operations across SEQ. As part of this work the government is examining the possibility of relocating the Caloundra aerodrome. The potential redevelopment of the aerodrome site removes a constraint to the CAMCOS corridor and provides an opportunity to better integrate the transport corridor with future land uses.

In December 2005, QT and the Council undertook the Caloundra Transit Oriented Community (CalTOC) workshop. The purpose of the workshop was to identify best practice design solutions which promote transit oriented development around the CAMCOS alignment through the Caloundra South area. The workshop was a collaborative planning exercise involving key stakeholders including, the Council, the major landowner, QT, C-G, the Office of Urban Management (OUM), the Department of Main Roads (DMR) and the Environmental Protection Agency (EPA). The workshop concluded that the current CAMCOS alignment and location of the existing Caloundra aerodrome would restrict the optimum settlement pattern for the Caloundra South and Caloundra central business area.

In addition, the Council investigations revealed that realigning the CAMCOS corridor through the aerodrome site offers the best opportunity for it to deliver on the SEQ Regional Plan agenda for achieving dwelling targets and transit oriented development.

The planning for large scale development in new areas like Caloundra South and the aerodrome site provides an opportunity for the more efficient, visually attractive and community responsive use of land to integrate arterial roads, rail, electricity transmission and other services.

Recent planning as part of SEQRP has placed a high emphasis on the need for self containment, so as to make more efficient use of the existing and planned transport infrastructure. TransLink's Draft Network Plan identifies CAMCOS as the major public transport spine for the Sunshine Coast which is integrated with the local bus network, and which also provides a high quality public transport access to Brisbane.

While the existing CAMCOS corridor has been agreed by the government, the Premier has expressed support for investigation of a CAMCOS realignment and of potential Caloundra Aerodrome redevelopment. The first part of this study, the Review of Environmental Factors

found the alternative alignment through the Caloundra aerodrome site to be the preferred corridor in the area. It performs better than the existing corridor in relation to the range of environmental, social and economic factors assessed. It provides a significantly better opportunity than the existing corridor to optimise the integration of public transport with future urban development in the study area..

The second phase of the study, the environmental impact study, will examine the environmental, social and economic impacts of the alternative corridor through the Caloundra aerodrome site in more detail and recommend mitigation measures to apply where necessary.

The study area is bounded by the Bruce Highway in the west, Pumicestone Passage in the east, Bells Creek in the south and Sugar Bag Road in the north. The location of the existing CAMCOS crossing of the Bruce Highway is assumed to be unchanged as is the entrance to the tunnel portal under Sugar Bag Road. The corridor under investigation is about 10 kilometres long. (See Attachment A for locality map).

2 General Information

1. The Environmental Impact Study (EIS) for the Caloundra South CAMCOS realignment corridor is to address the 'triple bottom line' of sustainable transport (that is, to include social, environmental and economic impacts and benefits).
2. It is the responsibility of the person preparing the EIS to identify and address, as fully as possible, the matters relevant to the specific proposal. There may be other issues not specified in these Terms of Reference (ToR) that should be considered in the EIS.
3. It is the responsibility of the contractor preparing the EIS to determine in conjunction with QT those parties that should be consulted during the EIS preparation stage.
4. The EIS should be a stand-alone document. It should contain sufficient information from any relevant previous transport studies to avoid the need by the assessing agencies to search out previous or supplementary reports.
5. Information in the EIS should be clear, succinct and objective and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. The purpose of the document is to enable members of the public, the assessing agencies and the determining authority to properly understand the environmental consequences of the proposed development. The body of the EIS is to be written in a clear and concise style that is easily understood by the general reader. Technical jargon should be avoided wherever possible and a full glossary included.
6. The EIS should refer by suitable appendices to all relevant specialist studies/ investigations that may have been carried out specifically for the corridor.
7. If there is a necessity to make use of material that is considered to be of a confidential nature, the proponent may request that such information remain confidential and not be included in the EIS. Nevertheless, this material should be made available to QT on a confidential basis.
8. A concise reference list and bibliography should be included. Any internet "web" pages used as data sources should be included.
9. A checklist shall be provided to indicate compliance of the EIS with the ToR.

10. The EIS should state the criteria adopted in assessing the proposal and its impacts, such as:
 - compliance with relevant legislation, policies and standards;
 - community acceptance;
 - maximisation of environmental benefits (if any); and
 - minimisation of risks and harm.
11. The level of analysis and details in the EIS should reflect the level of significance of the impacts. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed.
12. The emphasis should be on quality and not quantity. Repetition should be avoided.
13. This document represents Transport Planning Branch's preferred format for EIS reports as it facilitates easy assessment by assessing agencies.

3 Project Details

Provide a description of the project. This should include:

- Project title,
- Project proponent,
- Study area, including a locality map,
- A statement of the project objectives,
- Project timetable,
- The history of the project,
- An analysis of the feasible alternatives to the project,
- The consequences of not carrying out the project,
- Implementation of the project,
- Description of how the corridor is to be preserved.

4 Advisory Agency Consultation

To facilitate the assessment process, the Proponent should consult with Advisory Agencies and other appropriate stakeholders when required during the conduct of the EIS. The purpose of this consultation will be in part to identify legislation, policies and methodologies relevant to the assessment of the proposed Project.

Advisory Agencies should include but are not limited to:

Caloundra City Council
Department of Aboriginal and Torres Strait Islander Policy
Department of Emergency Services
Department of Employment and Training
Department of Housing
Department of Industrial Relations
Department of Local Government, Planning, Sport and Recreation
Department of Main Roads
Department of Natural Resources, Mines and water
Department of premier and Cabinet
Department of Primary Industries and fisheries
Department of Public Works
Department of State Development, Trade and Innovation
Environmental Protection Agency

Office of Urban Management
Queensland Health
Queensland Police Service
Queensland Rail
Queensland Transport
Queensland Treasury
Department of the Environment and Heritage (Commonwealth)

5 EIS Process

The documentation should clearly state the reasons and process for preparing the EIS. The EIS undertaken will be as comprehensive as any undertaken for the Coordinator-General under the *State Development and Public Works Organisation Act 1971*.

6 Specific Information

The EIS shall initially be prepared as a draft document containing all of the relevant documentation detailed in the ToR. Documentation in the EIS should detail the environmental assessment and consultation undertaken along the study alignment. Additional consultation shall be undertaken with other stakeholders, such as property owners and special interest groups, identified through the EIS development process only with the express approval of Queensland Transport. The EIS is the principal means of ensuring that ecologically sustainable principles are applied in the decision making process, therefore the EIS should detail the proposed mitigation measures required to minimise the apparent overall impact of the proposal. The recommended final corridor alignment should have the lowest overall environmental and social impacts, and the highest positive (or lowest negative) economic impact.

The potential impacts during the construction and operation (and maintenance) stages of the proposed development should be covered in the EIS. Non-quantifiable impacts should be fully described. To avoid ambiguity, if a matter is not relevant, it should be noted as such (that is it should be mentioned as not being relevant, rather than not mentioned at all). Where applicable, safeguards and mitigation measures to ameliorate the impacts should be proposed with an objective assessment of their effectiveness. Proposals for monitoring of impacts should also be referenced where appropriate.

A concluding statement at the end of the EIS document shall either

- recommend that the project proceed on the preferred corridor alignment (giving reasons), or
- give reasons for why, in the opinion of the consultant, it should not proceed.

The draft EIS shall be publicly advertised and written submissions invited from all parties. A final EIS shall be subsequently prepared which will modify the draft EIS and associated documents to address any new issue raised through the consultation process, including any recommended changes to the corridor alignment.

6.1 Executive Summary

The Executive Summary is to be a concise summary (no more than 15 pages) of the contents of the EIS and should set out the headings in the main report. It should include a

statement of recommendations and should be capable of being published as a stand-alone document.

6.2 Introduction

The introduction should contain the title of the proposed project, a brief description and a locality map. It should include the organisational structure of the consultant's project team and details of all consultants involved in the project.

6.3 Need for the Project

Discuss strategic alternatives that may have been considered, including land use proposals. List how the proposal fits with the strategic setting and also summarise operational need, such as traffic congestion, safety, road condition or local environmental problems caused by existing conditions. A patronage/ demand statement should also be included. Such information may be available already in corridor strategy reports, Reviews of Environmental Factors etc. Summarise why *this* proposed activity is needed *now* in terms of both its strategic and operational setting. This section should also discuss the consequences of not proceeding with the project.

In this part of the document refer to Treasury's Strategic Assessment of Service Requirement Guidance Material for guidance.¹

6.4 Description of the Proposal

The planning and engineering components of the study will be described.

6.4.1 Illustration of the preferred alignment

Use current mapping and diagrams to indicate clearly the preferred alignment with respect to tenure, land use, zoning, developments, residences, significant infrastructure, cultural heritage, agricultural, extractive industry, recreational areas, other infrastructure corridors and hydrological and environmental features and constraints and other relevant areas of significance.

6.4.2 Existing Transport corridors and service operations

Provide details of the existing transport infrastructure including a description of the existing transport network, adjacent mode types and estimated traffic flows. The performance of the existing transport network should also be described.

6.4.3 Planning layouts

For the preferred alignment provide horizontal and vertical planning layouts at 1:5000 scale with more detailed plans at intersections and points of interest (prepared in sufficient detail and accuracy to clearly show impacts on affected properties), including for:

- station locations, including all associated infrastructure (that is, access roads, park and rides, bus interchanges, and so on);
- bridges and earthworks for the corridor and stations;

¹ Queensland Treasury (2006) Project Assurance Framework Guidance Material: Strategic Assessment of Service Requirement. (Accessed on <http://www.treasury.qld.gov.au/office/knowledge/docs/project-assurance-framework/index.shtml>)

- other proposed works;
- property access and potential severance.

Outline the processes undertaken to arrive at the recommended route for the corridor and station site including options considered.

6.4.4 Detailed financial evaluation

Develop a bill of quantities for the construction of the project, together with the relevant capital costs, and investigate in detail the operating and maintenance costs over the life of the project.

The cost information will include the capital costs of new rail rollingstock required as a result of the project, together with their operating and maintenance costs. It will also include the costs and timing of replacing vehicles as necessary during the life of the project.

Investigate the likely revenues from operation of the project over its life. Investigate the potential for third party revenues (e.g., advertising, and so on in vehicles and on stations).

This detailed financial evaluation will form the basis of the economic evaluation of the project.

In undertaking the financial evaluation, refer for guidance to the Treasury's Project Assurance Framework's Cost-Benefit Analysis Guidelines.²

6.4.5 Land Requirements

The expected land requirements for the corridor and stations will be identified.

6.4.6 Associated Infrastructure

Describe any existing infrastructures and service facilities along the corridor, including any recent works by Queensland Transport, Main Roads and the relevant local authority.

6.4.7 Safety

The description of safety issues will include

- safety during the construction of the project, including access by emergency vehicles, and
- safety requirements for operation of the project (including maintenance).

6.4.8 Waste Management and Materials

The management and production of waste during construction will be described. This will require the development of an indicative waste inventory and a description of the management strategies to be used with regard to the Environmental Protection (Waste) Policy. Such strategies are expected to involve the principles of waste avoidance, reuse, recycling, treatment and disposal.

Where waste is taken off site for disposal or reuse the following details will be considered.

- Safety audits.
- Methods for the disposal of hazardous materials in the event of accidents.
- Methods and sites for spoil disposal including likely times and days that materials would be transported from site.
- Whole of life assessment.
- Suitability of waste material for reuse.

² Refer to footnote 1.

6.4.9 Public Utilities

Identify the impacts on the existing and proposed public utility plant and services, including the following.

- Requirements for relocation or protection of existing services.
- Disruptions and costs of impacts on existing services.
- Provision for planned future services.
- Safety aspects of services and structures.

6.4.10 Construction Issues

Identify construction issues. These could involve the following.

- Likely construction techniques and equipment used.
- Estimate of quantities, nature and potential sources of materials required for the project.
- Impacts of construction on existing traffic and proposed traffic management strategies.
- Timing of construction (including days and hours of operation during construction), extraction, drilling and blasting works.
- Construction site traffic generation and access.
- Construction compounds or worksite requirements, construction workforce parking requirements and impacts on existing roads and parking areas.
- Impacts of construction on adjacent properties.

6.4.11 Implementation and Staging

Investigate staging issues requiring consideration during construction and operation. These could involve the following.

- Assessment of staging construction from Beerwah to Caloundra South and Caloundra South to Maroochydore.
- Sequencing of construction to minimise impacts on the community and local traffic.
- Identification and prioritisation of critical components of the infrastructure in relation to maximising operational efficiencies over the full implementation framework.
- Identification of the impacts of implementation staging upon the following
 - transport and traffic,
 - economic impacts both local and regional,
 - operational planning and network integration,
 - local residents and businesses,
 - localised parking demand and impacts,
 - the general community, and
 - the physical environment.

6.4.12 Design Criteria

Design criteria for the corridor, stations and any road network changes will involve the following.

- Design standards, including
 - typical cross sections
 - geometry
 - structures
 - major drainage
 - aesthetics
 - noise amelioration.
- Stations and associated facilities (including parking and access arrangements).

- Pedestrian and cycle facilities and access (to stations and under/over the corridor).
- Buffers and noise abatement structures.
- Viaducts, aqueducts and bridges.
- Changes to public transport services and future public transport opportunities.
- Incorporation of Crime Prevention Through Environmental Design (CPTED) strategies in station design.

7 Environmental Assessment

Describe the physical and biological features of the existing project environment and surrounding areas in sufficient detail to allow the environmental impacts of the proposal to be adequately assessed and to provide a baseline against which predicted and future changes can be measured.

This section of the EIS should provide a detailed description of the potential environmental impacts associated with the proposal during both construction and operation, and provides site specific safeguards/ mitigation measures to ameliorate the identified potential impacts.

7.1 Geology, Geomorphology and Soils

7.1.1 Existing Environment

Provide a description of the geology and geomorphology of the study alignment in sufficient detail to describe the geology of the site in terms of the dominant soil types in a regional context. Describe the elevation, topography and landforms of the corridor alignment and surrounding areas including slope and terrain components and an analysis of subsurface and slope stability. Describe any interesting geomorphologically or geologically unique features (such as faults, unstable areas, and so on), and anything of associated biological importance. A topographic map will be prepared with contours shown at suitable increments with respect to the Australian Height Datum (AHD).

Soil profiles in areas likely to be affected by surface works should be described, with reference to McDonald et al 1990 and Australian Soil Classification Isbell 1996.

An overview of data on contaminated lands should also be conducted. This should identify sites likely to contain contaminated soil requiring off-site disposal.

7.1.2 Potential Impacts and Mitigation Measures

Assessment of the potential impacts and mitigation measures on soils, including erosion risk, settlement risk, rehabilitation potential, acid sulfate soils, contaminated land and construction spoil are required.

Erosion risk

The report should include an assessment of potential erosion effects, especially those resulting from the removal of vegetation, both on-site and off-site for all disturbed areas.

Strategies to prevent or control erosion should be specified and should be developed with regard to preventing soil loss in order to prevent significant degradation of local waterways by suspended solids.

Settlement risk

Reporting should present an assessment of the risk of settlement to adjacent land, due to tunnel construction, collapse or slope failure.

Rehabilitation potential

Strategies for the establishment and rehabilitation of worksites are to be provided. This should include descriptions of topsoil stripping, stockpiling and replacement. The minimisation of topsoil storage times, to reduce fertility degradation, should also be addressed.

Acid sulfate soils

The EIS should identify and outline strategies to manage acid sulfate soils³ consistent with State Planning Policy 2/02-Planning and Managing Development involving Acid Sulfate Soils, Department of Natural Resources Mines and Water's 2002 Queensland Acid Sulfate Soils Technical Manual-Soil Management Guidelines and other relevant technical documents.

Contaminated Land

Strategies to prevent land contamination, within the meaning of the Environmental Protection Act 1994, should be provided. Proposals for preventing, recording, containing and the remediation of any contaminated land likely to be intercepted by construction works should be outlined.

Investigation must be undertaken to identify all sites on the Environment Management Register within the proposed project area.

The EIS should indicate how the Project could comply with existing Site Management Plans for sites located within proposed corridor footprints.

Construction spoil

An assessment should be undertaken of construction spoil in terms of its suitability for use and its contribution to construction material supply compared with disposal to land fill.

7.2 Water Management

7.2.1 Existing Environment

Describe the hydrology traversed by the corridor alignment and surrounding areas including surface and locally important subsurface hydrology. This description should include water quality, wetlands, and the frequency and extent of flooding. Include an overview of any existing water use adjacent to the corridor alignment that may be impacted by the proposal.

The EIS should review the significance of groundwater in the Project area, including current authorised users, together with groundwater use in neighbouring areas. The depth to groundwater and flow direction should be identified.

The groundwater assessment should take into account the findings of the acid sulfate soils assessments as per Section 6.1.

The environmental values of the surface water and groundwater should be described in terms of:

- Values identified in the Environmental Protection (Water) Policy;
- Sustainability, including both quality and quantity; and
- Physical integrity, fluvial processes and morphology of groundwater resources.

³ Acid Sulfate Soils (ASS) occur in low-lying coastal areas, predominantly below 5.0 metres Australian Height Datum (AHD) including the subsoil or sediments below 5.0 metres AHD where the natural ground level of the land exceeds 5.0 metres AHD. The occurrence of ASS has both environmental and engineering implications. Reference should be made to the Guidelines, State Policies, Strategies and Checklists located on Department of Natural Resources, Mines and Water website <http://www.nrm.qld.gov.au/land/ass/products>

Water quality should be described from available information, including seasonal variations with flow, where applicable data are available. A relevant range of physical, chemical and biological parameters should be considered to gauge the potential for environmental harm on any affected water resources.

7.2.2 Potential Impacts and Mitigation Measures

The EIS should describe the potential for environmental impact to be caused by the proposed works to environmental values for water.⁴

Water management to address surface water and groundwater quality, quantity, drainage patterns and sediment movements should be outlined. Key water management strategy objectives include:

- Measures to avoid or minimise any proposed release, including but not limited to source reduction and water recycling;
- Maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota and downstream wetlands including the Moreton Bay RAMSAR wetland); and
- Protection of important local groundwater aquifers.

The EIS should describe options for managing and preventing such releases and mitigating any adverse impacts that might result. Options for mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.

The impact assessment should consider the impacts of the Project on groundwater resources, define the extent of the potential area within which groundwater resources are likely to be affected, and the significance of the Project to groundwater depletion or recharge. The assessment should take into account the potential affect of the Project on any affected groundwater regime caused by the altered porosity and permeability of any land disturbance. The assessment should also identify any groundwater-dependent ecosystems. Management options available to monitor and mitigate these effects should be provided.

Investigations of the potential for draw-down on known and potentially contaminated groundwater and, if relevant, the identification of measures to manage significant contaminant migration to adjacent previously uncontaminated sites generated by identified draw-down should be carried out.

The EIS should also address the Project's potential for providing habitats for disease vectors. Measures to control mosquito and biting midge breeding should be described.

7.3 Flora and Fauna

7.3.1 Existing Environment

Identify, map and describe threatened flora species and communities, including Regional Ecosystem (RE) categories where applicable, and the significance of vegetation types or locations to identified native fauna – in particular riparian vegetation communities.

⁴ Reference should be made to the Environmental Protection (Water) Policy, Water Act 2000 and the Australian and New Zealand Environment and Conservation Council (ANZECC) 2000 Guidelines.

Investigations should comply with all elements of the assessment code in the state government policy for vegetation management and nature conservation where appropriate.

On the basis of flora and fauna surveys and a desktop study, describe the terrestrial and aquatic flora and fauna present or likely to be present in the area or in the areas that may be affected by the corridor, including the existence of endangered, vulnerable or rare species under both Commonwealth and state legislation and the impact of the proposal on these aspects including:

- Any presumed extinct, endangered, vulnerable or rare species, their habitat requirements and sensitivity to change including any ongoing activities associated with the proposal;
- Location and importance of wildlife corridors;
- Occurrence or likely seasonal occurrence of migratory species, and presence of suitable habitat for these species;
- Location of any aquatic species likely to be affected by the project;
- The presence of biogeographically significant, unusual or evolutionary significant species or populations;
- Extent and incidence of exotic and weed species and the likely impact of corridor development (construction and operation) on their abundance and distribution. Species of note should include, but not be limited to, those species recognised under the *Rural Lands Protection Act* (declared and not declared) and recognised by local government. The status and category of any weeds should be noted;
- Presence of feral animals, their distribution and present level of ecological impact; and
- Presence of any significant/ notable nests, burrows, hollows and so on.

Note any species that are identified as under threat on a local or regional scale that may not be recognised under Commonwealth or state legislation.

Past fauna surveys conducted for the study area will be reviewed with results incorporated into the EIS where relevant.

Provide a description of the conservation significance of any specific portions of the corridor alignment including wildlife and habitat. Include reference to State Forests, Fish Habitat Areas, Marine Parks, National Parks, Reserves and other conservation areas/ parks as relevant to the proposal and an explanation of their conservation value.

7.3.2 Potential Impacts and Mitigation Measures

Include any likely direct and indirect impacts on terrestrial and aquatic flora and fauna including migratory species. Attention should be given to any rare, threatened or endangered species, or species or habitats of local, state or national significance identified in the surveys and/or desktop study. Discuss the ability of identified vegetation and fauna to withstand any increased pressure resulting from the proposal (including potential barrier, fragmentation and edge effects of the proposed corridor on terrestrial and aquatic habitats).

Measures to mitigate impacts, including wildlife corridors and compensatory habitat areas and their adequacy and effectiveness should be clearly identified with supporting reasons. Measures for ongoing management of the natural environment and prevention of the

introduction and spread of pests and weeds should also be included. Consideration should be given to the extent and type of disturbance created by other corridors.

7.4 Conservation Areas

7.4.1 Existing Environment

Provide a description of the conservation significance of any specific portions of the corridor alignment including wildlife and habitat. Include reference to State Forests, Fish Habitat Areas, Marine Parks, National Parks, Reserves and other conservation areas/ parks as relevant to the proposal and an explanation of their conservation value.

7.4.2 Potential Impacts and Mitigation Measures

Identify impacts on any natural or conservation areas which may have wildlife, habitat or aesthetic conservation value. This is to include reference to State Forests and National/ Marine Parks, local government conservation areas, revegetation corridors, wetlands and waterways, and any other natural vegetation on any tenure.

7.5 Ecological Relationships

Describe the extent, integrity and relative importance of biological communities of the site and surrounding area;

- Discuss the relationship of the vegetation to water quality and soils stability;
- Discuss the conservation significance of the associations and communities of the site and surrounding area, in respect to local, regional and national and international importance; and
- Describe the ecological values of the study area, including the refuge habitats, food chains, presence of barriers to, and corridors for, wildlife movement.

7.6 Socio-economic Environment

7.6.1 Existing Environment

Describe the social and economic structure of the study area including; demographic characteristics of population growth and distribution; land; housing and accommodation; community facilities and services; leisure and recreational opportunities; employment and occupation and economic infrastructure including commercial, industrial and retail activity.

As part of this section, describe the existing transport operations in the study area in terms of:

- The regional and local road network, including traffic demand, travel speed and times, road capacity, etc
- Traffic composition and movement trends
- Traffic flows – peak and daily
- Public transport services
- Cycling, pedestrians and facilities
- Freight movements.

7.6.2 Potential Impacts and Mitigation Measures

Provide an assessment of the potential impacts (real and perceived) of the corridor alignment of the following:

Land Acquisition and Compensation

Define the land tenure along the study alignment. Discuss likely impacts on the land use status, property values and ownership of land traversed by the study alignment, and assessment of the need for any easement acquisition, and compensation for loss of land and production and increased operational costs caused by severance of property, including compensation for any resumption of Native Title rights and interests.

Land Use

Discuss potential site specific and cumulative impacts of the proposal on existing and potential land use and developments. Assess the potential impact of the corridor on the operation, management, productivity of developments, for example likely sterilisation of mineral and significant extractive industry resources and loss of good quality agricultural land. Note how much land of each type/use will be altered, relating this to the amount of land of each type/ use currently existing in the area.

Cumulative Impacts of Linear Developments on land Use

Consider any severance impacts of other existing or proposed linear developments. Comment on how the project relates to any other existing and future developments or actions Queensland Transport should reasonably be aware of, that have been, or are being taken or that have been approved in the area affected by the corridor. Community severance (if any) in relation to sense of place, identity and service delivery, for example schools, shops, churches, recreational, entertainment and cultural facilities, social links, health and other community centres and open space.

Features of Community Interest

Detail the matters likely to be of interest to other parties affected or likely to be affected by the proposal. Augment the list of relevant local, state and Commonwealth agencies, service and utility providers, community groups and individuals provided in Section 14 of the Terms of Reference by an additional list of parties likely to be affected.

Such parties may be affected or are likely to be affected by development of the proposed community infrastructure as a result of:

- Legislative or administrative responsibilities in relation to the circumstances of the proposal, including the location of the study corridor alignment;
- An interest in a parcel of land within the corridor alignment;
- The extent and nature of on-site or off-site effects.

Undertake consultation about the project including discussion or presentations or the relevant impacts of the project. Include discussion on any feature or areas of local regional or community concern such as those of recreation, amenity cultural heritage or conservation value. Provide copies of any documented response to, or submission from the consultation.

Identify any affected persons or third parties including any specific community segments. Detail such individuals or groups and describe the views expressed. Provide a list of those

parties consulted during the environmental impact assessment process by type or organisation.

General Social Impacts

Include impacts on affected property owners and communities, including Aboriginal communities, employment and construction impacts on local communities. Include an analysis of the impact of alternatives on the amenity of affected persons, for example, landholders, neighbours, visitors.

In addition, the following should be included:

- Impacts on people who live, recreate, travel along, or work near the area of the proposed corridor for both the construction and operation phases.
- An assessment of the direct and indirect impacts on accommodation especially for low-income groups.
- Impacts which may lead to any reduction to the amenity and sustainability of the local communities and in particular losses to community facilities and reduced accessibility.
- Accessibility for any disadvantaged groups or individuals that may be affected by the proposal.
- Community impacts, which include the impacts on existing cultural values, community cohesion, aspirations of individuals and groups with an interest in the project area, lifestyle and land use patterns.
- Socio-economic impacts which include the impacts on employment opportunities, the labour market and existing businesses and industries.
- Personal safety and security.

Economic Evaluation

Undertake a detailed cost-benefit analysis of the impacts of the proposal on the local, regional and state economies. Details should be given of any adverse or beneficial effects the proposal is likely to have on local businesses, industries, agricultural industries, tourism and labour. Among other things, the economic analysis should cover:

- user benefits (such as travel time savings resulting from the project, reduced private vehicle operating costs and road safety improvements, etc),
- benefits and impacts to the broader community through global transport network effects (induced travel, modal shifts etc) on both a local and a regional basis,
- benefits and impacts on existing and potential businesses and commercial properties within the study area (catchment),
- impacts from construction activity,
- socio-economic effects (employment, land use changes etc), and
- environmental effects.

An evaluation framework should be established and clearly described. This framework should, as a minimum:

- provide a clear definition of the economic objectives and scope of the corridor, including the extent of the study area for the purpose of economic assessment,
- patronage/ demand forecast for the study,
- set and justify a timeframe for analysis that reflects the economic life span of the facility as a public asset,
- after consultation with QT and Queensland Treasury, identify and justify an appropriate project-specific discount rate, and
- identify and examine all quantifiable benefits and impacts.

In undertaking the economic evaluation, refer for guidance to the Treasury's Project Assurance Framework's Cost-Benefit Analysis Guidelines.⁵

Transport and Traffic

Describe the transport modelling used to forecast demand for the corridor.

For the periods to 2016 and to 2026 forecast for the corridor and for each station:

- travel trends for the study area
- demand for the project
- public transport trends, including likely
 - o suppressed demand,
 - o public transport volumes
- traffic volumes
- pedestrian and cycle volumes
- likely parking demand levels at stations.

In addition, the contractor will have to

- recommend heavy vehicle movement strategies during construction.
- assess integration possibilities with other modes of transport.
- describe provision for pedestrians, cyclists, public transport services and other special operating facilities along or across the corridor during construction and operation,
- describe access to stations, including pedestrian and cycling connectivity to meet existing and future needs.
- assess impacts of the project on existing and expected future traffic flows.
- assess impacts of the project on other planned transport infrastructure developments in the study area.

Relationship to Other Transport Infrastructure Projects

This section should describe the potential impacts of the Project on existing and planned transport infrastructure projects. The analysis must also address:

- the functional relationship between the Project and other transport infrastructure projects;
- timing implications; and
- opportunities for service integration.

⁵ Refer to footnote 1.

7.7 Air Quality and Climate

7.7.1 Existing Environment

Provide details of the existing air quality in terms of chemical composition and presence of pollutants. Identify atypical meteorological conditions and their likely frequency of occurrence. Provide a description of the climatic features and microclimate of the corridor alignment (for example temperature, wind, rainfall).

7.7.2 Potential Impacts and Mitigation Measures

Describe any likely impacts on air quality during both the construction and operational phases, including dust, odours, particulates or potential greenhouse gas emissions and how these may affect the surrounding environment including, but not necessarily limited to, residences, ecologically sensitive areas and other sensitive receptors where applicable.

Make reference to the consistency with relevant air quality regulations and policies, such as the EPA's Environmental Protection (Air) Policy 1997.

The greenhouse gas emission impacts of the project, both during construction and operations are to be assessed. This assessment should include the calculation and presentation of changes in volume of greenhouse emissions resulting from the predicted changes in traffic volumes. Discuss the implications of the project in relation to both State and Council Greenhouse, or Climate Change strategies.

7.8 Noise and Vibration

7.8.1 Existing Environment

Provide details of the existing ambient noise levels within the vicinity of the corridor alignment. Provide details of any noise and vibration sensitive receptors or locations within the corridor alignment and detail their respective distance from the corridor alignment.

7.8.2 Potential Impacts and Mitigation Measures

Assess the existing background noise levels in districts traversed by the corridor and any station sites, and any increase in background and incidental noise and vibration levels at sensitive locations, particularly during the construction and operational phases.

7.9 Aesthetic Character and Amenity

7.9.1 Existing Environment

The Project has the potential to facilitate urban design, landscape and visual improvements in the study corridor and across a wider area. The urban design, landscape and visual analysis should consider the Project as a whole, on its merits within a wider context and at a local level in terms of project surface works.

The EIS is to describe the aesthetic and landscape values of the area traversed by the corridor alignment and other features contributing to the amenity including: landform; visual character; viewsheds traversed by the corridor alignment; resident populations within the viewshed; buildings, structures or other facilities of particular cultural, historic, religious or social importance.

7.9.2 Potential Impacts and Mitigation Measures

Evaluate local and regional visual impacts of the corridor and associated structures, including station sites, using the appropriate simulation to portray the near and far views of the completed structures and their surroundings at visually sensitive locations.

7.10 Management of Pest Species

Detail the occurrence of pest species including weed species identification, prevalence and infestation of pests (such as fire ants) and control of illegal dumping and uncontrolled access.

7.11 Waste Management

Describe waste management and disposal of materials including oils and lubricants, water, solid waste, vegetative waste and regulated waste.

7.12 Cultural Heritage

The impact of the proposed development on both indigenous and non-indigenous cultural heritage will be determined in the assessment.

Appropriate Aboriginal Land Councils, indigenous and non-indigenous groups and/or individuals having a traditional or historic association to the land affected should be consulted and have an active role in determining the cultural heritage areas of significance within the affected area.

Local and regional historical societies should be contacted to determine sites of significant heritage value. Advise if any place along the corridor alignment or adjacent to the alignment is entered in the heritage register under the *Queensland Heritage Act 1992*.

Activities should include:

- review of literature to identify relevant archaeological, anthropological, natural, historical and other cultural heritage data pertaining to the area impacted by the proposed development;
- consultation of relevant cultural heritage site registers and data bases to compile a list of significant indigenous and non-indigenous sites and places previously recorded in the area impacted by the proposed development;
- consultation locally for information on any areas/items considered of cultural heritage significance by local and regional stakeholders;
- identification of any land along the study alignment subject to a native title claim or indigenous land use agreement;
- identification of Aboriginal Traditional Owners, Native Title claimants and other indigenous interest groups;
- detailed and ongoing consultation with all relevant groups throughout the development process;
- relevant cultural heritage field surveys in conjunction with the Traditional Owners to identify and record significant cultural heritage sites;

- any likely effect on the Native Title holder or claimant and other Aboriginal persons particularly concerned with the land, including their rights, interests, culture and traditions;
- any likely effect on indigenous heritage values (including spiritual, social, anthropological, archaeological, historical or scientific) located on or in the vicinity of the site by way of a comprehensive survey. The owners of the cultural heritage values and any organisation that has legislative responsibilities for the cultural heritage values should approve the survey process and outcomes. Results of this survey should also be sent to the Coordination Heritage Unit of the Department of Natural Resources Mines and Water;
- any likely effect on non-indigenous heritage values. Results of this survey should be forwarded to the Environmental Protection Agency Cultural Heritage Branch;
- determination of the potential impact of the study alignment and/or station site with consideration of issues including lifestyle, heritage places, and other places frequently visited or used;
- preparation of recommendations to minimise the impact of the proposed development on these places; and
- preparation of a Cultural Heritage Management Plan.

Appropriate Aboriginal parties should be consulted in accordance with the provisions of the *Aboriginal Cultural Heritage Act, 2003*.

7.13 Hazard and Risk

7.13.1 Existing Environment

A hazard and risk analysis, using an all-hazards approach, should be outlined which:

- Addresses the handling, transport, storage, and use of hazardous goods by reference to applicable Codes of Practice and Australian Standards;
- Describes the environmental values likely to be affected by hazardous materials and incidents; and
- Identifies hazardous events or activities likely or which may possibly occur both during construction and operational phases of the Project. These could include:
 - Storage and handling of hazardous goods;
 - Transportation of hazardous goods;
 - Vehicle accidents;
 - Inundation of the corridor during construction;
 - The implications of climate change; and
 - Dangerous and hazardous materials spills.

The EIS should report on a risk assessment of the above hazards, in order to outline the levels of risk, if possible in terms of consequences and probability arising from potential hazards, events and situations. The assessment should also include the identification of hazardous materials likely to be used in the operation of the Project.

7.13.2 Potential Impacts and Mitigation Measures

This section is to outline the strategies for hazard and risk management including measures proposed to avoid or minimise the flooding of the works as well as upstream flood impacts resulting from any changes to drainage patterns, emergency disaster and evacuation plans for access and egress for emergency vehicles, containment procedures for the spillage of goods and hazardous substances, the adequate [provision of hydrant water systems and the specific details of the traffic management system to deal with emergencies.

The EIS should describe the design features of the Project and emergency services arrangements to manage accidents/incidents including all fire and safety provisions in the design and incident management procedures proposed. These features are to consider the specific needs of people with a disability who may experience access problems, in particular to any emergency evacuation exist points.

7.14 Town Planning & Legislative Requirements Report

The Town Planning and Legislative Requirement Report shall cover the intent of any relevant state statutes and state planning policies including coastal management; marine parks; local planning scheme/s and land use plan intentions or outcomes to identify issues relevant to the study alignment, including the information required for environmental assessment and/or the development approval process (for example development approval under the *Integrated Planning Act 1997* (IPA) or; Community Infrastructure Development under the IPA or; development approval under *State Development Public Works Organisation Act*). The report should contain all relevant town planning requirements for the study.

The document should also include any potential Commonwealth approval(s) and a list of potential State and/or Local Council permits or approvals and assessment processes that would be required for the selected study alignment.

7.15 Environmental Cost-Benefit Summary

The summary should include both the short and long term environmental costs and benefits to be borne by the community and the environment, such as reduced productivity on land traversed by the corridor, quantity of good agricultural land effected, areas of high conservation values effected, and reduction in greenhouse gas emissions. It should include an analysis of all options for traversing state transport corridors including overhead and underground construction based on ultimate concept plans. Where costs/ benefits are not quantifiable, they should be described.

8 Queensland Transport's Environmental Record

The report should advise how the EIS is consistent with QT's environmental record and should outline its portfolio environmental framework and policy. Specific reference should be made to the environmental performance of relevant past projects of a similar nature and structure to that proposed.

9 Proposed Safeguards and Mitigation Measures

A consolidated list should be prepared of proposed mitigation measures to prevent, minimise or compensate for the relevant impacts of the action, including:

- (i) a description of proposed safeguards and mitigation measures to deal with relevant impacts of the action including mitigation measures proposed to be taken by the state government, local government or the proponent;
- (ii) assessment of the expected or predicted effectiveness of the mitigation measures;
- (iii) any statutory or policy basis for the mitigation measures;
- (iv) the cost of the mitigation measures; and
- (v) the name of the agency responsible for endorsing, approving and implementing each mitigation measure or monitoring program.

10 Environmental Management Plan

10.1 Outline of the Plan

A draft Environmental Management Plan (EMP) for the construction and operational stages of the project should be included in the draft EIS. The design of the project should incorporate features to minimise environmental impacts that are consistent with this EMP.

The EMP should contain all relevant details available at the time the EIS is prepared. When information is not available, they should be described with an indication of how and when the information will be incorporated into the final detailed EMP. When developing the EMP, any relevant impacts identified during the EIS process should be considered.

The plan should address, but not be limited to, the following matters:

- the management objectives;
- the performance objectives;
- specific strategies to meet the performance objectives, such as the preparation and implementation of various control plans;
- identification of responsible personnel in the hierarchy;
- the quality assurance, monitoring and auditing requirements and programs including the identification of performance indicators and criteria, monitoring and auditing locations and frequency;
- reporting procedures;
- identification of any correction action which may be necessary to meet the performance objectives;
- details of ongoing maintenance of the site post construction, including identification of the responsible personnel; and
- a contingency plan to account for natural disasters such as cyclones, storms and fires and so on that may be encountered during the construction or operational phase.

10.2 Monitoring

The EMP should outline an appropriate environmental monitoring program in accordance with the principles listed below:

- reference should be made to relevant legislation and standards;

- monitoring methods should meet any relevant state agency guidelines for Australian standards;
- accredited laboratories should be used for testing;
- reporting should facilitate appropriate interpretation of the monitoring results and effective implementation of resultant findings;
- a review process for the monitoring program should be established.

Monitoring should occur throughout the development, construction, operation and decommissioning phases of the project to ensure that management commitments and licensing arrangements are kept, and to enable ameliorative measures to be taken if unexpected impacts are detected and to facilitate best practice environmental management.

11 Conclusions and Recommendations

The EIS will incorporate a section on conclusions and recommendations, which will include the recommendation of the preferred corridor alignment and public transport mode.

12 Public Access to Draft EIS

A copy of the draft EIS shall be placed on the contractor's project website for public access throughout the period of the public review and consultation. In addition, a copy of the document shall be made available for viewing by members of the public at the contractor's offices and at locations identified in the study area determined in consultation with QT. Copies of the draft EIS, in both hard copy and on CD, shall be made available to QT.

13 Preparation of the Final EIS

Following completion of the period of public review and consultation, the draft EIS should be amended, as appropriate, to include:

- a list of the parties consulted (subject to their permission);
- a summary of all submissions and the account taken of the issues raised;
- any further assessment of environmental effects of the proposal;
- any additional strategies for managing the environmental effects;
- if required, a statement of any matters proposed to be included in the designation of the corridor as community infrastructure under section 2.6.4 of the *Integrated Planning Act 1997*; and
- any recommended changes to the proposed corridor alignment (that is, the final corridor alignment determined following completion of the public review and consultation).

The contractor will prepare both hard copy and CD versions of the final EIS as required by QT. An additional CD copy of the final EIS will be prepared for placement on the Queensland Transport website which will contain no individual file greater than 4MB in capacity to facilitate downloading of the information.

14 Information Sources Provided in the EIS

For information given in the draft EIS, the draft must state:

- a) The source of the information;
- b) How recent the information is;
- c) The perceived reliability;
- d) How the reliability was tested;
- e) What uncertainties (if any) are in the information.

The contractor will confirm that any such information remains current and fit for its purpose.

15 Consultation

All consultation must be consistent with the Communication Strategy for the corridor study prepared by QT.

Any consultation about the action is to be described in the EIS, including:

- any consultation that has already taken place;
- proposed consultation;
- any documented response to, or result of, any consultation that has already taken place; and
- identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

The concerns of the relevant local, state and commonwealth agencies, service and utility providers, community groups, affected property owners and individuals should be identified and addressed in the EIS. All consultation should be clearly documented including issues raised and how they were dealt with. Results of consultation should be summarised in the EIS report and included in detail in an appendix.

Attachment A
Study Location Map

