

## 3. Sustainability

### 3.1 Introduction

Sustainability is a concept that aims to integrate the principles of environmental conservation, social equity and economic development in any human activity. Over recent years, sustainability has evolved as a central theme influencing the delivery of all major public and private sector projects.

The concept of sustainability becomes particularly important when it comes to a large-scale future-oriented venture, such as a major transport infrastructure project. Such projects contain both opportunities and risks for sustainability. While such ventures provide an opportunity to project our aspirations for sustainability into the future, owing to their scale, they are also likely to be associated with greater impacts if sustainability principles are not duly considered.

To optimise sustainability outcomes it is critical that sustainability principles are applied throughout the project from inception through to operation.

The concept of sustainability has been central to the CoastConnect – Caloundra to Maroochydore quality bus corridor project (CoastConnect) and has been addressed by various technical disciplines involved in the project to date.

The following chapter aims to:

- provide an assessment of the CoastConnect project to date against key sustainability principles for transport infrastructure
- provide recommendations on how to optimise sustainability outcomes in the following phases of the project.

#### 3.1.1 Sustainability framework for transport infrastructure

The philosophy of sustainability has been increasingly embraced by government and non-government agencies. Chapter 14 (Land use planning) discusses the policy and legislative requirements that apply to the CoastConnect project. The following identifies recent government and non-government initiatives that provide further direction on how the concept of sustainability could be applied to CoastConnect.

##### Queensland Government

Sustainability is a central theme in the Queensland Government's approach to planning for the future of the state.

*Toward Q2: Tomorrow's Queensland* (the Q2 plan) is a plan for the future of Queensland that formulates the government vision for the state based on the five 'ambitions' aiming to address current and future challenges. Relevant to the CoastConnect project are the Q2 goals for a green and healthy Queensland.

The Q2 plan specifically identifies the goal of reducing the carbon footprint of the state. CoastConnect, by virtue of providing an alternative to private car travel, is an important step towards achieving this goal. CoastConnect would further contribute to the Q2 goals by ensuring sustainability and resource-efficiency principles are implemented throughout its design, construction and operation.

The Q2 plan also emphasises the role of physical activity in prevention of illnesses. The CoastConnect project incorporates improvements to cycling and pedestrian infrastructure likely to encourage a healthier lifestyle for the local community.

The draft South East Regional Plan 2009–2031 identifies sustainability and climate change as major priority areas for the region (Desired Regional Outcome 1), and provides a framework for ensuring sustainability of the region. This framework comprises:

- integrated and long-term decision making
- intergenerational equity
- intragenerational equity
- conserving biological diversity and ecological integrity
- internalising environmental costs
- engaged governance.

More specifically to transport infrastructure, Queensland Department of Transport and Main Roads has provided a Busway Sustainability Discussion Paper (GCI 2008) that establishes a draft framework of sustainability principles and objectives for sustainable transport infrastructure. The paper is an input into the sustainability chapter of the draft Busway Planning and Design Manual (QT 2002) and was prepared to ensure government commitment to sustainability is well communicated to all players involved in busway infrastructure projects.

### **Sunshine Coast Regional Council**

The draft Sunshine Coast Regional Council Corporate Plan 2009–2014, driven by the vision for the region to become ‘...Australia’s most sustainable region — vibrant, green, diverse’, demonstrates the council’s strong commitment to sustainability.

The plan contains eight themes that support the development of the vision, ranging from ecological sustainability to great governance and social cohesion. All of the themes have specific connotations of sustainability.

CoastConnect aligns with a number of strategic priorities as set out in the plan, including:

- “1.3.1 *Facilitate the delivery of key infrastructure projects for our preferred economic growth*
- 2.1.4 *In partnership with government and the community, develop and implement energy transition and greenhouse gas reduction strategies for the region*
- 2.2.1 *Engage with the community to assist with the protection of our environment through sustainable practices and resource minimisation*
- 2.6.1 *Ensure new developments meet high standards of ecological sustainability and urban design*

- 3.1.1 *Foster partnerships with governments, business and the community to encourage innovation and sustainability*
- 4.2.3 *Promote physical activity and recreation*
- 5.1.5 *Provide equitable access to council's facilities, services and access ways*
- 6.1.1 *Develop and implement an integrated transport strategy for both existing and new communities*
- 6.1.2 *In partnership with all levels of government, build and maintain a high quality transport network*
- 6.1.3 *Provide a network of linked pedestrian walkways and cycleways across the region*
- 6.1.4 *Work with the community to promote alternatives to the private car by promoting programs such as TravelSmart*
- 6.2.2 *Continue to work with all stakeholders to secure and progress key public transport corridors*
- 6.2.3 *In partnership with state government, deliver a responsive and affordable public transport system, that considers arterial bus and light rail, that links the major activity centres of the region."*

Consistency with these priorities provides a framework for how CoastConnect would contribute to achieving a sustainable future for the region. The priorities in the plan also provide sustainability objectives for the project.

The council has an active role in the design and delivery of CoastConnect, and thus has a role in ensuring sustainable practices are incorporated throughout its life. As such, the project provides an opportunity for the council to set standards for, and demonstrate commitment to, sustainable practices.

### **Non-government initiatives**

The establishment of the Australian Green Infrastructure Council (AGIC) in 2008 highlights the key role the sustainability concept is set to play in the development of future infrastructure in Australia. As a priority initiative, the AGIC is developing a Sustainability Rating Tool for Infrastructure Projects. The rating tool aims to promote a greater acceptance of sustainability practices in the development of Australian infrastructure.

The rating tool categories highlight the need for sustainability practices to be embedded in all aspects of a project delivery, including:

- project management and governance
- economic performance
- resource use
- emissions, pollutions and waste
- biodiversity
- people and place
- workforce.

Subject to its completion, an assessment of the detailed CoastConnect corridor design against the AGIC rating tool may be worthwhile as a preliminary analysis moving through to detailed design. If the tool is not complete, it may be useful to apply the criteria in a more qualitative assessment. The findings of such an assessment, particularly with respect to resource use, pollution and waste minimisation, and the workforce, may substantially enhance the development of the construction and environmental management plan(s) during delivery and operational periods.

## 3.2 Methodology

### 3.2.1 Understanding the project's contribution to sustainability

CoastConnect is seen to contribute to sustainability in three major ways:

- by providing more sustainable transport options
- by incorporating sustainable infrastructure elements
- by incorporating sustainable practices and processes in the project delivery.

These concepts are outlined below.

#### **A sustainable transport mode**

The provision of a multimodal transport corridor and improvements in associated public transport services, cycling and pedestrian infrastructure represents a significant step towards the sustainability of a region.

The primary contribution of public transport and non-motorised transport networks to sustainability is a greater efficiency in the use of resources, such as road space, fuel and travellers' time. Other sustainability benefits include reduction in the environmental footprint of travel, with further implications for regional CO<sup>2</sup> emissions and improvement in air quality; an increase in physical activity and social interaction; and more equitable access.

In addition, by improving the accessibility of a place, public transport infrastructure attracts a variety of land uses to one location, usually in proximity to a public transport stop, thus contributing to a more compact and diverse land use pattern that is widely considered more sustainable (for example, transit-oriented development/communities).

#### **Sustainable infrastructure**

The design, materials and procedures used in the construction, operation and maintenance of bus infrastructure can also enhance sustainable outcomes by minimising harm and adopting opportunities for mitigation, benefit or improvement.

Adopting a whole-of-life approach to the sustainability of products and materials promotes value-for-money through minimised resource consumption and cost savings on consumables, maintenance and disposal. Well-designed infrastructure can also help to build social capital through contributing to the creation of places that encourage interpersonal interaction and more equitable access.

### 3.2.2 Sustainability principles for transport infrastructure

An assessment of CoastConnect's sustainability initiatives was conducted against the sustainability principles and objectives proposed in the draft Busway Planning and Design Manual (QT 2002).

These principles include:

- promote a more sustainable transport network
- promote resource efficiencies across the whole of project and infrastructure life
- protect and enhance natural, physical and human environments
- promote community capacity, equity and social wellbeing
- promote sustainable forms of local and regional economic growth
- undertake informed and responsive project governance and decision making.

The assessment method was limited to a desktop review of the CDIMP chapters and community consultation findings (Appendices B – D).

## 3.3 Assessment

### 3.3.1 Promote a more sustainable transport network

#### Concept design assessment

CoastConnect is likely to influence travel patterns on the Sunshine Coast for years to come. The main indicator of the project's success will be the change in the modal split between private transport and other travel modes, such as public transport, cycling and walking.

There are a number of practical ways to ensure that the transport network is designed to optimise sustainability outcomes. Chapter 5 (Engineering) and Chapter 7 (Pedestrian and cycle access) provide an overview of the network design elements incorporated in the CoastConnect design.

The assessment concludes that the concept design promotes sustainability principles by:

- improving the bus travel time by up to 13 minutes along the corridor
- increasing attractiveness and capacity for trips made by sustainable modes of transport (public transport, walking and cycling):
  - improving the visibility, reliability, connectivity, efficiency, accessibility and capacity of the public transport system
  - improving community accessibility through better longitudinal and cross-corridor pedestrian and cycle connections.

Following community feedback, the first draft concept design was reviewed, with the current design comprising fewer impacts on property and parking facilities. There has also been a reduction in the proposed transport corridor capacity in some locations (e.g. a reduction from six lanes to four lanes in some sections).

These changes will help facilitate local access, limit social and economic dislocation, and restrict the use of sections of the corridor as a traffic through-route. Accordingly, the current concept design can be seen as a more balanced and sustainable approach to the project than the previous concept, with many improvements arising from community feedback. However, it will be important to ensure that a careful assessment is made of any further changes to the corridor design to ensure that the project's overall objective of providing an effective priority bus corridor is not compromised.

## Recommendations

The following are recommended:

- adopt recommendations provided in Chapter 5 (Engineering), Chapter 6 (Traffic) and Chapter 7 (Pedestrian and cycle access) of this Concept Design and Impact Management Plan (CDIMP), based on their contribution to:
  - network design that is consistent with the following design principles:
    - good connectivity
    - ease of use
    - safety
    - context appropriate design.
  - corridor design that provides for integration with future planned public transport infrastructure to ensure that future corridor widening requirements and disruption to services are minimised.
- develop sustainability performance measures for the network design and operation
- continue community consultation during the detailed project and network design, to ensure it responds most accurately to the local commuters' needs. Community consultation will also be particularly important for the design of supporting infrastructure, such as pedestrian and cycling linkages to bus stops, bus stop location and design
- ensure effective and logical staging of infrastructure delivery that delivers sustainable transport benefits in a timely fashion. This will contribute to a wider acceptance of the new system and a greater shift toward public and non-motorised transportation modes.

### 3.3.2 Look for resource efficiencies across the whole of project and infrastructure life

#### Concept design assessment

Construction of the proposed infrastructure will involve significant use of resources and energy. The best strategy to achieve resource efficiencies across the whole of the project is through material choice combined with smart design and construction practices. These should be guided by the 'reduce, reuse, recycle' philosophy. Adoption of this philosophy will help to minimise the production of waste and emissions, maintain the value of the asset and its component materials, and potentially reduce capital and maintenance costs.

The ways to ensure resource efficiency include:

- adopting a 'cradle to cradle' style whole of life approach to the choice of construction materials and components. This approach considers sustainability in the manufacture, use and disposal phases of a product and differs from the 'cradle to grave' approach by using a recycling process in the disposal phase. It involves:
  - favouring consumables made from durable, recyclable, recycled and/or renewable sources
  - sourcing low environmental-footprint raw materials for construction by favouring:
    - local suppliers and/or on-site production to reduce impacts of transportation
    - efficient transportation methods where necessary — sea, rail, road and air respectively
    - components and materials produced using non-toxic, low carbon and/or low energy processes
    - materials and components whose ultimate disposal can be environmentally safe and optimally recycled.
- design solutions that help minimise energy and resource use and thus capital, operational, maintenance and disposal costs, for example:
  - on-site renewable energy production to power lighting/services
  - on-site rain/stormwater collection and retention for construction processes and for operational needs such as landscape maintenance and cleaning
  - correct orientation of structures to suit solar and climatic conditions thus minimising the need for lighting and climate control.

Chapter 5 (Engineering) specifically identified the requirement to develop strategies for resource efficiency during the detailed design and construction phases of the project. Potential strategies would include water-sensitive urban design, climate-sensitive design, energy and waste minimisation, renewable energy generation, recycling facilities and whole-of-life efficiencies.

As the detailed design phase of the project has not yet commenced, opportunity exists to incorporate specific objectives for resource-efficiency and whole-of-life cost minimisation into the project.

To ensure that these objectives are incorporated into development of the detailed design and preparation of the construction management plan(s) for all stages of the project, it is recommended that they are developed and adopted prior to the commencement of the detailed design phase.

The knowledge base and parameters pertaining to the measurement of sustainability is likely to change over time, particularly as new technologies emerge. Given the expected project timeframe spanning some 5 years (2014–2019), it is recommended that a review of sustainability initiatives (e.g. resource efficiency and waste minimisation strategies) be conducted at each stage of project delivery. The staging and implementation plan should document the requirement to review sustainability measures at key project re-assessment gateways for each stage.

## Recommendations

The following are recommended:

- further design phases should consider the following elements in more detail (see also Chapter 5 (Engineering)):
  - anticipated construction methodology
  - potential construction waste management and materials
  - maintenance
  - staging issues
  - operational engineering issues.
- capture environmental benefits through integrated design responses and designing for components to meet sustainable material performance standards
- develop and adopt objectives and evaluation criteria for resource efficiency prior to the detailed design phase commencing
- include sustainability objectives and performance measures in the consultancy briefs, project documentation and technical tender specifications
- include a requirement in the staging and implementation plan to review sustainability initiatives and techniques at each stage of the project delivery to ensure current best practice standards.

### 3.3.3 Protect and enhance natural, physical and human environments

#### Concept design assessment

Following chapters of this CDIMP discuss potential impacts of the project and mitigation measures on the natural, physical and human environments.

Chapter 13 (Ecology) provides an assessment of potential impacts on the natural environment of the corridor. The area in which the CoastConnect - Caloundra to Maroochydore corridor is to be located is highly urbanised and developed, with much of the original vegetation having been cleared and replaced by urban land uses over the past 100 years. Given this, terrestrial ecological values within the project area are considered nominal and fragmented, and impacts associated with the project would be minimal.

Mitigation measures were recommended to protect mature trees along the alignment or provide additional landscaping to improve the existing natural environment.

The project area contains a number of aquatic and marine ecological values. If not properly managed, the project has potential to increase sedimentation and pollution of waterways adjoining the corridor alignment. Chapter 11 (Ground conditions) and Chapter 12 (Hydrology, hydraulics and surface water quality), identified mitigation measures on how to minimise the potential impact on the aquatic and marine environments.

Pockets of green space present along the corridor have significant social and community values. A detailed assessment of the project's impact on the green and public space along the corridor was conducted as part of this CDIMP.

Identified mitigation measures included the use of quality landscaping techniques for the corridor to compensate for the loss of green and open space amenity. The concept design also incorporates a strong focus on quality urban design, specifically with respect to development and integration of the busway stations with the existing built and natural environment.

Impacts on human environment, such as reduced access to public beaches and parking convenience, have been addressed in the current concept design through offsetting lost car parks, maintenance of all current pedestrian crossings, and provision of pedestrian overpasses at stations.

Mitigation and design measures identified in the CDIMP would further minimise the impacts of the project on the local environment, and in some cases, would improve the existing situation (e.g. through the use of urban design techniques).

### **Recommendations**

The following are recommended:

- adopt recommendations provided in the technical chapters of this CDIMP, including:
  - ensuring ecological values within the project area are properly identified and protected. Habitat values within the project corridor should be investigated in more detail closer to delivery of the project. Of particular importance is investigation of potential impacts associated with waterway crossings (bridge widening and realignment)
  - implementing construction management plan where development works will occur in close proximity to waterways. Other typical mitigation strategies would include introducing coastal planting to supplement and strengthen dunal vegetation and coastal landscaping and replacing on-street landscaping in accordance with the Sunshine Coast Regional Council provisions
  - implementing a water quality monitoring program prior to design and land resumption. The purpose of the water quality monitoring programme is to verify current conditions, which would assist the design of the stormwater quality treatment devices and compliance with the site-based water quality objectives
  - noting that low-lying sections of the existing roads may currently be vulnerable to flooding. Under current conditions, this presents significant problems in providing adequate drainage and flood immunity. If global sea levels rise according to current estimates of climate change impacts, then the serviceable life of the corridor will be significantly curtailed. It is noteworthy that the two sections of the corridor with the highest cost (construction plus property resumption) are the two sections at highest risk from potential climate change impacts. It is recommended that this issue be considered further prior to the commencement of detailed design and land resumptions
  - recognising further detailed assessments of construction noise and vibration will be required closer to the construction phase of the project.

- capture environmental benefits through integrated design response to environmental goals and opportunistic infrastructure upgrades:
  - design for new, replacement or reinstated infrastructure to meet environmental standards and criteria
  - apply any improved design standards and practice that were not in place when existing infrastructure was developed.
- ensure detailed design assessments include criteria relating to:
  - high quality urban and infrastructure design
  - water-sensitive design and runoff management
  - climate-sensitive design — solar orientation, climate appropriateness
  - functional needs and performance from the perspective of the general public.
- ensure environmental and urban design (including design for safety) criteria are applied to all elements of the CoastConnect project, including bus stops, bus stations, pedestrian and cycling links, corridor landscaping.

### **3.3.4 Promote community capacity, equity and social wellbeing**

#### **Concept design assessment**

The CoastConnect project has incorporated direct and on-going communication with the local community and other stakeholders. In addition to the structured consultation programme, the Department of Transport and Main Roads conducted meetings and interviews with affected business owners to identify and respond to community concerns.

Community consultation in September and October 2008 (see Chapter 2 (Community consultation)) raised issues such as:

- potential removal of on-street car parking for recreational purposes
- perceived impacts on property values
- lack of cycling provisions including lack of dedicated cycle lanes
- concerns about pedestrian safety
- convenience of proposed bus stop locations.

In response to community consultation, the draft corridor design was amended to significantly reduce impacts on properties and parking facilities. Other design elements, such as location of bus stops and cycling routes, impact on green space and access to public beaches, and application of urban design techniques throughout the corridor have also been reviewed in consultation with the stakeholders. Further consultation with respect to revised concept design was conducted in July 2009. The outcomes of this round of consultation demonstrated a change in perception of the key issues associated with the CoastConnect corridor, with focus being shifted to more detailed operational issues, such as design of cycling facilities and frequency of bus services.

These practices demonstrate the department's commitment to achieving social equity and inclusion of direct environmental benefits through managing and responding to community concerns early in the design process.

Consultation with potential users of the corridor is a critical step in ensuring that the number of people using the future infrastructure is maximised, while the amount of potential operational issues for the corridor is minimised. In addition, effective community consultation, with evident feedback loops, empowers community members and allows them to internalise and accept the project more easily. Community consultation may also lead to changes in travel behaviour.

### **Recommendations**

The following are recommended:

- continue developing an effective working relationship with the local community and other stakeholders in the project:
  - ensure early and continuous engagement with directly affected stakeholders during the construction of each stage of CoastConnect
  - ensure a strong relationship with key influencers and peak groups through open communication and clear channels of contact
  - ensure community representative groups are effectively engaged on an ongoing basis
  - benchmark qualitative community consultation feedback against statistically valid market research results
  - proactively engage with the specific local stakeholders most impacted by any changes to community spaces such as parks and other open spaces
  - ensure the general public knows how and where to seek information about the project and that contact is effectively monitored, tracked and responded to.

### **3.3.5 Promote sustainable forms of local and regional economic growth**

#### **Concept design assessment**

Discussion in Chapter 14 (Land use planning), demonstrates that the CoastConnect concept design is consistent with the regional and local strategic directions for economic growth and development. The concept design effectively integrates the development of bus stations with activity and transport nodes along the corridor. There may be a number of opportunities to redevelop areas adjoining the future bus stops/stations in accordance with the principles of transit-oriented development (TOD). Delivery of integrated TOD outcomes around bus stations will depend on land use planning undertaken by Sunshine Coast Regional Council in collaboration with other key stakeholders, including the Department of Transport and Main Roads, TransLink Transit Authority and private enterprise.

Access is a key economic sustainability issue for many of the economic enterprises located along the corridor. An assessment of the economic impact of CoastConnect, with specific relevance to loss of parking facilities for businesses located along the corridor, was conducted as part of this CDIMP.

In response to this assessment and community feedback, the concept design was reviewed to reduce the number of parking impacts and provide replacement parking facilities. Consideration has also been given to the protection for, and appropriate provision of, adequate loading and service facilities.

Presently, major economic drivers of the Sunshine Coast consist of industries associated with construction, retail and tourism. CoastConnect - Caloundra to Maroochydore is expected to have tangible impacts upon the retail and tourism industries within the area in which it will operate through increasing the mobility of residents and tourists along the corridor and its catchment networks. In conjunction with additional local incentives, increased mobility is also expected to support the diversification of industries as the Sunshine Coast matures.

### **Recommendations**

The following are recommended:

- in consultation with affected businesses, further develop strategies for provision of replacement car parking spaces and service/loading bays
- in consultation with stakeholders, including public transport users, council and local Chambers of Commerce, further develop options for proposed bus stations at Caloundra, Kawana Shoppingworld and Maroochydore and potential for redevelopment of adjoining areas. Particular consideration should be given to urban design, integration with the existing development, and pedestrian accessibility
- ensure that the bus services offered on the CoastConnect - Caloundra to Maroochydore are able to be utilised easily by all sectors of the population.

### **3.3.6 Undertake informed and responsive project governance and decision making**

#### **Concept design assessment**

Sustainability, including a commitment to responsive project governance and decision making, could be best incorporated into the project through the development of a set of practical criteria and objectives to be reached at each phase of the project.

To date, no project specific sustainability objectives have been adopted for the CoastConnect project. However, a number of strategies implemented on the project to date demonstrate the department's commitment to the overall sustainability outcomes and to informed and responsive project governance. These strategies include:

- early identification of potential impacts and mitigation measures
- a significant review of the draft concept design
- on-going community consultation processes.

Establishment of project-specific sustainability objectives would further communicate the department's commitment to delivery of sustainable infrastructure and ensure this message is carried through the lifespan of the project. Establishing this would also provide common understanding for everyone involved in the project delivery.

This is particularly important, given that supporting elements of the broader CoastConnect - Caloundra to Maroochydore project strategy would be delivered by a number of agencies, including the Department of Transport and Main Roads, TransLink Transit Authority, Sunshine Coast Regional Council and/or private enterprise.

### **Recommendations**

The following are recommended:

- prior to commencement of the detailed design phase, develop and adopt sustainability objectives and performance criteria for the project. The draft Busway Planning and Design Manual and the AGIC assessment criteria can provide the basis for this
- ensure that sustainability objectives and criteria are included in assessments made at key project review gateways such as contract/tender document preparation, detailed design review, project approval and so on
- continue to utilise community and stakeholder consultation, with an effective feedback loop in decision making.

## **3.4 Findings**

This chapter provided a broad assessment of sustainability initiatives incorporated in the concept design of CoastConnect.

The project is expected to provide contribution to broader sustainability of the region in three major ways:

- as a sustainable transport mode
- as a sustainable infrastructure
- by ensuring sustainable project delivery practices are in place.

Sustainability of the project will be accomplished through deliberate design of the infrastructure and services network; incorporation of sustainable infrastructure materials and construction practices; and effective identification and management of potential impacts.

The cumulative assessment of impacts and recommended mitigation measures associated with this project demonstrated that to date, the concept design and the process adopted by the Department of Transport and Main Roads have been largely consistent with sustainability principles.

It is important, however, to ensure that these principles are applied in every phase of the project. Achieving this would require adopting a set of project-specific sustainability objectives. To date, sustainability objectives have not been included in the Terms of Reference for the CoastConnect project.

Establishment of the project-specific sustainability objectives would communicate the department's commitment to delivery of sustainable infrastructure and ensure this message is carried through the life of the project. This would also provide the level playing field for everyone involved in the project delivery.

This is particularly important, given that the project is to be delivered by a number of agencies, including the Department, TransLink, Sunshine Coast Regional Council and private enterprise.

The project provides an opportunity for the department, council and other players to set standards for, and demonstrate commitment to, sustainable practices.

### 3.5 Recommendations and further investigations

The following is a list of recommendations to ensure sustainability measures are incorporated in the further phases of the project:

- adopt recommendations on impact mitigation measures provided in this CDIMP, including:
  - ensuring detailed network design is consistent with the design principles adopted for this project, such as:
    - good connectivity
    - ease of use
    - safety
    - context-appropriate design.
  - conduct detailed investigation of potential impacts on habitat values associated with waterway crossings (bridge widening and realignment) close to the delivery of the project
  - provide coastal planting to supplement and strengthen dunal vegetation, and coastal landscaping and replacement of on-street landscaping in accordance with the Sunshine Coast Regional Council provisions
  - implement a water quality monitoring program prior to design and land resumption. The purpose of the water quality monitoring programme is to verify current conditions, which would assist the design of the stormwater quality treatment devices and compliance with the site based water quality objectives
  - investigate impact of climate change and sea level rise on the serviceable life of the corridor. The two sections of the corridor with the highest cost (construction plus property resumption) are the two sections at highest risk from potential climate change impacts. It is recommended that this issue be considered further prior to the commencement of detailed design and land resumptions
  - conduct detailed assessments of construction noise and vibration closer to the construction phase of the project.

- prior to commencement of the detailed design phase, develop and adopt sustainability objectives and performance criteria for the project. The draft Busway Planning and Design Manual and the AGIC assessment tool criteria can provide the basis for this
- include a requirement to adhere to sustainability objectives in consultancy briefs and project documentation (this may form a Performance Indicator for the project)
- the AGIC Rating Scheme is soon expected to provide a methodology for sustainability assessment of infrastructure projects, such as the CoastConnect - Caloundra to Maroochydore. An assessment of the detailed design against the AGIC rating tool may assist in further developing the sustainability (and value for money) of the project. The findings of this assessment, particularly with respect to resource efficiency, pollution and waste minimisation, may substantially inform development of the construction management plan
- the knowledge of best practice in sustainability changes over time. Given the expected project timeframe spanning some 5 years (2014–2019), it is recommended that a review of sustainability initiatives (e.g. resource efficiency and waste minimisation strategies) be conducted at each stage of project delivery. The staging and implementation plan should document the requirement to review sustainability measures at each stage.

## 3.6 References

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