



Gladstone Ports Corporation

Growth, Prosperity, Community.

Chapter 18 – Sustainable Development





18. Sustainable Development

18.1 Introduction

The aim of this chapter is to qualitatively assess how the Western Basin Dredging and Disposal Project has considered the objectives of sustainable development. The National Strategy for Ecologically Sustainable Development (NSESD) objectives and Australian Green Infrastructure Council (AGIC) indicators have been used as the basis for the comparison. This assessment and description of the scale of impacts / risk and mitigation options for this Project are based on the preceding chapters of this EIS and the technical appendices.

The EIS considers the proposal in the context of other current and planned developments in the Port of Gladstone. There is the potential for cumulative or compounded impacts where surrounding projects result in multiple stressors on the area. To avoid and/or manage adverse cumulative impacts and capitalise on opportunities, a regional planning approach is required; including in some cases, more extensive mitigation and offsetting strategies at the individual project level.

The Sustainable Development Assessment is not an assessment as to whether or not a project should proceed. Such decisions are based on wider socio-political considerations, together with the outcome of the EIS and a range of associated community consultation and regulatory processes. The scope of this assessment is to qualitatively demonstrate that the design enhancements, mitigation and offsetting recommended for the Western Basin Dredging and Disposal Project achieve a balance between environmental integrity and social and economic development.

This chapter should be read in the context of the technical studies undertaken for this EIS.

18.2 Methodology

18.2.1 Overview

The Sustainable Development Assessment is based on qualitative, desk-top analysis using the information provided in the technical reports to this EIS. A whole-of-project perspective is taken on the impacts associated with the Project and the mitigation effort required to achieve sustainable development values. The methodology for assessing how the Western Basin Dredging and Disposal Project considers the objectives of sustainable development is shown in Figure 18-1.

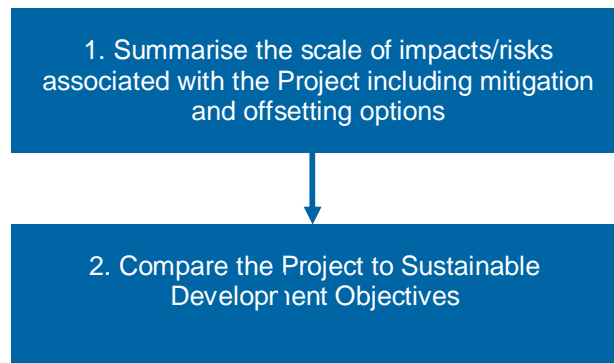


Figure 18-1 Methodology Overview

Step 1 – EIS Overview

The Western Basin Dredging and Disposal Project EIS is based on technical investigations undertaken by ecologists, engineers, planners and social scientists etc who assess the Project from their particular area of speciality to determine short and long term impacts of the Project and options for avoiding and mitigating any adverse impacts. The aim of this step is to review the EIS and associated technical reports and present this technical information in a matrix format in order to highlight key findings and recommendations of the EIS.

Step 2 – Sustainable Development Assessment

Sustainable Development objectives encourage a holistic and long term approach to decision-making. The aim is to improve quality of life and economic opportunity without irreversibly degrading ecological systems and biodiversity. The Sustainable Development objectives for this Assessment are based on the NSESD and AGIC indicators. The aim of this step is to demonstrate that sustainable development aspects have been considered and incorporated in the Project, and that the Project provides long-term benefit for the region.

18.2.2 Scope

Chapter 2 of the EIS provides a detailed Project description. The impacts associated with the quarry supplying the bund construction material, and future industries locating on the Western Basin Reclamation Area are investigated as part of separate regulatory processes, and are not included in this EIS.

This Sustainable Development Assessment is limited to the Port boundary; however it should be noted that some impacts can extend beyond the physical demarcation of the Project. These include impacts on terrestrial and marine ecology, housing and community infrastructure for construction and operational staff, visual impacts on the landscape etc. These broader impacts are also discussed in this Chapter.



18.2.3 Cumulative Impacts

Any proposed development has the potential to impact upon the environmental, social or economic values of a locality. It also has the potential to produce a cumulative impact upon those values when the proposed activity is conducted in combination with other developments. The typical effect is a compounded impact resulting from the interaction of multiple stressors from different projects. To have a complete understanding of the full impact potential of a proposed development, it is necessary to assess the potential cumulative impacts that may result from the Project in combination with other projects. An assessment of cumulative environmental impacts considers the potential impact of a proposed development in the context of previous, existing and future known developments. This enables the Project to be understood in relative context and not in isolation from other projects.

A number of coastal developments are being undertaken in the Gladstone region concurrently. There is potential for cumulative impacts to the region resulting from concurrent or successive developments, particularly with regard to multiple dredging and reclamation activities. Impacts from future developments are not always able to be quantified and, accordingly, it is appropriate to examine cumulative impacts across all developments from a qualitative perspective. All future dredging and disposal of dredged material that is envisaged for the inner harbour of the Port of Gladstone has been encompassed in this EIS. Therefore, this EIS in itself represents a cumulative impact assessment of many of the potential environmental impacts associated with the proposed development of the inner harbour. Other projects that are either already approved or are currently undergoing separate approvals processes and can therefore be encompassed in this cumulative impact assessment, include:

- ▶ Annual maintenance dredging of the shipping channels, swing basins and berth pockets of various Port of Gladstone facilities by the 'Brisbane' trailer suction hopper dredger;
- ▶ Development of the Wiggins Island Coal Terminal (approved);
- ▶ LNG Ltd Stage 1 dredging at the existing Fisherman's Landing reclamation Bulk Liquids Wharf;
- ▶ Fisherman's Landing Northern Expansion (EIS on public display); and
- ▶ Development of LNG facilities on Curtis Island and the existing Fisherman's Landing Reclamation.

Cumulative impacts associated with this Project have been identified and scaled in this EIS and associated technical reports and are summarised in the main EIS document. Cumulative impacts associated with industries locating on the Western Basin Reclamation Area are considered outside the scope of this EIS as their nature and timing is unknown and they are expected to be considered in separate approval processes.

18.3 EIS Overview

18.3.1 Introduction

The objective of the EIS is to identify and assess all potential social, environmental and economic impacts of the Project, and where possible, identify how adverse impacts can be avoided or mitigated. Where project impacts can not be avoided or mitigated, appropriate offsets can be proposed. The EIS is a self-contained and comprehensive document. The aim of this section is to provide a high-level overview of the impacts identified in the main EIS and the associated mitigation options recommended. No analysis or interpretation of the data is undertaken. The aim of the following sections is to provide the assessment of the Project against sustainable development objectives.



The Western Basin Dredging and Disposal Project EIS identifies and scales the impacts / risks associated with the construction of the bund around the Reclamation Area; dredging and placement of material in the reclamation; decant of tailwaters from placement of material in the Reclamation Area; and runoff / discharge of stormwater after final capping of the reclamation. The impacts/risks identified cover social, environmental and economic considerations that are relevant to the proposal, such as impacts on marine fauna and flora, commercial fisheries, employee health and safety, noise etc. The scale of impact or risk is based on the nature of the activity and the environment supporting the activity assuming that no significant mitigation solutions are in place (termed 'raw risk'). The 'residual risk', or level of risk remaining after mitigation options have been implemented, is also discussed in technical reports. In this chapter the effectiveness of mitigation options is only discussed from a qualitative perspective.

The risk/impact assessments in the EIS technical reports filter the minor acceptable risks or impacts from the major unacceptable risks and consider the sources of risk, the consequences, and the likelihood that those consequences may occur. A semi-quantitative risk assessment methodology is used to determine level of risk. The semi-quantitative process estimates the degree of the consequence and probability and assigns a score to each risk. Full details on this risk approach are provided in Chapter 3 of this EIS. For the purposes of this chapter, the GPC consequence and likelihood tables are reproduced below to enable interpretation of the EIS Overview matrix.

Table 18-1 Consequence Scales

Category	Workplace Health & Safety	Environment	Financial Impact on Earnings before Interest and Tax	Community or Customer Reputation	Legal	Process Interruption
1 Minor	Near miss/no injury	On site release of pollutant contained without external assistance	Losses less than \$100,000	Isolated complaint	Court action with small fine – less than \$10,000	Less than 1 hour
2 Moderate	First Aid Treatment	On site release of pollutants contained with external assistance	Losses of \$100,000 to \$1 million	Multiple community or customer complaints	Court action with moderate fine - \$10,000 to \$75,000	1 hour to 1 shift
3 Significant	Medical treatment	Significant on or off site release and detrimental impacts	Losses of \$1 million to \$2.5 million	Community action with possible delays to Project	Court action with significant fine - \$75,000 to \$250,000	1 shift to 1 day



Western Basin Dredging and Disposal Project

Category	Workplace Health & Safety	Environment	Financial Impact on Earnings before Interest and Tax	Community or Customer Reputation	Legal	Process Interruption
4 Major	Serious injury/lost time injury	Major offsite release and detrimental impacts	Losses of \$2.5 million to \$5 million	Community action severely delays Project	Court action with major fine - Greater than \$250,000	1 day to 1 week
5 Critical	Major extensive injury (permanent disablement) or fatality	EPA ordered shutdown of major part of process	Losses of greater than \$5 million	Community or customer outrage prevents projects or results in severe damage to Corporate image which limits future options	Court action with jail sentence	More than 1 week

Table 18-2 Likelihood Rating

Likelihood	Rating	Likelihood Calculator
Rare	1	The risk may occur only in exceptional circumstances (The risk is not likely to occur in the next 25 years)
Unlikely	2	The risk could occur at some time (The risk is likely to occur once in the next 5-25 years)
Possible	3	The risk might occur at some time (This risk is likely to occur in the next 2-5 years)
Likely	4	The risk will probably occur in most circumstances (The risk is likely to occur in 1-2 years)
Almost Certain	5	The risk is expected to occur in most circumstances (The risk is likely to occur within the next 12 months)



Table 18-3 Risk Assessment Allocation

Likelihood	Consequence				
	Critical (5)	Major (4)	Significant (3)	Moderate (2)	Minor (1)
Almost Certain (5)	High	High	High	Medium	Medium
Likely (4)	High	High	Medium	Medium	Low
Possible (3)	High	Medium	Medium	Low	Low
Unlikely (2)	Medium	Medium	Low	Low	Very Low
Rare (1)	Medium	Low	Low	Very Low	Very Low

18.3.2 Items of Clarification

The EIS Overview Matrix in Table 18-4 provides a whole-of-project perspective on the scale of impacts associated with the Western Basin Dredging and Disposal Project and the cumulative impacts (where relevant) from the additional projects listed in Section 18.2.3. The 28 impact or risk categories have been considered and scaled (either semi quantitatively or qualitatively) in the EIS by the various technical disciplines. It is important to clarify that positive impacts or opportunities associated with the Project, for example, benefits from expanding port capacity and industrial development, are not covered in the risk approach. For the purposes of this chapter, these opportunities and benefits have been highlighted separately. These benefits are the primary 'drivers' for the Project and the aim is to balance these significant economic driven benefits with social and environmental considerations. In areas where there is no cumulative risk due to the current project taking into account all proposed activities that could impact on a particular environmental aspect in the Western Basin of the port, or where the level of risk is unknown, these have been presented with a dash (-).



Table 18-4 Environmental Impact Assessment Overview

	Economy					Community					Environment																	
	Regional economy	Industrial development	Local employment	Infrastructure (roads etc)	Commercial fishing industry	Accessibility (natural and recreational areas)	Cultural Heritage (Aboriginal and non-Aboriginal)	Noise	Community interest in environmental issues	Visual Amenity and Landscape Character	Health and safety	Terrestrial Fauna	Terrestrial Flora	Marine Fauna	Marine Flora	Surface Water and Stormwater	Groundwater integrity	Marine Water Quality	Coastal Processes	Sediment Quality	Soil and Land (acid sulphates)	Atmosphere (air quality, GHG emissions)	Waste Generation	Hydrogeology	Raw materials intensity (i.e quarry)	Water intensity	Energy intensity	
Whole of Project	Expected positive benefits from Project					H	M	L	L	M	M	L	M	L	H	H	VL	VL	M	M	M	M	M	L	L	M	L	M
Cumulative Impacts						H	H	M	M	H	H	L	M	L	H	H	L	VL	H	M	M	M	M	M	L	L	M	L
CONSTRUCTION																												
Construction of bund wall	Expected positive benefits from Project					H	M	L	L	M	M	L	M	M	M	M	L	VL	M	H	M	L	VL	L	L	M	VL	M
Cumulative Impacts						H	M	M	-	M	M	L	-	-	M	M	-	-	M	H	-	L	-	L	-	M	-	-
Dredging and placement of material within reclamation						H	L	L	M	M	M	VL	VL	VL	H	H	L	VL	M	H	M	M	M	L	VL	VL	VL	H
Cumulative Impacts						H	L	L	-	H	M	L	-	-	H	H	-	-	H	H	-	M	M	L	-	-	-	H
Decant of tailwaters from placement of material in bund						L	VL	VL	VL	VL	VL	VL	L	L	M	M	M	VL	M	VL	VL	L	VL	L	VL	VL	VL	VL
Cumulative Impacts						-	-	-	-	-	-	-	-	-	M	M	-	-	M	-	-	-	-	-	-	-	-	-
OPERATION																												
Runoff / discharge of stormwater after final capping of reclamation	Expected positive benefits from Project					VL	VL	VL	VL	VL	VL	VL	L	L	M	M	M	VL	M	VL	VL	M	VL	VL	VL	VL	VL	VL
Cumulative Impacts						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



18.3.3 Key Impacts / Risks

Based on the output of the matrix, this review of the EIS has identified the following:

- ▶ **Positive Impacts** - The establishment of the reclamation and the resulting increase in industrial development and attraction of major industries will result in positive cumulative impacts on the regional economy, State economy, local employment and infrastructure development in the Gladstone Port Region.
- ▶ **Very Low – Low Impacts** - In general, impacts associated with availability of community services, noise, terrestrial fauna and flora, visual impacts, groundwater integrity, surface water, waste generation, geology, cultural heritage, local employment, infrastructure and water intensity are expected to be low – very low for the Project. However, some of these impacts may result in negative effects when considered alongside surrounding developments. Impacts to consider include cultural heritage, community services and noise.
- ▶ **Medium Impacts** - Use of raw materials, sediment quality impacts, impacts on the recreational fishing industry, accessibility (recreational and natural areas), impacts on coastal processes and greenhouse gas emissions are expected to be medium. With cumulative impacts exacerbating medium impacts in area such as visual amenity and landscape impacts and energy use in the area.
- ▶ **High Impacts** - Impacts of the dredging and reclamation establishment on marine fauna and flora, impacts on the commercial fishing industry, water quality impacts from an increase in turbidity and the energy intensity of the dredging and impacts are expected to be high. Community interest in the environmental impacts of the Project is also expected to be high.

As a general assessment, it could be concluded that areas that have positive impacts should be maximised, areas that have low – medium impacts should be minimised through normal business improvement processes, and areas that have medium - high impacts require some form of design enhancement, staging of works, monitoring, mitigation and/or offset to respond to these significant challenges that have the potential to degrade the sustainability values of the region.

18.3.4 Key Cumulative Impacts

Based on the output of the matrix, cumulative impacts that elevate medium risks to a higher risk occur in areas such as community interest in the environment and visual impact. In other areas such as impacts on commercial fishing and marine megafauna and flora, high risks are expected at both the Project and cumulative impact level. Positive or beneficial socio-economic impacts associated with Port of Gladstone are also anticipated. The following is an overview of the scale, intensity, duration and frequency of beneficial and adverse cumulative impacts associated with this Project and other significant projects in the region:

- ▶ **Socio-economic (employment, infrastructure, economic development)** – In general, the Project is expected to result in long term benefit for the regional, state and national economy. This in turn, will lead to flow on benefits to the region including demand for employment, infrastructure and industrial development and an increased tax base for Gladstone and the State. However, while there may be net benefit from each project individually, if a number of other projects proceed concurrently with the Western Basin dredging and bund construction, there may be impacts on other aspects of the economy and community, including increasing housing and rental prices, stress on existing



community facilities such as schools and medical services and shortfalls in the local labour market. Community interest in these issues is expected to increase over time.

- ▶ **Marine Flora and Fauna** - The key impacts of the Project relate to direct impacts on marine flora and fauna through removal of habitat, sediment deposition, reduction in water quality and direct collisions with megafauna. The extent and severity of these impacts is determined by length of the dredging campaign, the type of equipment used and the way in which it is operated. There is the potential for compounding effects on water quality should multiple dredging projects such as WICT and Fisherman’s Landing Northern Expansion proceed concurrently with the Western Basin Dredging and Disposal Project. For example, if the capital dredging occurs while another dredging project occurs, the spatial extent of turbid plumes could overlap and the impact of the combined plumes above background water quality concentrations would need to be considered. Community interest in the cumulative impacts of dredging projects on conservation values is expected to be high.
- ▶ **Visual Impact on Landscape and Topography** – The visual impact assessment for the Western Basin Dredging and Disposal Project identified large adverse visual impacts from cumulative developments in the area (including the LNG plants on Curtis Island), particularly from viewpoints such as Port Curtis and Friend Point. The result is a visual encroachment on the natural feel of the inner harbour and a permanent change to the visual character of the location. Mitigation options associated with retaining vegetation and replanting are proposed to reduce these impacts.

18.3.5 Key Mitigation Options

Options for managing impacts/risks associated with the Western Basin Dredging and Disposal Project are identified in the EIS and associated technical reports. Table 18-5 provides a high-level overview of mitigation strategies recommended for this Project. This should be read in conjunction with the EMP and the technical reports.

Table 18-5 Project Mitigation Options

Mitigation - Construction
Construction of bund wall
<p>Low - Medium impacts, managed by:</p> <ul style="list-style-type: none"> ▶ Marine and road traffic safety plans ▶ Local contractor employment and local spend ▶ Road surfacing to take into account climate change aspects ▶ Cultural Heritage Management Plan during construction ▶ Source recycled materials i.e. for geotextile fabric ▶ Construction safety and hazard management plans ▶ Monitoring of water quality against trigger levels <p>Medium - High impacts, managed by:</p> <ul style="list-style-type: none"> ▶ Regional approach to dealing with cumulative impacts ▶ Protection of mangroves through intertidal channel ▶ Low wattage, directional lighting where lighting is required



- ▶ Monitoring of seagrasses

Mitigation - Construction

Construction of bund wall

- ▶ Monitoring of impacts on shorebird migratory communities
- ▶ Provide large rocks for bund wall to encourage alternative food sources for birds and predators
- ▶ Monitoring of water quality against trigger levels especially relating to decant regimes
- ▶ Monitoring of turbidity levels at sensitive ecosystem receptors
- ▶ Emergency Response Procedures Plan to mitigate impacts associated with fuel and oil spills
- ▶ Waste management plan

Dredging and placement of material in the Reclamation Area

Low – Medium impacts, managed by:

- ▶ Marine and road traffic safety plans
- ▶ Local contractor employment and local spend
- ▶ Dredging safety and hazard plans (including safety of marine animals)
- ▶ Waste management
- ▶ Operate within safe weather conditions during dredging

Medium - High impacts, managed by:

- ▶ Bund design to reduce potential of fines entering marine environment
- ▶ Mechanisms such as tickler chains on dredgers to avoid interaction with turtles resting on seabed
- ▶ Marine plant offsets in accordance with Government policy
- ▶ Selection of least environmental impact dredging options where possible
- ▶ Manually remove any fauna trapped in bund
- ▶ Dredging limited to agreed footprint of channels
- ▶ Consider turtle nesting period in dredging schedule
- ▶ Use warning strikes or soft starts to alert mega-fauna to leave the area for pile driving
- ▶ Minimise light spillage. Use low wattage, directional lighting
- ▶ Protect mangroves, especially those that provide visual or biodiversity benefits
- ▶ Monitoring of seagrasses
- ▶ Monitoring of impacts on shorebird migratory communities
- ▶ Dredge Management Plan
- ▶ Energy Efficiency Opportunities Assessment implementation
- ▶ Acid Sulphate Soils Management Plan



Mitigation - Construction

Decant of tailwaters from placement of material in the bund

Medium - High impacts, managed by:

- ▶ Surface water impacts managed through design i.e. decant ponds
- ▶ Progressive capping and planting of native vegetation, including trees and groundcover on the mound
- ▶ Monitoring of impacts on shorebird migratory communities

Mitigation - Operation

Runoff/discharge of stormwater after final capping of reclamation

Medium – High Impacts

- ▶ Surface water impacts managed through design i.e. stormwater ponds to control discharge quality
- ▶ Progressive capping and planting of native vegetation, including trees and groundcover on the mound
- ▶ Monitoring of impacts on shorebird migratory communities

18.4 Sustainable Development

The challenge of Sustainable Development is how to meet the economic needs and aspirations of society today, while conserving ecosystems and environmental resources for the benefit of future generations. A sustainable development approach considers the wider economic, social and environmental implications of our decisions in an integrated way and takes a long term view of impacts on the region and biosphere.

The Port of Gladstone is a centre for major industrial development in Queensland. The combination of a natural sheltered port, proximity to mineral resources and the availability of industrial land have made the Port of Gladstone a favourable location for major industry and port development. These physical and economic resources have also been supported by State and local government planning approaches that have facilitated opportunities for major industrial and resource development. To accommodate the shipping requirements of various LNG proposals and other future developments the Western Basin Dredging and Disposal Project has been initiated. The challenge of Sustainable Development in the context of the Port of Gladstone is how to undertake significant port infrastructure development that supports major industrial expansion in a way that protects and builds the diversity of social, environmental and economic values and opportunity in the region.

The Sustainable Development objectives for this chapter are based on the National Strategy for Ecologically Sustainable Development (NSED). The NSED was ratified by all levels of government in Australia in 1992 and has been incorporated into significant policies such as the *Environment Protection and Biodiversity Conservation Act* 1999. The NSED goal, objectives and guiding principles are outlined in Table 18-6. The NSED outlines a high-level strategy for implementing sustainable development. The objectives are supported by principles that aim to guide or operationalise the aspirations of protecting the welfare of future generations, inter-generational equity, and protecting biodiversity, ecological processes and life supporting environmental systems.



Table 18-6 Sustainable Development Objectives

National Strategy for Ecologically Sustainable Development, Australian Government	
Goal	Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.
Core Objectives	<ul style="list-style-type: none"> ▶ To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations. ▶ To provide for equity within and between generations. ▶ To protect biological diversity and maintain essential ecological processes and life-support systems.
Guiding Principles	<ul style="list-style-type: none"> ▶ Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations. ▶ Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. ▶ The global dimension of environmental impacts of actions and policies should be recognised and considered. ▶ The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised. ▶ The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised. ▶ Cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms. ▶ Decisions and actions should provide for broad community involvement on issues which affect them.

The Australian Green Infrastructure Council (AGIC) indicators are useful for putting into practice the more high-level and aspirational objectives of the NSESD. AGIC was established in 2008 by practitioners in the infrastructure industry who identified the need for a standardised rating tool for implementing and demonstrating the sustainability performance of Australian infrastructure projects. AGIC engaged industry to develop a comprehensive list of indicators for measuring sustainability in infrastructure. Although the AGIC rating tool is still under development, these indicators reflect industry best practice, and projects that consider and respond to the indicators are generally performing well in terms of expectations relating to sustainable development. Table 18-7 lists the AGIC sustainability indicators. These indicators are supported by further descriptors and are available on the AGIC website (www.agic.net.au).



Table 18-7 AGIC Sustainability Indicators

	Criteria	Indicator
1	Project Management and Governance	1.1 Purchasing and Procurement 1.2 Reporting and Responsibilities 1.3 Climate Change Vulnerability 1.4 Making Decisions 1.5 Knowledge Sharing and Capacity Building
2	Economic Performance	2.1 Value for Money 2.2 Due Diligence 2.3 Economic Life
3	Using Resources	3.1 Energy Use 3.2 Water 3.3 Materials Selection and Use
4	Emissions, Pollution and Waste	4.1 Greenhouse Gas Management 4.2 Discharges to Air, Water and Land 4.3 Land Management 4.4 Waste Management
5	Biodiversity	5.1 Functioning Ecosystems 5.2 Enhanced Biodiversity
6	People and Place	6.1 Health, Wellbeing, Safety 6.2 Natural and Cultural Heritage Values 6.3 Participatory Processes 6.4 Positive Legacy for Current and Future Generations 6.5 Enhanced Urban and Landscape Design and Aesthetics 6.6 Knowledge Sharing, Shared Intellectual Property
7	Workforce	7.1 Safety, Health and Wellbeing of Workforce 7.2 Capacity Building 7.3 Increased Knowledge of Applied Sustainability 7.4 Equity



18.5 Sustainable Development Assessment

The aim of the Sustainable Development Assessment is to provide a comparative analysis of how the Project conforms to the objectives of sustainable development. This information is required to demonstrate that Sustainable Development aspects have been considered and incorporated during the scoping and planning of the Project. The Sustainable Development Assessment is a qualitative assessment that considers three key questions:

- ▶ Is the range of impacts / risks considered in the EIS comprehensive from a sustainable development perspective?
- ▶ Are the mitigation options recommended for medium / high risks associated with the Project adequate, at least from the perspective of the qualitative review undertaken for this chapter?
- ▶ How does the Project generally conform to the NSESD sustainable development objectives?

18.5.1 Scope of Impacts

The scope of the impacts covered in the EIS is broadly aligned with indicators recommended by the AGIC and is comprehensive in its scope and coverage. Given this Project is in the EIS stage, indicators relating to project design and implementation such as procurement, reporting and capacity building are unable to be fully considered. It is recommended that the AGIC rating tool be utilised in the design and construction of the Project to ensure that sustainability outcomes are appropriately considered and addressed by the Project.

18.5.2 Impacts and Mitigation Options

The key Sustainable Development challenges of the Project are those impact or risk areas that are of concern (medium - high risk) meaning they have the potential to systematically degrade social, economic or environmental values of the region over the long term. In these areas concerted effort, investment and monitoring is required to ensure that social and economic development is balanced with environmental integrity and that cumulative impacts are taken into consideration. The mitigation options identified for the Western Basin Dredging and Disposal Project seek to address the low, medium and high adverse impacts associated with the Project. There is a hierarchy of avoidance and mitigation options recommended depending on level of impact, as outlined below:

- ▶ Continuous improvement in standard work practices (e.g. construction management plans or planting of reclamation);
- ▶ Staging or sequencing of construction/operations (e.g. avoiding seabird nesting/migration seasons);
- ▶ Engineering design enhancements to avoid/mitigate impacts (e.g. design of stormwater drainage system);
- ▶ Regional approach taking into consideration cumulative impacts (e.g. sequencing of dredging projects); and
- ▶ Monitoring and offsets for unavoidable impacts on values of significance (e.g. offsets for marine habitat, recreational and commercial fishing areas).

Based on this qualitative assessment, it is evident that the avoidance and mitigation options proposed for the Western Basin Dredging and Disposal Project would, if implemented, reduce or offset medium and high impacts associated with the Project to medium, low or negligible levels.



18.5.3 Conformance to the NSESD Sustainable Development Objectives

This chapter demonstrates that the Western Basin Dredging and Disposal Project conforms to the NSESD Sustainable Development Objectives as follows:

Objective 1 - To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations

The EIS considers long term social, environmental and economic issues. It engages with the community, addresses health and safety of construction staff and the community, seeks opportunities to enhance community values and considers global environmental challenges such as climate change and marine biodiversity.

Objective 2 - To provide for equity within and between generations

The EIS recommends employment and business opportunities for locals, identifies community values, considers gender and generational issues, respects Aboriginal and non-Aboriginal cultural values and considers future protection and enhancement of social, economic and environmental opportunity.

Objective 3 - To protect biological diversity and maintain essential ecological processes and life-support systems

The EIS has identified environmental values and long term impacts on these values. It seeks to protect biodiversity, maintain essential ecological processes and integrate environmental and economic values. The precautionary principle has been used when assessing environmental harm and the environmental impacts of materials and energy use are considered.

In conclusion, detailed consideration of the impacts identified in this EIS and effective implementation of mitigation options is expected to deliver a project that is aligned with the objectives of Sustainable Development and provides long term sustainable benefit to the region.