

# A9

BACKGROUND TO THE PROJECT

# ENVIRONMENTAL IMPACT ASSESSMENT PROCESS



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A9:A	Terms of Reference for an EIS for the Project
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## 9.1 SUMMARY OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

This section summarises the EIA process determined for the project that is provided in more detail in Chapter A6.

### 9.1.1 Commonwealth approval process

On 7 October 2011, the Australian Government determined that the project is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act), due to the likely potential impacts on Matters of National Environmental Significance (MNES) (EPBC reference number EPBC 2011/5823).

The controlling provisions under the EPBC Act are:

- Wetlands of international importance (sections 16 and 17B)
- Listed threatened species and communities (sections 18 and 18A)
- Listed migratory species (sections 20 and 20A).

As a consequence, the Project required assessment and approval under the EPBC Act.

The Australian Government determined that the bilateral agreement between the Australian and Queensland Governments would apply to the preparation of an EIS. As part of the EIS process, the Commonwealth Minister for the Environment will review the EIS to ensure that it addresses the requirements of the EPBC Act in relation to MNES.

This enables the EIS conducted under Part 4 of the *State Development and Public Works Organisation Act, 1971* (SDPWO Act) to meet the impact assessment requirements under both Commonwealth and Queensland legislation. The Project requires approval from the responsible Commonwealth Minister under Part 9 of the EPBC Act before it can proceed.

On 7 October 2011, the Australian Government also determined that the associated aviation airspace management referral (EPBC 2011/6104), made under section 160 of the EPBC Act by CASA and Airservices Australia, requires assessment under the EPBC Act.

Airspace impacts have been addressed in the EIS and the impacts relevant to section 160 of the EPBC Act will be assessed by the Australian Government (only) and conducted in parallel with the bilateral process under Part 4 of the SDPWO Act (see Chapter A6).

The Terms of Reference were prepared for the EIS, which were finalised in May 2012.

### 9.1.2 Queensland State Government approval process

An Initial Advice Statement was submitted to the Queensland Government in September 2011 under the SDPWO Act. The Project was declared a 'significant project' (now referred to as a 'coordinated project') for which an EIS is required'.

An environmental assessment has been undertaken (covering both State and Commonwealth matters relating to the three controlling provisions listed in section 9.1.1) through the SDPWO Act process with the resultant document being this EIS, led by the State Government pursuant to the bilateral agreement between the State and Commonwealth Governments.

In addition to the EIS approval at Commonwealth and State levels, other state and local government environmental and planning approvals and permits will be required as previously detailed in Section A6 – Planning and Legislation Review.

## 9.2 IMPACT ASSESSMENT METHOD

Volumes B, C and D present the core of the impact assessment contained within this EIS, covering a wide range of technical disciplines. To enable a valid comparison to be made of the significance of impacts, a generally consistent approach has been applied to each technical matter contained within chapters in the aforementioned volumes of the EIS.

In short, this process involved:

- Establishing baseline conditions for each element being discussed (i.e. aircraft noise, marine ecology etc.)
- Using the project description (Chapter A4) and construction methodology (Chapter A5) to understand the project, its impacting actions, but also the mitigation inherent in the design
- Assessing the potential impacts of the project using a consistent methodology for describing impacts
- Describing the impacts without any additional mitigation
- Describing proposed mitigation for the particular element being discussed
- Describing the residual impacts that are anticipated to remain once additional mitigation is implemented.

This translates to a chapter format that is generally as follows:

- Introduction
- Methodology
- Limitations and assumptions
- Policy context and legislative framework
- Existing conditions (baseline)
- Impact assessment (including with and without mitigation and residual effects)
- Summary (including assessment summary matrix).

All of the mitigation and management measures are consolidated into three main management plans located in Volume E. These are:

- Environmental Management Plan
- Dredge Management Plan
- Airspace Management Plan.

Overall the approach taken through the process of developing this EIS has been to firstly prevent or avoid significant impacts through design changes early in the Project process, then seek to reduce impacts through the implementation of mitigation prescribed in Management Plans and finally, where impacts cannot be adequately mitigated and residual impacts predominate, to compensate for the impact (i.e. through provision of offsets).

### 9.2.1 Scoping

The project TOR were prepared by the Coordinator General and provided to SCA in May 2012. The TOR are provided in **Appendix A9:A**. The TOR informed the scope of the inputs studies and assessment that form this EIS.

### 9.2.2 Baseline

Establishing baseline involved a wide range of activities including:

- Review of published material (journals, reports etc.) and historical and current mapping from a range of sources

- Undertaking issue specific site surveys for aspects such as marine and terrestrial ecology, noise, cultural heritage and landscape and visual, geotechnical etc.
- Consultation with local, state and Commonwealth government agencies.

### 9.2.3 Approach to impact assessment

A specific set of descriptors have been developed to describe impacts in the EIS. This involves two aspects as follows:

- 1. Significance Assessment:** a generic set of significance criteria is defined (see **Table 9.2a**) and enables consistent description of adverse and beneficial impacts. In each chapter the significance criteria is made relevant to the topic being considered. This assessment also requires consideration of the duration of the impact (see **Table 9.2b**), and the relevant EPBC Act Significant Impact Guidelines for Matters of National Environmental Significance.
- 2. Risk Rating:** using the risk framework detailed in **Table 9.2c**, the overall impact is assessed by assessing the significance of the impact and its likelihood (i.e. highly unlikely, unlikely, possible, likely and almost certain).

*Table 9.2a: Generic significance criteria*

Significance	Criteria
<b>Very High</b>	These impacts are considered critical to the decision making process. They tend to be permanent, or irreversible, or otherwise long term, and can occur over large scale areas. These effects are generally but not exclusively associated with sites and features of and/or the impacts of <b>national</b> importance. Typically, mitigation measures are unlikely to remove such effects.
<b>High</b>	These impacts are likely to be of importance in the decision making process. They tend to be permanent, or otherwise long to medium term, and can occur over large or medium scale areas. Environmental receptors are high to moderately sensitive, and/or the impacts are of State significance.
<b>Moderate</b>	These impacts are relevant to decision making, particularly for determination of environmental management requirements. These impacts tend to range from long to short term, and occur over medium scale areas or focused within a localised area. Environmental receptors are moderately sensitive, and/or the impacts are of regional or local significance.
<b>Minor</b>	These impacts are recognisable, but acceptable within the decision making process. They are still important in the determination of environmental management requirements. These impacts tend to be short term, or temporary and at the local scale.
<b>Negligible</b>	Minimal change to the existing situation. This could include for example impacts which are beneath levels of detection, impacts that are within the normal bounds of variation or impacts that are within the margin of forecasting error.
<b>Beneficial</b>	The effects of the project can also be beneficial – using the same scale, negligible, minor, moderate, high, very high.

Table 9.2b: Relative duration of environmental effects

Relative Duration of Environmental Effects	
Temporary	Days to Months
Short Term	Up to 1 year
Medium Term	From 1 to 5 Years
Long Term	From 5 to 50 Years
Permanent / Irreversible	In Excess of 50 Years

Table 9.2c: Risk matrix

Likelihood of Impact	Significance of Impact				
	Negligible	Minor	Moderate	High	Very High
Highly Unlikely/ Rare	Negligible	Negligible	Low	Medium	High
Unlikely	Negligible	Low	Low	Medium	High
Possible	Negligible	Low	Medium	Medium	High
Likely	Negligible	Medium	Medium	High	Extreme
Almost Certain	Low	Medium	High	Extreme	Extreme

The approach outlined previously ultimately assesses the residual risk taking into consideration any proposed mitigation measures identified as necessary to lower the significance, frequency or risk of an impact occurring.

Figure 9.2a illustrates the overall approach to impact assessment, incorporating an assessment of the 'preliminary design' scenario, as well as the 'additional recommended mitigation' scenario.

#### 9.2.4 Mitigation

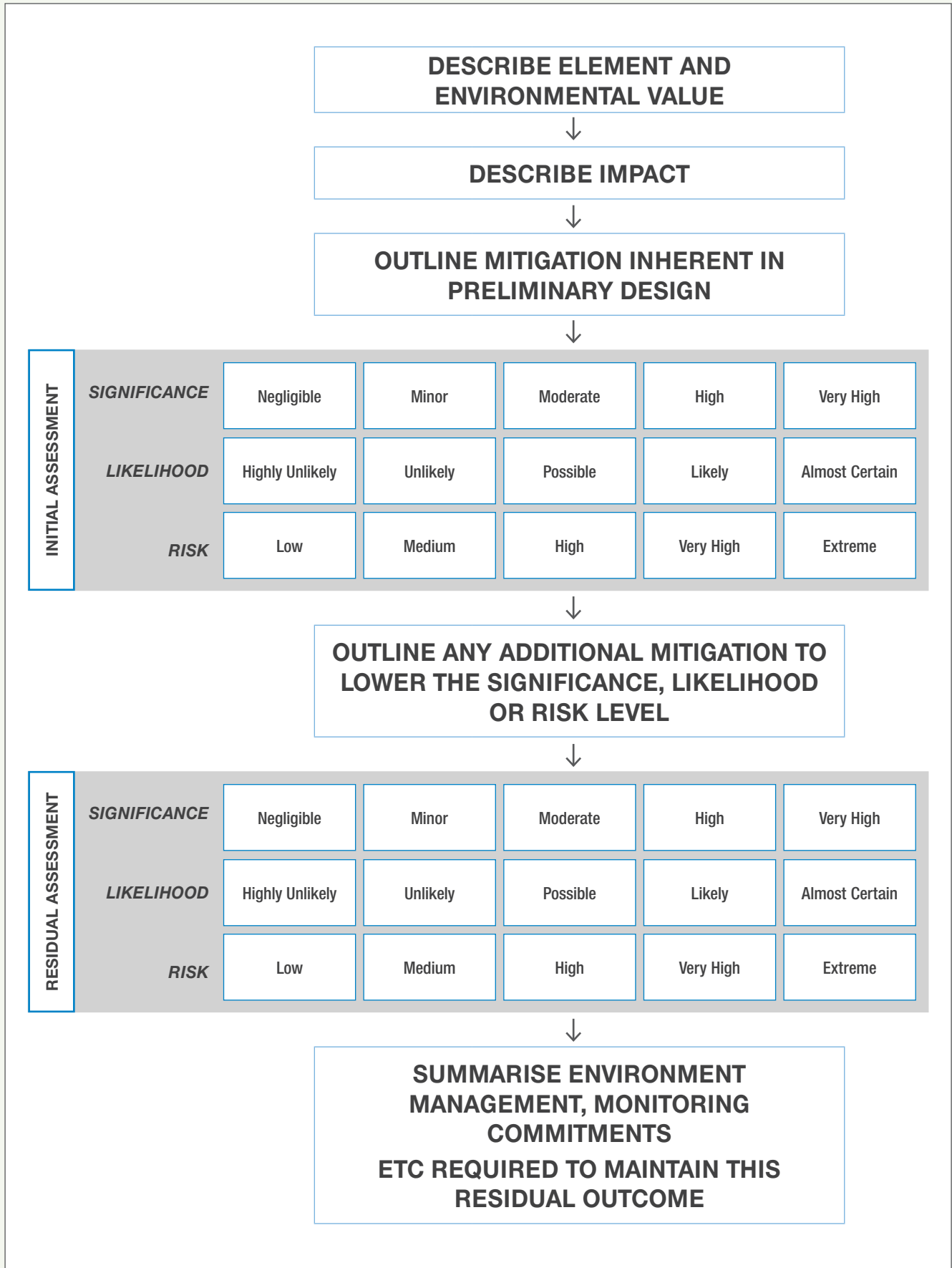
As stated previously, the mitigation inherent in the design is included in the initial assessment of impacts.

Following this, where necessary, additional mitigation is proposed in order to reduce the significance or likelihood of an identified impact occurring. In describing mitigation measures in each chapter the following is considered:

- A description of the predicted effectiveness of the mitigation measures
- Any statutory or policy basis for the mitigation measures or offsets
- Whether the mitigation could be implemented by the proponent, or whether other parties were necessary for it to take effect
- The options for timing of works to mitigate potential impacts.

The mitigation information has been used to inform and develop the relevant management plan e.g. Environmental Management Plan, Dredge Management Plan or Airspace Management Plan.

Figure 9.2a: Impact assessment process



## 9.3 RELATIONSHIP TO OTHER PROJECTS

This section lists other major infrastructure and planning projects that are being undertaken or that have been proposed or approved in the Sunshine Coast area, that may be potentially affected by the Project (see **Table 9.3**).

As appropriate, relevant projects are included in the cumulative impact assessment, which is presented in Chapter E7.

*Table 9.3a: Relationship to other projects*

<b>Airport projects in the region</b>
• Brisbane Airport New Parallel Runway (NPR)
• Master Plan for Caloundra Aerodrome
<b>Public transport projects in Sunshine Coast region</b>
• Caboolture to Maroochydore Corridor Study
• Sunshine Coast Light Rail
• Upgrade of the North Coast Line to Nambour Station
<b>Infrastructure projects</b>
• Upgrades to the Sunshine Motorway including the Sunshine Coast Transport Project
• Upgrades to the Bruce Highway
<b>Dredging Projects in northern Moreton Bay</b>
• Port of Brisbane Pty Ltd (PBPL) dredging at Spitfire Channel
<b>Planning and other projects</b>
• Desalination Plant
• Maroochydore Principal Regional Activity Centre (PRAC)
• Sunshine Coast Hospital
• Boral Quarry
• Parklands Quarry

## 9.4 DREDGE MODELLING ASSUMPTIONS

The following section describes the various modelling assumptions that have been adopted in Volumes B and C of the EIS as they relate to the potential impacts of dredging.

A key variable, unknown at this stage is the size of dredge vessel to be used during construction and whilst it is preferred and expected (and stated in Chapter A5 – Project Construction) that a medium sized trailer suction hopper dredge (TSHD) would be used for the Project, there is no guarantee such a vessel would be available at the time of construction.

A medium sized TSHD has a capacity of 8,000 – 12,500 m<sup>3</sup> and would result in an approximately 14 week dredge campaign. However, if a smaller vessel only is available this would result in a longer dredge campaign of up to 33 weeks.

A 33-week dredge campaign would have the greatest impacts to water quality and water quality objectives in watercourses surrounding the airport site as these are affected primarily by duration. The tailwater management system would be designed according to the length of the dredge program and tailwater concentrations would stay consistent regardless of the duration.

**Table 9.4a** describes the modelling assumptions used in each relevant chapter.

Table 9.4a: Modelling assumptions used in relevant chapters

Model assumptions	Volume B Chapter B6 – Surface Water Quality and Hydrology		Volume B Chapter B10 – Marine Ecology	Volume B Chapter B4 – Coastal Processes	Volume C Chapter C3 – Coastal Processes and Water Quality
	Water quality modelling and scour analysis in Marcoola drain	Scour analysis in Marcoola drain (sensitivity analysis)			
Dredge campaign timeframe	33 weeks	33 weeks	33 weeks	33 weeks	6 weeks
TSHD capacity	2,900 m <sup>3</sup>	2,900 m <sup>3</sup>	2,900 m <sup>3</sup>	2,900 m <sup>3</sup>	12,000 m <sup>3</sup>
Tailwater discharge	26,031 m <sup>3</sup> /day	26,031 m <sup>3</sup> /day	26,031 m <sup>3</sup> /day	26,031 m <sup>3</sup> /day	n/a
Rationale	<p>The longer dredge duration has the potential to have the greatest water quality and quantity impacts. This assessment of the longer dredge campaign was considered to be the most conservative.</p>	<p>With respect to scour in Marcoola drain whilst it may be considered that if a greater volume of tailwater was discharged, more scouring would occur, an initial assessment indicated that minor decreases in shear stress in the Marcoola drain from the reclamation are due to increased water levels as a result of an increased volume from the tailwater discharge. These higher water levels correspond to decreased velocities because the cross sectional area of flow is increased. For this reason also, this decrease in bed shear stress is likely to be accentuated with a higher tailwater discharge flow rate, further reducing scour potential within the system.</p>	<p>Marine ecology impacts (in part) flow directly on from the assessment of surface water quality and quantity and as such have also considered the longer dredge campaign being the most conservative.</p>	<p>The assessment of coastal processes assumes a 33 week dredge campaign to enable the worst case assessment.</p>	<p>The modelling assumed that dredging would be undertaken by a medium-large sized TSHD operating for a six week period with an average hopper load of 12,000 m<sup>3</sup> (considered to have the highest plume production potential) and the dredger working on an 8.7 hr cycle time (i.e. the time taken to fill the hopper, steam to the pump out location and steam back to the sand extraction area). The assessment of potential impacts to marine ecology in Chapter C4 uses the outputs of this assessment.</p>

Of note and as described in Chapter B6 – Surface Water and Hydrology, the most conservative dredging scenario was assessed and the impacts were determined to be minor with temporary and minor changes to TSS, turbidity and salinity in the Marcoola drain, but no observable impacts elsewhere in the Maroochy River.





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