



Browse LNG Precinct



Browse Liquefied Natural Gas Precinct

SAR Response to Submissions

September 2011

Summary Report

Preface

The Department of State Development (**DSD**) provides leadership to drive responsible development for Western Australia's future. Working closely with industry, communities and government agencies the Department delivers significant State initiatives and facilitates major resource, industrial and infrastructure projects. It also works to attract strategic investment to Western Australia, assist the development of export markets, and enable the development of strategic industrial land and infrastructure for the benefit of the State and its people.

The State of Western Australia, through the Minister for State Development, is proposing to develop an onshore, common-user Liquefied Natural Gas (**LNG**) precinct to process natural gas from the Browse Basin gas fields off the West Kimberley coast (the **BLNG Precinct**). In delivering the Precinct, the Western Australian Government is committed to balancing the needs of industry, the local community and the environment for the benefit of all Western Australians. The development of the Precinct would result in billions of dollars of capital investment, create thousands of jobs and provide significant opportunity for existing and future local businesses. The development will also provide the opportunity to substantially improve the education, health, social and economic well-being of Aboriginal people and significantly reduce disadvantage within the Kimberley community.

DSD has been working in partnership with industry, the Kimberley Land Council (**KLC**) and Traditional Owners to identify the most suitable location and to coordinate the establishment of the Precinct. This Strategic Assessment process is the culmination of four years of work to identify the most suitable site, based on technical, environmental and heritage criteria. On 30 June 2011 the State Government, the Goolarabooloo Jabirr Jabirr (**GJJ**) Native Title Claim Group and Woodside Energy Ltd finalised agreements to secure access to the land required for the Precinct and to secure benefits worth more than \$1.5 billion over a 30 year period for Traditional Owners, and the broader Kimberley Indigenous Community.

This *Response to Submissions* report has been prepared in accordance with guidelines established by the *Environmental Protection Authority*. The purpose of the public review is to enable transparency and accountability by providing the opportunity for the public to provide comment on the proposal and to enable the provision of new relevant information for consideration by regulators. DSD is committed to the public review process and subsequent modification of the Precinct concept and management arrangements as appropriate.

While the State recognises that there is some opposition within segments of the local community, it is considered that, given the extensive studies, broad community consultation, and the agreement of the Traditional Owners of the land in question, this location delivers the best overall environmental and social outcome for Western Australia.

In relation to the proposal for the development, over 11,000 submissions were received during the public review period. The majority of these were 'proforma' submissions, of which there were approximately eight different versions. In total, there were 202 individual submissions (including the eight proforma versions), ranging from single page letters through to substantial reports. Of these 202 submissions, 26 were submitted by 'named' organisations which comprised a mix of Non-Government Organisations (**NGOs**), Government agencies and stakeholder groups. A comprehensive process of analysing and responding to all 202 submissions was undertaken.

A number of common concerns emerged from the submissions received. Some of these concerns are relevant at the general project and policy level, while others apply to the technical detail of the assessment process. Some of the concerns related to how the information was originally presented and described in the Strategic Assessment Report (**SAR**). This **Summary Report** responds to common issues arising as part of the public review process, and detailed responses to individual questions are presented in a comprehensive compendium appended to this report (**Appendix A**). An electronic version of both this Summary Report and Appendix A is provided in a pouch at the back of this document.

DSD has committed to a governance structure that is appropriate for the BLNG development. To that end, a BLNG Precinct Control Group will be established to oversee and coordinate the implementation of the Precinct Plan. The Precinct Control Group, consisting of the Department of State Development, LandCorp, Broome Port Authority and Traditional Owners, will recommend actions, plans, and strategies to Cabinet through the Minister for State Development. Traditional Owners representation will ensure the active engagement and responsibility for recommendations in recognition of the Traditional Owners' status as the custodians of the land.

Nomenclature, Acronyms, Measurements and Units List

| | |
|---|---|
| Nomenclature, Acronyms, Measurements and Units List | i |
|---|---|

Response to Submissions

| | |
|--|-----------|
| 1 Overview and Project Benefits | 1 |
| 1.1 Background | 1 |
| 1.2 Project Benefits | 2 |
| 1.3 Submission Process | 6 |
| 1.4 Document Structure | 13 |
| 2 Management Response | 15 |
| 2.1 The Strategic Assessment Process | 15 |
| 2.2 Derived Proposal Process | 19 |
| 2.3 Governance Issues | 21 |
| 2.4 Management Plans | 27 |
| 2.5 Land Access and Informed Consent | 34 |
| 3 Stakeholder Engagement Process | 35 |
| 3.1 Past Stakeholder Engagement Process | 35 |
| 3.1.1 Northern Development Taskforce Stakeholder Engagement | 37 |
| 3.1.2 Social Impact Assessment Engagement Activities | 40 |
| 3.1.3 Public Review Period | 42 |
| 3.2 Future Stakeholder Engagement | 44 |
| 3.2.1 Opportunities for Engagement with Future Commercial Proponents | 44 |
| 3.2.2 Opportunities for Engagement with the Foundation Proponent | 45 |
| 3.2.3 Precinct Engagement Plan | 46 |
| 4 Key Themes and Response to Issues Raised | 47 |
| 4.1 Overview of Key Themes and Issues | 47 |
| 4.2 Site Selection and Approvals Process | 47 |
| 4.3 Project Description | 56 |
| 4.4 General and Policy Issues | 62 |
| 4.4.1 Emergency Response | 62 |
| 4.4.2 Greenhouse Gas Emissions | 63 |

| | | |
|----------|---|------------|
| 4.5 | Marine Factors | 66 |
| 4.5.1 | Marine Fauna | 68 |
| 4.5.2 | Marine Ecosystem Integrity | 73 |
| 4.5.3 | Water Quality | 74 |
| 4.6 | Terrestrial Factors | 76 |
| 4.6.1 | Terrestrial Fauna | 77 |
| 4.6.2 | Terrestrial Ecology | 79 |
| 4.6.3 | Air Quality | 83 |
| 4.7 | Social Factors | 88 |
| 4.7.1 | Social Impact Management Compliance | 90 |
| 4.7.2 | Human Health | 91 |
| 4.7.3 | Precinct Worker Behaviour | 95 |
| 4.7.4 | Broome Community Services | 95 |
| 4.7.5 | Community Identity and Tourism | 96 |
| 4.7.6 | Cost of Living and Accommodation | 97 |
| 4.7.7 | Education, Training and Employment | 99 |
| 4.7.8 | Local Procurement | 101 |
| 4.7.9 | ASIA Recommendations | 103 |
| 4.8 | Heritage Factors | 104 |
| 4.8.1 | Legislative Framework | 105 |
| 4.8.2 | Dinosaur Footprints | 111 |
| 4.8.3 | National Heritage Listing | 113 |
| 4.8.4 | Aboriginal Heritage | 114 |
| 4.8.5 | Cultural Heritage Management | 116 |
| 5 | Cumulative Environmental Impacts | 119 |
| 6 | Proposed Changes to Commitments in the SAR | 121 |
| 7 | References | 131 |

Annexure

| | |
|--|------------|
| Annexure 1 - Index of Questions and Answers in Appendix A | 139 |
| Annexure 2 - Native Title Documentation | 145 |
| Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements) | 153 |

| | |
|--|------------|
| Annexure 4 - Management Strategies | 165 |
| Annexure 5 - Dampier Peninsula Planning Strategy | 191 |
| Annexure 6 - Groundwater Dependent Ecosystem Review | 195 |
| Annexure 7 - ASIA Recommendations | 213 |
| Annexure 8 - Cumulative Environmental Impacts | 243 |

Tables

| | |
|---|-----|
| Table 1.1 Summary of Kimberley Conservation Initiatives | 3 |
| Table 1.2 List of Named Organisations that Made a Submission | 7 |
| Table 1.3 Overview of Key Concerns Raised in Submissions | 9 |
| Table 2.1 State Management Strategies – Required for Precinct Management | 31 |
| Table 2.2 State Framework for Management of Social and Economic Impacts | 32 |
| Table 3.1 Summary of Stakeholder Participation in NDT Working Group Meetings | 37 |
| Table 3.2 ASIA Community Meetings (September 2009 – January 2010) | 41 |
| Table 4.1 Summary of Site Selection Analyses Conducted | 48 |
| Table 4.2 Summary of Key Proposal Characteristics | 59 |
| Table 4.3 Key Concerns Raised by Submissions - Marine Factors | 66 |
| Table 4.4 Key Concerns Raised by Submissions - Terrestrial Factors | 76 |
| Table 4.5 Sensitivity of Hydrogen Sulphide Modelling Results to Gas-field Composition | 86 |
| Table 4.6 Key Concerns Raised by Submissions - Social Factors | 89 |
| Table 4.7 Summary of Proposed Human Health Impact Management Measures | 92 |
| Table 4.8 Key Concerns Raised by Submissions - Heritage Factors | 104 |
| Table 6.1 Proposed Changes to the Commitments in the SAR | 121 |
| Table A3.1 Composition of PCM | 157 |
| Table A4.1 Draft BLNG Precinct Air Quality Management Strategy | 167 |
| Table A4.2 Draft BLNG Precinct Emergency Response Strategy | 169 |
| Table A4.3 Draft BLNG Precinct Terrestrial Ecological Management Strategy | 171 |
| Table A4.4 Draft BLNG Precinct Surrounds Fire Management Strategy | 174 |
| Table A4.5 Draft BLNG Precinct Preliminary Closure and Decommissioning Strategy | 176 |
| Table A4.6 Draft BLNG Precinct Port Environmental Management Strategy | 178 |
| Table A4.7 Summary of Social and Economic Impact Management Plans by Impact Category | 180 |

Figures

| | |
|--|-----|
| Figure 1.1 Distribution of Issues Raised | 11 |
| Figure 2.1 Strategic Assessment Process | 17 |
| Figure 2.2 Derived Proposal Decision Process Flow Diagram | 20 |
| Figure 2.3 Proposed Governance Structure | 22 |
| Figure 2.4 Schematic of State Government Responsibilities | 29 |
| Figure 3.1 Relationship of High Level Briefings and Strategic Assessment Component Studies | 36 |
| Figure 3.2 Project Stakeholders | 45 |
| Figure 4.1 Generic Layout of BLNG Precinct | 61 |
| Figure 5.1 Example Cumulative Impact Summary Table Generation Process | 120 |
| Figure A6.1 Digital Elevation Model Showing Location of Vegetation Communities | 199 |

| | |
|---|-----|
| Figure A6.2 Simplified Conceptual Model | 202 |
| Figure A6.3 Rainfall Data from Broome Airport 2005 & 2008 | 204 |
| Figure A6.4 Rainfall Data from Broome Airport 1998-2011 | 204 |
| Figure A6.5 Broome NDVI 2005 | 206 |
| Figure A6.6 Broome NVDI 2008 | 207 |
| Figure A6.7 Schematic of Changes In Community Structure due to Prolonged Water Stress | 209 |

Nomenclature, Acronyms, Measurements and Units List

| Acronym | Definition |
|------------------------------|---|
| ACMC | Aboriginal Cultural Materials Committee |
| Additional Proponent | A person or persons appointed by the State in accordance with clause 36 to develop and conduct an Additional Proponent Project in the LNG Precinct who has ratified the BLNG Precinct Project Agreement by signing a Ratification Deed. |
| Additional Proponent Project | The Additional Proponent's project for the processing and exporting of LNG within the BLNG Precinct carried out pursuant to and in accordance with the Project Rights. |
| AH Act | <i>Aboriginal Heritage Act 1972 (WA)</i> |
| AHC | Australian Heritage Council |
| AIMS | Australian Institute of Marine Science |
| AMOSC | Australian Marine Oil Spill Centre |
| AMSA | Australian Maritime Safety Authority |
| ANZECC | Australian and New Zealand Environment Conservation Council |
| ARMCANZ | Agriculture and Resource Management Council of Australia and New Zealand |
| ASIA | Aboriginal Social Impact Assessment |
| ATSIHP Act | <i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i> |
| Best Practice | The application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact. |
| BHP | BHP Billiton |
| BJV | Browse Joint Venture |
| BLIP | Building Local Industry Policy |
| BLNG | Browse Liquefied Natural Gas |
| BLNG Precinct | Browse Liquefied Natural Gas Precinct |
| BP | British Petroleum |
| BPEMP | BLNG Precinct Environmental Management Plan |
| BPPH | Benthic Primary Producer Habitat |
| BrPA | Broome Port Authority |
| Category A | These are the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons. |
| Category B | These are indirect activities and actions as a result of the BLNG Precinct that are considered in the impact assessment but do not form part of the approvals process. |

| Acronym | Definition |
|-------------------------|--|
| Category C | Related projects that are outside the scope of the Strategic Assessment but form part of the cumulative impact assessment. |
| CEMP | Construction Environment Management Plan |
| CHEAK | Cultural, Heritage and Environmental Advocacy for the Kimberley |
| CHMP | Cultural Heritage Management Plan |
| CO ₂ | Carbon Dioxide |
| commercial proponent(s) | The Foundation Proponent and any Additional Proponent |
| CRG | Community Reference Group |
| Cwth | Commonwealth |
| DEC | Department of Environment and Conservation |
| DEEWR | Commonwealth Department of Education, Employment and Workplace Relations |
| DET | Department of Education and Training |
| DEWHA | Commonwealth Department for the Environment, Water, Heritage and the Arts, now SEWPAC |
| DIA | Department of Indigenous Affairs |
| DMA(s) | Decision-making Authorities |
| DMP | Department of Mines and Petroleum |
| DoC | Department of Commerce |
| DoF | Department of Fisheries |
| DoP | Department of Planning |
| DoW | Department of Water |
| DP | Dampier Peninsula |
| DPI | Department for Planning and Infrastructure |
| DRF | Declared Rare Flora |
| DSD | Department of State Development |
| DSDMP | Dredging and Dredge Spoil Disposal Management Plan |
| DTWD | Department of Training and Workforce Development |
| EIA | Environmental Impact Assessment |
| EMP | Environment Management Plan |
| EP Act | <i>Environmental Protection Act 1986</i> |

| Acronym | Definition |
|----------------------|---|
| EPA | Environmental Protection Authority |
| EPBC Act | <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
| EU | European Union |
| FEED | Front End Engineering Design |
| FESA | Fire and Emergency Services Authority of Western Australia |
| FIFO | Fly in/Fly out |
| FLNG | Floating Liquefied Natural Gas |
| Foundation Proponent | Woodside Energy Ltd is appointed as a potential Foundation Proponent for the Precinct |
| GBS | Gravity Based Structure |
| GCA | Gaffney Cline and Associates |
| GDE(s) | Groundwater Dependant Ecosystem(s) |
| GGAP | Greenhouse Gas Abatement Plan |
| GHG | Greenhouse Gas |
| GJJ | Goolarabooloo Jabirr Jabirr |
| GST | Goods and Services Tax |
| H ₂ S | Hydrogen Sulphide |
| ha | hectare |
| HIA | Heritage Impact Assessment |
| HoA | Heads of Agreement |
| HPA | Heritage Protection Agreement |
| HRA | Health Risk Assessment |
| ICNWA | Industry Capability Network Western Australia |
| ILUA | Indigenous Land Use Agreement |
| IMS | Invasive Marine Species |
| INPEX | INPEX Corporation |
| IP(s) | Interested Parties |
| IPP | Industry Participation Plan |
| JPP | James Price Point |

| Acronym | Definition |
|--------------------------|---|
| KALACC | Kimberley Aboriginal Law and Culture Centre |
| KLC | Kimberley Land Council |
| KLRC | Kimberley Language Resource Centre |
| km | kilometre |
| KMTA | Kimberley Marine Tourism Association |
| LAI | Leaf-area Index |
| LIA | Light industrial area |
| LIGT | Large Industrial Gas Turbine |
| LNG | Liquefied Natural Gas |
| MEP | Marine Environment Pollution |
| MNES | Matters of National Environmental Significance |
| Mtpa | million tonnes per annum |
| MVT | Monsoon Vine Thicket |
| MWDMP | Marine Wastewater Discharge Management Plan |
| Native Title Act | <i>Native Title Act 1993</i> (Cth) |
| Native Title Claim | The application pursuant to the Native Title Act made on behalf of the Goolarabooloo Jabirr Jabirr Peoples. |
| Native Title Claim Group | Set out in the Native Title Act in relation to the Native Title Claim. |
| Native Title Party | The registered native title claimants under the Native Title Act for and on behalf of the Native Title Claim Group. |
| NDT | Northern Development Taskforce |
| NDVI | Normalised Difference Vegetation Index |
| NEPM | National Environment Protection Measure |
| NES | National Environmental Significance (i.e. matters of NES) |
| NGO(s) | Non-Government Organisation(s) |
| NM | Nautical mile |
| NPI | National Pollutant Inventory |
| NT | Northern Territory |

| Acronym | Definition |
|-------------------|---|
| NT Act | <i>Native Title Act 1993</i> |
| OCC | Operations Coordination Committee |
| OEPA | Office of Environment Protection Authority |
| PAKAM | Pilbara and Kimberley Aboriginal Media |
| PCG | Precinct Control Group |
| PFCEMP | Port Facilities Construction Environmental Management Plan |
| PFCs | Per fluorocarbons |
| Plan | Refer to Precinct Plan |
| PMC | Precinct Management Committee |
| PPA | Precinct Program Agreement |
| ppb | Parts per billion |
| ppm | Parts per million |
| ppt | Parts per thousand |
| Precinct | Refer to 'BLNG Precinct' |
| Precinct Plan | The formal Plan for the BLNG Precinct under Commonwealth legislation (see also Plan) |
| Project Agreement | The BLNG Precinct Project Agreement |
| Proponent | The Proponent for the Precinct is the Minister for State Development |
| RBA | Regional Benefits Agreement |
| RIWI Act | <i>Rights in Water and Irrigation Act 1914</i> |
| SAR | Strategic Assessment Report |
| SEA | Strategic Environmental Assessment |
| SEWPAC | Commonwealth Department of Sustainability, Environment, Water, Population and Community |
| SIA | Social Impact Assessment |
| SMC | Social Management Committee |
| SoSA | Scope of the Strategic Assessment |
| SRE | Short Range Endemic |
| SSIMP | Strategic Social Impact Management Plan |
| STD | Sexually Transmitted Disease |

| Acronym | Definition |
|----------|---|
| STI | Sexually Transmitted Infection |
| STK | Save the Kimberley |
| t | tonne |
| TAFE | Technical and Further Education |
| tcf | trillion cubic feet |
| TCU | Thermal Combustion Units |
| TEC | Threatened Ecological Community |
| TIA | Tourism Impact Assessment |
| TO(s) | Traditional Owner(s) |
| ToR | Terms of Reference |
| TTS | Temporary Threshold Shift |
| USA | United States of America |
| VMP | Vegetation Monitoring Program |
| VOC(s) | Volatile Organic Compound(s) |
| WA | Western Australia |
| WAFIC | Western Australian Fishing Industry Council |
| WAITOC | Western Australian Indigenous Tourism Operators |
| WAPC | Western Australian Planning Commission |
| WET | Whole Effluent Toxicity |
| Woodside | Woodside Energy Limited |
| WWF | World Wildlife Fund |

1 Overview and Project Benefits

1.1 Background

The State of Western Australia (**WA**), through the Minister for State Development (the **Proponent**), proposes to develop an onshore, common-user Liquefied Natural Gas (**LNG**) Precinct to process natural gas from Browse Basin gas fields off the West Kimberley coast. The Department of State Development (**DSD**) has been charged with advancing this proposal under direction of the Proponent. Woodside Energy Limited (**Woodside**) was appointed as a potential **Foundation Proponent** for the Precinct under the Preliminary Development Agreement signed in October 2009. This Agreement established Woodside as a partner with the State Government in bringing the project to completion.

The Browse Liquefied Natural Gas Precinct (**BLNG Precinct** or **Precinct**) would consist of LNG processing facilities and associated infrastructure, and would be located in the vicinity of James Price Point, approximately 60 kilometres (**km**) north of Broome, on the west Kimberley coast of Western Australia. The BLNG Precinct would provide a location for processing gas and associated products from the Browse Basin with an LNG production capacity of up to 50 million tonnes per annum (**Mtpa**). If it were to occur, full development of the Precinct would most likely be phased in as demand for additional processing capacity arises. The Precinct would accommodate a minimum of two **proponents** at one location and enable sharing of common-user facilities such as the port, roads, infrastructure corridors and workers' accommodation. A **Precinct Plan** has been developed to meet the requirements of the Commonwealth Government.

A detailed and comprehensive assessment has considered the environmental, social, economic, heritage and strategic implications of the Precinct should it reach its full capacity. The assessment process has involved desktop studies, field surveys, modelling, data analysis, impact assessment and stakeholder consultation, the results of which are documented in the BLNG Precinct Strategic Assessment Report (**SAR**).

The purpose of the Strategic Assessment Report is to meet the requirements of the State and Commonwealth governments in accordance with the Terms of Reference. The Strategic Assessment includes a high level impact assessment (including social factors), a description of the strategic proposal, identifying 'future proposals' (to be approved under the *Environmental Protection Act 1986* (the **EP Act**)) and the Precinct Plan (to be endorsed under the *Environment Protection and Biodiversity Conservation Act 1999* (the **EPBC Act**)), and includes the Proponent's proposed draft conditions that may be applied to future proposals. The document includes a summary of existing information, identifying main impact areas and sets out the proposed management arrangements, mitigation and safeguards to ensure impacts are managed.

The Strategic Assessment Report is presented in seven parts:

- Part 1: Executive Summary;
- Part 2: Strategic Assessment Process including Site Selection, Facilities Description and Consultation Process;
- Part 3: Environmental Assessment – Marine Impacts;
- Part 4: Environmental Assessment – Terrestrial Impacts;
- Part 5: Social and Heritage Assessment;
- Part 6: Commonwealth Matters including Precinct Plan, Management Arrangements and Matters of National Environmental and Social Significance; and
- Part 7: Supplementary Information on Wastewater Discharges, Hydrocarbon Spills, Benthic Primary Producer Habitats and Coastal Processes.

The Proponent's **Response to Submissions** comprises a **Summary Report** (this document) which describes the public submissions process. It summarises and interprets the main themes coming out of the public review and highlights any management responses proposed to address these. This includes new measures that have arisen as a result of the information and comments contained in the public submissions. A consolidated list of questions raised during the public submission process along with the Proponent's response to each individual question is provided as **Appendix A**. The Table of Contents of questions raised by all submitters is presented in **'Annexure 1 - Index of Questions and Answers in Appendix A'**. Electronic copies of both the Summary Report and Appendix A are provided on a disk in a pouch at the back of this document.

1.2 Project Benefits

The Western Australian Government is committed to driving responsible development to meet the needs of the State now and into the future. Such an opportunity can be delivered through the development of the Browse Basin, one of Australia's most prospective gas regions situated 300km off the west Kimberley coast.

The Browse Basin currently has reported gas reserves of around 34.6 trillion cubic feet (**tcf**) and some 600 million barrels of condensate. While exploration commenced in the Browse Basin in 1967 with potentially Australia's largest gas field (Scott Reef) discovered in 1971, this hydrocarbon-rich province is yet to be developed. The main obstacle has been the relative isolation given the distance from the mainland or a significant domestic market.

Nevertheless, historically high energy prices, rising demand in international markets, advances in technology and a global move towards cleaner energy sources, has led to recent interest from a variety of LNG producers. A number of companies have, over the past five years, expressed interest in developing projects at various locations along the sensitive Kimberley coastline.

The *ad hoc* development of multiple LNG gas processing facilities at various locations along the Kimberley coast would create multiple footprints along this environmentally sensitive coastline. The establishment of the Browse LNG Precinct will avoid such an outcome through the creation of a single LNG processing Precinct near James Price Point. This strategy will facilitate the development of these valuable gas reserves while providing the best overall outcome for the State and region.

Indigenous communities in the West Kimberley suffer from high levels of economic and social disadvantage. The establishment of the BLNG Precinct would make a significant contribution towards improving the economic and social conditions of the region's Indigenous peoples. The State and Foundation Proponent have worked closely with the Kimberley Land Council (**KLC**) to negotiate agreements to bring benefits to the Goolarabooloo Jabirr Jabirr (**GJJ**) Native Title Claim Group and other Indigenous peoples in the West Kimberley and Kimberley Region.

On 30 June 2011 the State, the GJJ Native Title Claim Group, and Woodside as the potential Foundation Proponent, finalised agreements to secure access to land near James Price Point for the establishment of the Precinct. The GJJ Native Title Claim Group has agreed to relinquish their native title interests in the land and water required for the Precinct, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct. The agreement also includes long term commitments to limit the Precinct for LNG processing and related activities, as well as the rehabilitation of the land and return of the land to the Traditional Owners at the end of the Precinct's life.

The objective of the Browse LNG Precinct proposal is to create a single, commercially viable processing location with suitable land tenure, governance principles, and strategic approvals in place, to attract and facilitate a minimum of two LNG projects to commercialise gas from the Browse Basin and support the needs of the State. The ultimate outcome is expected to deliver economic, social and environmental benefits.

1.2.1 Environmental Benefits

The proposed development of the Precinct has already provided a number of environmental benefits for the region and will generate more if approved and ultimately developed. While individual project proponents must operate according to strict environmental conditions to limit impacts, the wider environment is set to benefit through:

- minimising environmental impacts and footprints through the development of a common-user LNG Precinct;
- increased environmental data and knowledge to assist with the development of management responses and planning;
- funding for improved environmental management, including fire management regimes and commitments to additional conservation reserves on the Dampier Peninsula which are to be jointly managed with Traditional Owners; and
- the provision of LNG as a low carbon energy source.

Establishing a common-user LNG Precinct in one location, rather than dispersed LNG facilities along the coast, is anticipated to generate environmental benefits by ensuring that common infrastructure is used and sensitive areas are avoided (refer to **Section 4.2 'Site Selection and Approvals Process'**).

In relation to the benefits that increased knowledge of the environment will bring, the scale of research and studies is significant. Through the Northern Development Taskforce (**NDT**) and the site selection process which considered 43 sites spread along the whole length of the Kimberley coast, a broad array of knowledge was collated in addition to a number of more and more refined studies designed to inform the process. In addition, there have been a number of very significant studies commissioned by Woodside, including the most comprehensive ever done on the West coast population of humpback whales. Woodside has already spent more than \$80 million on environmental studies to support the Browse LNG Development and a further \$25 million is being invested in 2011. The benefit of many of these studies to the broader scientific community is demonstrated by the publication of many in the recent Journal of the Royal Society of Western Australia Symposium on Kimberley Marine and Coastal Science. This and the other studies that support the SAR will help support planning and management for conservation by the relevant agencies.

Through the negotiation to obtain Tradition Owner consent for the Precinct, funds have been made available to create heritage and conservation areas and support management improvements to the natural environment on the Dampier Peninsula such as improving fire management and implementing weed and pest control programs.

In addition and importantly, LNG as an energy source offers important global environmental benefits as follows:

- LNG is a low-emission conventional fuel that will have a prominent role in helping the world transition to energy sources with lower greenhouse gas emissions.
- The development of Browse gas resources will provide an alternative to coal as an energy source in major markets such as Asia.
- The combustion of coal emits 80% more greenhouse gas per unit of energy produced than natural gas.

As well as the above conservation or environment benefits that would result from the BLNG Precinct proposal there are a number of other major conservation initiatives that are underway which will provide significant environmental benefits to the Kimberley. These are summarised in **Table 1.1 'Summary of Kimberley Conservation Initiatives'**. This table also includes links to sites where more detailed information can be found.

Table 1.1 Summary of Kimberley Conservation Initiatives

| Agency | Activity | Description | Link |
|------------------------------|--|---|---|
| Commonwealth (SEWPAC) | North-west Marine Region Plan (under development) | The North-west Marine Region covers some 1.07 million square kilometres of ocean adjacent to the north-west of Australia. The region includes only the Commonwealth waters extending from the Western Australian - Northern Territory border to Kalbarri, south of Shark Bay. The North-west Marine Region encompasses the marine habitats of the expansive and shallow north-west shelf to the depths of the Cuvier and Argo abyssal plains dropping to around five kilometres. | http://www.environment.gov.au/coasts/mbp/north-west/index.html |
| | National Heritage Listing (comment period 30 August, 2011) | National Heritage listing would provide recognition of those places in the west Kimberley of outstanding heritage significance to Australia. The heritage assessment of the west Kimberley will | http://www.environment.gov.au/heritage/ahc/national-assessments/ |

| Agency | Activity | Description | Link |
|--|--|--|--|
| | | <p>help ensure heritage values are part of decision-making, so heritage protection is balanced with the social and economic aspirations of the Kimberley community.</p> <p>Importantly, National Heritage listing does not change land ownership, and does not affect Native Title. Management of National Heritage listed places also remains with the current land owner or manager.</p> | kimberley/index.html |
| Western Australian Government (DEC) | Kimberley Science and Conservation Strategy (released 17 June, 2011) | <p>Kimberley Science and Conservation Strategy, a bold plan to conserve the region's natural and cultural values, has been released with an initial \$63 million budget over five years.</p> <p>The strategy sets out opportunities for Aboriginal involvement and employment in land management, and promotes nature and culture-based tourism.</p> <p>The centre piece of this Strategy is the creation of the Kimberley Wilderness Parks. These will include the State's largest interconnected system of marine and terrestrial parks covering 3.5 million hectares.</p> | http://www.dec.wa.gov.au/content/view/6558 |

1.2.2 Economic Benefits

The development of the Precinct would result in billions of dollars of capital investment, create thousands of jobs and provide opportunities for specialist service providers. It would encourage the establishment of industry-focused training, education and research institutes, and specialist risk management and emergency response resources in the region. The proposal would also provide significant economic benefits to the GJJ Native Title Claim Group and West Kimberley Indigenous communities. Benefits to the nation, the State and the region arising from LNG development would include:

- monetary and non-monetary benefits to the registered GJJ Native Title Claim Group, other affected native title claimants and Indigenous people;
- provision of services to design, build and maintain projects within the Precinct;
- provision of support services including (but not limited to) catering, cleaning, port services, security, environmental management, machining and tooling, office support and transportation;
- provision of jobs through the employment of construction and operational work forces;
- jobs and contracts arising from the design, management and construction of related infrastructure such as roads and houses;
- expenditure arising from the jobs and contracts leading to many indirect benefits;
- State taxes and duties applying to Precinct projects and other service companies;
- various service fees to Government trading enterprises charged with managing the Precinct;

- local government charges applying to those projects and companies using services;
- a share of royalties from developed gas resources which fall into State waters;
- a share of Goods and Services Tax (**GST**) and other Commonwealth revenue streams that arise from this project; and
- development of fit-for-purpose infrastructure including common-user infrastructure, a “project ready” location, and consistent management approach to attract future development.

Specific economic benefits can be quantified as follows:

- The Browse LNG Development is expected to contribute \$50 billion to Australia's GDP.
- It is estimated to contribute \$9 billion to Australian government revenue through taxation payments.
- 6000 direct jobs will be created during onshore construction, and up to 2000 during offshore construction and installation.
- 300 jobs have been targeted for Indigenous people.
- The benefits package for Kimberley Indigenous people agreed with the GJJ Native Title Claim Group is worth in excess of \$1.5 billion and includes training, employment, business opportunities and native title compensation payments.

The establishment of a single, common-user Precinct would also reduce duplication of infrastructure such as ports, accommodation and roads that would be required for individual ‘stand alone’ facilities. This would offer economic efficiencies to proponents, while reducing the development footprint – thus limiting the potential disturbance to environmental, cultural and heritage values. A common-user Precinct would also enable a coordinated and consistent approach to: management of potential environmental, heritage and social impacts; monitoring of cumulative effects; and auditing and control mechanisms.

1.2.3 Social Benefits

The economic and social impacts and benefits are closely related. Management strategies such as the West Kimberley Industry Participation Initiative will encourage and support local businesses in procuring supplies and services for the BLNG Precinct. This will help diversify the West Kimberley economy and encourage more socially sustainable communities. The commitments by the State and Foundation Proponent with respect to training of local workers, Indigenous employment targets and contracting, will make a positive contribution to closing the gap for sectors of the community that are currently socially disadvantaged.

The operations phase of the Precinct will bring new families to the West Kimberley, especially to Broome. The addition of new residents and increased economic vigour will improve the taxpayer rate base and enable greater local government investment in community facilities and services.

The creation of a BLNG Precinct will provide increased certainty for the community with respect to the future development of LNG facilities in the Kimberley. As part of the Browse (Land) Agreement between the State and the Goolarabooloo Jabirr Jabirr Peoples, the State has committed to not operating, authorising or permitting the operation of any gas processing facilities along the Kimberley Coastline other than at the BLNG Precinct.

1.2.4 Benefits to Traditional Owners

The State and Woodside commitments in the BLNG Precinct Project Agreement and Regional Benefits Agreement will assist in strengthening Indigenous communities in the West Kimberley and the Region. The agreements establish a unique and comprehensive regime of benefits both for the GJJ Native Title Claim Group and Indigenous communities across the Dampier Peninsula and the wider Kimberley region. Benefits are valued at more than \$1.5 billion over a 30 year period and will include:

- funds for a Kimberley Reading Recovery Program;
- reform of Indigenous land tenure on the Dampier Peninsula to allow for home ownership and create economic development opportunities;
- funds to establish businesses and investment;
- funds for joint ventures;
- funds for the building of homes for GJJ and other Indigenous people;

- funds for training and education initiatives;
- land for housing and businesses;
- direct employment through the construction and operation of the Precinct;
- indirect employment through businesses maintaining and servicing the Precinct;
- State Government (Port Authority and LandCorp) and proponent training programs;
- State Government (Port Authority and LandCorp) and proponent employment obligations and targets;
- contract and tendering opportunities for GJJ businesses;
- funds to support, promote and protect Aboriginal culture and heritage in the Kimberley;
- funds for the creation and joint management of conservation areas with the State Government (Department of Environment and Conservation (**DEC**));
- funds to support the training of members of the Native Title claim group as Indigenous Rangers to engage in environmental and cultural heritage monitoring at the LNG Precinct and its surrounds; and
- the State funding component of \$256 million includes a Kimberley Enhancement Scheme which will invest in Indigenous social programs.

There will be a commensurate expansion of commercial proponent benefits when other LNG proponents take up land in the Precinct. An overview of these agreements and associated benefits is provided in '**Annexure 2 - Native Title Documentation**' and '**Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)**'. The full set of agreements are available on DSD's website at the following link: <http://www.dsd.wa.gov.au/8416.aspx>.

1.3 Submission Process

In accordance with the EP Act, the purpose of the public review is to enable transparency and accountability by providing an opportunity for the public to provide comment on the proposal.

The first six parts of the Strategic Assessment Report were released for public review on 13 December 2010, and the Supplementary Information (**Part 7**) was released for a six week public review period on 14 February 2011. All seven parts are available for download from the consultation portal at <http://public-consult.epa.wa.gov.au/portal> or DSD's website at <http://www.dsd.wa.gov.au/BrowseLNG>. Public submissions on the SAR (all seven parts) closed on 28 March 2011.

Over 11,000 submissions were received during the public review period. The majority of these were 'proforma' submissions, of which there were approximately eight different versions. In total, there were 202 individualised submissions (including the eight proforma versions), ranging from single page letters through to substantial reports. Of these, 26 were submitted by 'named' organisations which comprised a mix of Non-Government Organisations (NGOs), Government agencies and stakeholder groups as listed in **Table 1.2 'List of Named Organisations that Made a Submission'**. The remaining 176 individual submissions were from 'unnamed' sources, that is, from private individuals whose details were held back by the EPA as confidential information, and these included the eight proforma versions.

A comprehensive process of analysing and responding to submissions was undertaken. Each submission was reviewed and questions captured. Consistent with the purpose of the public review process, any submission which contained an expression of preference for or against the BLNG Precinct proposal was noted, however specific responses to public opinion have not been provided.

Table 1.2 List of Named Organisations that Made a Submission

| Group or Company | Sub ID | Group or Company | Sub ID |
|---|--------|--|--------|
| Alliance for a Clean Environment | 161 | Kimberley Land Council | 224 |
| Australasian Wader Studies Group | 22 | Kimberley Whale Watching | 2 |
| Department of Education | 9 | Lynn MacLaren MLC, Member for the South Metropolitan Region Legislative Council WA | 165 |
| Department of Indigenous Affairs | 171 | Pearl Producers Association | 101 |
| Department of Planning | 172 | Safe Climate Perth | 112 |
| Department of Training and Workforce Development | 12 | Shire of Broome | 166 |
| Department of Water | 13 | Turtle Island Restoration Network | 93 |
| Department of Environment and Conservation | 64 | University of WA | 23 |
| Department of Health | 104 | WA Chamber of Commerce and Industry | 225 |
| Discover Australia Holidays | 167 | Western Australian Fishing Industry Council Inc (WAFIC) | 157 |
| Environs Kimberley | 169 | Woodside | 103 |
| Environs Kimberley, The Wilderness Society, CCWA, Turtle Island Restoration Network, Save the Kimberley | 120 | WWF and Australian Conservation Foundation | 170 |
| Kimberley Development Commission | 127 | Yawuru Native Title Holders Aboriginal Corporation RNTBC ICN | * |

* Confidential submission.

Individual questions and detailed responses are contained in **Appendix A**. They are organised by topic, generally in line with the structure of the SAR, with exceptions as noted below:

- Part 1: Executive Summary [Questions that were raised with respect to the Executive Summary (Part 1) were re-allocated to corresponding sections in Parts 2 to 7 so that particular factors or topics would be grouped together, for ease of navigation];
- Part 2: Strategic Assessment Process [note: this category of questions was re-named 'General/Policy' to cover any non-studies related questions not captured elsewhere];
- Part 3: Environmental Assessment – Marine Impacts;
- Part 4: Environmental Assessment – Terrestrial Impacts;
- Part 5: Social and Heritage Assessment;
- Part 6: Commonwealth Matters; and
- Part 7: Supplemental Modelling Studies.

Each question was rigorously analysed by a team of specialists and a response prepared on behalf of the Proponent. Over 1200 questions were raised from the individually registered submissions and the proforma submissions. An overview of key issues raised in each of the main categories (presented in subsequent sections in this Summary Report) is provided in **Table 1.3 'Overview of Key Concerns Raised in Submissions'**. Additionally, **Figure 1.1 'Distribution of Issues Raised'** illustrates the number of questions raised with respect to each topic, for all submissions.

Table 1.3 Overview of Key Concerns Raised in Submissions

| Issue | Summary of Key Concerns Raised in Submissions | Cross Reference |
|--------------------------------------|--|--|
| Governance | <ul style="list-style-type: none"> Governance and ability to manage impacts (social and environmental). | Summary Report (Section 2) |
| Stakeholder Engagement | <ul style="list-style-type: none"> Lack of appropriate stakeholder engagement and questions of future opportunities. | Summary Report (Section 3) |
| Site Selection and Approvals Process | <ul style="list-style-type: none"> Consideration of alternative sites. Level of detailed investigation in the SAR. | Summary Report (Section 4.2) Appendix A (Part 2) |
| Project Description | <ul style="list-style-type: none"> Lack of detail for specific project features such as jetty length, breakwater and dredging). Potential flow on effects from the Precinct. Possible 'industrialisation' of the Kimberley. | Summary Report (Section 4.3) Appendix A (Part 2) |
| General and Policy | <ul style="list-style-type: none"> Emergency response and management, particularly cyclones, oil spills and well blow-outs. Greenhouse gas emissions, particularly, the predicted scale of emissions, the potential for net benefits, and the detail of greenhouse gas abatement measures. | Summary Report (Section 4.4) Appendix A (Part 7) |
| Marine Factors | <ul style="list-style-type: none"> Impact on marine megafauna, in particular the extent and scientific rigour of the studies conducted on megafauna, the potential impact of increased vessel movements, underwater noise, and oil spills. Marine Ecosystem Integrity, in particular the predicted impacts to benthic habitats and the potential flow on effects to herbivorous marine fauna. Water quality, in particular wastewater discharges from operations, the robustness of hydrocarbon spill modelling and the preparedness of the proponent to both prevent and manage a major oil spill. Cumulative impacts, specifically the perceived inadequacies of the strategic assessment process to assess cumulative impacts from simultaneous Precinct activities. <p>[Refer also to Table 4.3 'Key Concerns Raised by Submissions - Marine Factors' for a breakdown of issues raised, categorised by SAR marine factors].</p> | Summary Report (Section 4.5) Appendix A (Part 3) |
| Terrestrial Factors | <ul style="list-style-type: none"> Terrestrial fauna, in particular the extent and scientific rigour of the terrestrial fauna surveys. Minimising impacts to Significant Fauna Habitat. Direct and indirect impact on flora and vegetation, particularly the monsoon vine thicket. Groundwater management and impacts from drawdown and contamination. Air quality, in particular: <ul style="list-style-type: none"> concern about the health risks due to air emissions and the apparent lack of a health risk and health impact assessment; | Summary Report (Section 4.6) Appendix A (Part 4) Summary Report (Annexure 6) |

| Issue | Summary of Key Concerns Raised in Submissions | Cross Reference |
|----------------------------------|---|--|
| | <ul style="list-style-type: none"> concern about commitments and means to manage emissions, especially benzene and other air toxics; and the need for more detailed and more comprehensive baseline monitoring studies. <p>[Refer also to Table 4.4 'Key Concerns Raised by Submissions - Terrestrial Factors' for a breakdown of issues raised, categorised by SAR terrestrial factors].</p> | |
| Social Factors | <ul style="list-style-type: none"> Additional pressure on Broome's social services. Increased cost of living. Concern that Indigenous Education, Training and Employment benefits and opportunities will not be realised. Diminishing availability of housing. Loss of Broome's lifestyle and tourism identity. Communities and activities on Dampier Peninsula. Social impact management compliance. <p>[Refer also to Table 4.6 'Key Concerns Raised by Submissions - Social Factors' for a breakdown of issues raised, categorised by SAR social factors].</p> | <p>Summary Report (Section 4.7)</p> <p>Appendix A (Part 5)</p> |
| Heritage Factors | <ul style="list-style-type: none"> Legislative framework to appropriately manage Indigenous heritage. Presence of Dinosaur Footprints and impact of development. National Heritage Listing status and concern that it is not being taken into account. Aboriginal heritage at the Precinct site and potential impact to specific sites and broader cultural attachment. <p>[Refer also to Table 4.8 'Key Concerns Raised by Submissions - Heritage Factors' for a breakdown of issues raised, categorised by SAR heritage factors].</p> | <p>Summary Report (Section 4.8)</p> <p>Appendix A (Part 5)</p> |
| Cumulative Environmental Impacts | <ul style="list-style-type: none"> Consideration of cumulative environmental impacts. | <p>Summary Report (Section 5.0)</p> <p>Summary Report (Annexure 8)</p> |

| |
|-----|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |
| 13 |
| 14 |
| 15 |
| 16 |
| 17 |
| 18 |
| 19 |
| 20 |
| 21 |
| 22 |
| 23 |
| 24 |
| 25 |
| 26 |
| 27 |
| 28 |
| 29 |
| 30 |
| 31 |
| 32 |
| 33 |
| 34 |
| 35 |
| 36 |
| 37 |
| 38 |
| 39 |
| 40 |
| 41 |
| 42 |
| 43 |
| 44 |
| 45 |
| 46 |
| 47 |
| 48 |
| 49 |
| 50 |
| 51 |
| 52 |
| 53 |
| 54 |
| 55 |
| 56 |
| 57 |
| 58 |
| 59 |
| 60 |
| 61 |
| 62 |
| 63 |
| 64 |
| 65 |
| 66 |
| 67 |
| 68 |
| 69 |
| 70 |
| 71 |
| 72 |
| 73 |
| 74 |
| 75 |
| 76 |
| 77 |
| 78 |
| 79 |
| 80 |
| 81 |
| 82 |
| 83 |
| 84 |
| 85 |
| 86 |
| 87 |
| 88 |
| 89 |
| 90 |
| 91 |
| 92 |
| 93 |
| 94 |
| 95 |
| 96 |
| 97 |
| 98 |
| 99 |
| 100 |

[illegible]

1.4 Document Structure

The remainder of this document contains the following sections:

- **Section 2 'Management Response'** provides a description of the strategic assessment process and relevant legislative framework underpinning the process at both a State and Federal level, including the Derived Proposal Process. An outline of issues relating to governance and management plans is provided. A description of land access and informed consent is also outlined.
- **Section 3 'Stakeholder Engagement Process'** provides an overview of the stakeholder process undertaken, outlining both past engagement activities and planned future engagement strategies.
- **Section 4 'Key Themes and Response to Issues Raised'** summarises the key themes and common concerns that have emerged from the submissions received. Some of these concerns are relevant at the general project and policy level, while others apply to the technical detail of the assessment process.
- **Section 5 'Cumulative Environmental Impacts'** summarises the cumulative assessment process, conducted in order to synthesise the successive, incremental and combined impacts of Category A activities.
- **Section 6 'Proposed Changes to Commitments in the SAR'** summarises the proposed changes to commitments in the SAR, which have arisen through the public review process.
- **Section 7 'References'**, including from both Summary Report and Appendix A.

The following Annexures provide further details and supporting material to the information presented in this document:

- **'Annexure 1 - Index of Questions and Answers in Appendix A'** provides a complete Table of Contents of all questions and answers, sorted by topic.
- **'Annexure 2 - Native Title Documentation'** details the Native Title information relevant to the Precinct.
- **'Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)'** provides a summary of the Governance and Environmental Management issues as described in the Indigenous Agreements.
- **'Annexure 4 - Management Strategies'** contains a number of tables detailing the environmental and social strategies and plans for the project.
- **'Annexure 5 - Dampier Peninsula Planning Strategy'** provides further background and current status of planning for the Dampier Peninsula.
- **'Annexure 6 - Groundwater Dependent Ecosystem Review'** presents an appraisal of the James Price Point monsoon vine thicket and drainage basin vegetation water dependence.
- **'Annexure 7 - ASIA Recommendations'** provides a consolidated table of all ASIA recommendations and how they are addressed.
- **'Annexure 8 - Cumulative Environmental Impacts'** outlines the methodology that has been implemented to determine potential cumulative impacts associated with Category A activities.

A consolidated list of questions and answers is provided in **Appendix A**, sorted by topic.

A pouch in the back of this document contains a disk with an electronic copy of the *Response to Submissions* documentation (i.e. the Summary Report and Appendix A).

2 Management Response

2.1 The Strategic Assessment Process

The Government of Western Australia entered into an agreement with the Commonwealth Government to undertake a Strategic Assessment of the Precinct Plan. A Strategic Assessment Agreement was established under Section 146(1) of the EPBC Act. It provides for the assessment of impacts of actions under the Precinct Plan for a common-user LNG precinct on all matters protected by Part 3 of the EPBC Act and is intended to meet the provisions of Section 38 of the EP Act, through a concurrent and collaborative process.

The Strategic Assessment process, under the EPBC Act, allows the Commonwealth Minister for Sustainability Environment Water Population and Communities (**Commonwealth Minister**) to endorse a Precinct Plan following a strategic assessment and also to approve "classes of actions" that are undertaken in accordance with the Precinct Plan.

The assessment process under the State EP Act allows for the assessment of strategic proposals. Ministerial approval of a strategic proposal defines the implementation conditions which will be applied to future proposals identified in the strategic proposal. A future proposal identified in a strategic proposal can be declared a derived proposal by the Environmental Protection Authority (**EPA**) and, subsequently, the EPA is not required to assess the proposal. Once declared, the State Minister for the Environment (**State Minister**) may, by written notice, indicate which of the implementation conditions (if any) apply to the derived proposal.

For both processes it should be noted that, as this strategic assessment covers the impact of multiple proponents over a significant timescale, there will be inherent uncertainties in clearly articulating outcomes and the most appropriate and effective mitigation, management and offset measures. The SAR makes conservative assumptions to outline the "worst-case" impact envelopes so that these uncertainties will be addressed later through the undertaking of further environmental surveys and monitoring, various geotechnical investigations and through the advancement of engineering design by individual proponents.

2.1.1 Commonwealth Government EPBC Act Approvals Process

The Precinct Plan would enable processing of the Browse Basin gas reserves at a single location and for commercial proponents to utilise fit-for-purpose infrastructure including common-user infrastructure. The implementation of the Precinct Plan also provides certainty to future commercial proponents that there is a "project ready" location where the establishment of LNG facilities would be streamlined. Other benefits that would flow from the implementation of the Precinct Plan include: the concentration of LNG development in one place reducing overall environmental impact; co-ordinated and consistent environmental management; and enhanced economic and social benefits for the Kimberley Region and for Western Australia.

The Precinct Plan for the BLNG Precinct is subject to strategic environmental impact assessment under the provisions of the EPBC Act, based on the possibility that the implementation of actions under the Precinct Plan may adversely affect matters of National Environmental Significance (**NES**).

The key steps of the EPBC Strategic Assessment process are as follows:

1. **Strategic Assessment Agreement:** The then Commonwealth Minister triggered a Strategic Assessment under the EPBC Act by forming a Strategic Assessment Agreement with the authority responsible for the Precinct Plan (in this case the Western Australian State Government) to undertake an assessment pursuant to s146. The agreement also detailed the requirements for the assessment of impacts under other legislation; in this case the EP Act. The Strategic Assessment Agreement included endorsement criteria that set out what the Minister must consider when endorsing the Precinct Plan.
2. **Terms of Reference:** Based on the Strategic Assessment Agreement, Terms of Reference were drafted to detail what information must be contained in the Strategic Assessment. The Terms of Reference were finalised in July 2008 (DSD, 2010c; SAR **Appendix A-3**).
3. **Preparation and finalisation of the SAR:** The draft SAR (**Part 1 to 6**) was released for a 15 week (initially 12 weeks but later extended) public review period from Monday 13 December 2010. As required by the EPA, supplementary information (**Part 7**) was released on 14 February 2011.

4. **Ministerial recommendations:** The Commonwealth Minister may recommend modifications to the Precinct Plan which was presented as part of the SAR.
5. **Endorsement of the Precinct Plan:** If the Strategic Assessment meets the terms of reference and recommended modifications (or equivalent) have been made to the Precinct Plan, the Minister may endorse the Precinct Plan. To ensure consistency between State and Commonwealth requirements this occurs after the release of the WA Minister for Environment's Statement on the proposal. At this stage, no actions are yet approved under the Precinct Plan.
6. **Approval of actions under the Precinct Plan:** Once the Precinct Plan has been endorsed, the Commonwealth Minister may, under s146B, approve actions or classes of actions that would normally trigger assessment under the EPBC Act. An approval under s146B may include conditions.

The approval of actions under a Precinct Plan can take place at any time following the endorsement of the Precinct Plan.

2.1.2 Western Australian EP Act Assessment Process

Under Section 38 (Division 1, Part IV) of the EP Act, the EPA may carry out an environmental assessment of strategic proposals. A strategic proposal is essentially a proposal that identifies future proposal(s) that are likely to have a significant effect on the environment.

The assessment process culminates in the prescription of conditions that will apply to these future proposals. These conditions, however, will not apply until a proposal, identified in the assessed strategic proposal, is referred to the EPA and declared to be derived under Section 39B of the EP Act. This is similar to the approval of actions phase under the EPBC Act process. However, the approval of actions by the Commonwealth Minister is a separate process and may occur at a different time to the determination of derived proposals by the EPA.

A three stage assessment process has been, and will continue to be, applied to the Precinct Plan and future proposals addressed by the Precinct Plan, as follows:

1. **Stage 1:** Early strategic advice was provided by the EPA under Section 16(e) of the EP Act on environmental sensitivities associated with short-listing of sites for the BLNG Precinct. The EPA concluded the following regarding development of the BLNG Precinct near James Price Point:

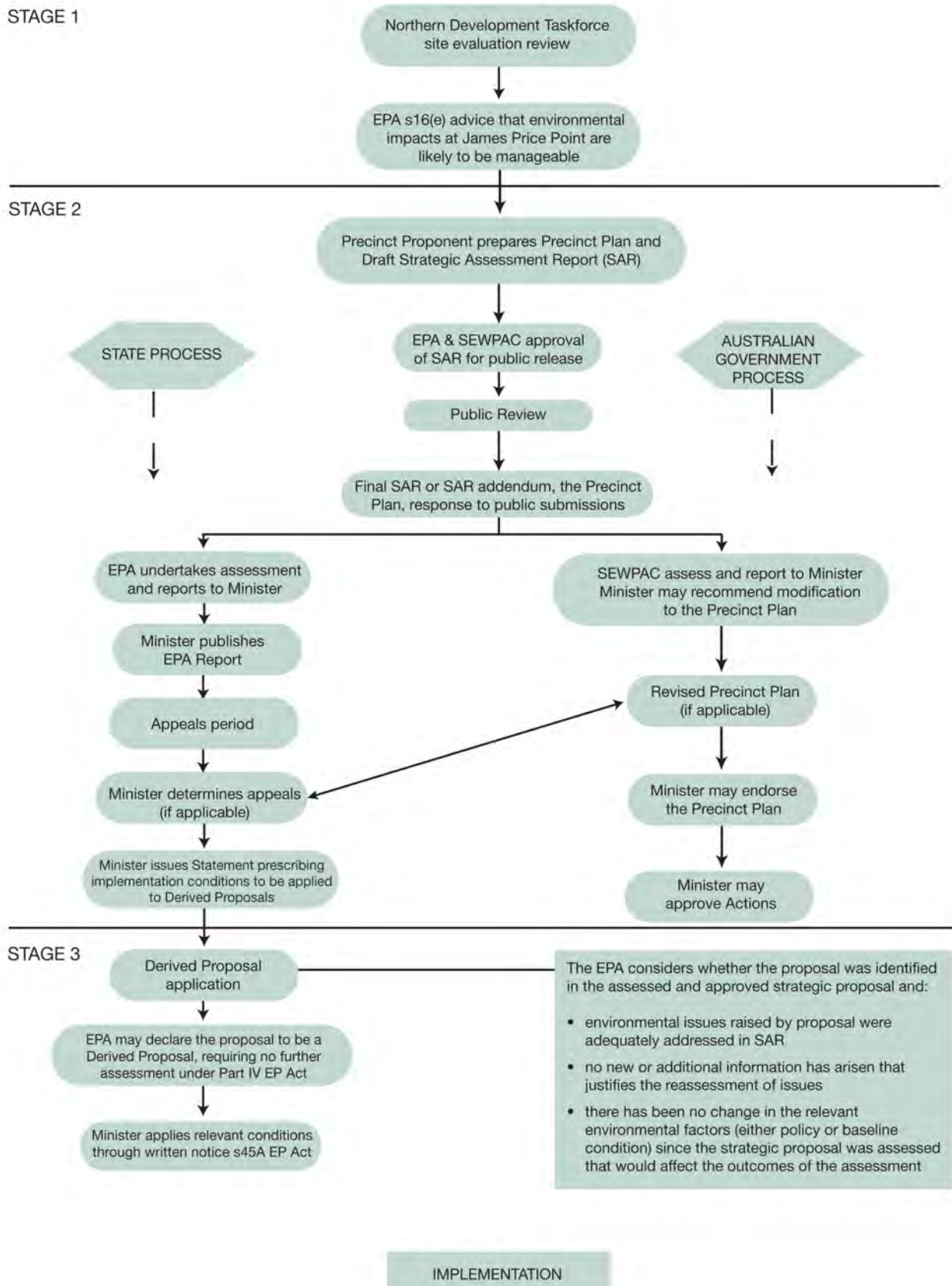
"The environmental impacts and risks of locating a precinct in the James Price Point area are likely to be manageable. The risk of future expansion being significantly constrained is likely to be low."

"Based on the available data, the EPA considers that the James Price Point area is the least environmentally constrained of the two short-listed sites on the Dampier Peninsula for a gas processing precinct."

2. **Stage 2:** Assessment of the Precinct Plan (strategic proposal) as described in this Strategic Assessment under Section 38 of the EP Act and the setting of implementation conditions that will apply to derived proposals identified in the strategic proposal, if the Minister issues a statement that the proposal may be implemented.
3. **Stage 3:** Consideration for declaration of derived proposal(s) that were identified as "future proposals" in the assessed strategic proposal and the application of the relevant conditions to the proposal(s).

A SAR was prepared as part of the Section 38 EP Act assessment process (Stage 2 **Figure 2.1 'Strategic Assessment Process'**). The BLNG Precinct strategic proposal was referred under s38 of the EP Act by the Minister for State Development (the Proponent) to the EPA on 1 April 2008. The EPA agreed to undertake an assessment of the strategic proposal and this decision was advertised on 14 April 2008. No formal EPA administrative procedures are currently published to outline the process to be followed under the EP Act for the assessment of strategic proposals.

Figure 2.1 Strategic Assessment Process



A detailed Scope of the Strategic Assessment (**SoSA**) was endorsed by the EPA on 1 December 2009 with reference to the Preface that was provided by DSD to clarify the purpose of the Strategic Assessment and the information expectations at each stage of the approvals process (refer to DSD, 2010a; DSD 2010b).

The SAR was prepared in accordance with the SoSA and Terms of Reference, and included a strategic level impact assessment of environmental, heritage and social factors, a description of the Precinct Plan (to be endorsed under the EPBC Act), the identification of future proposals (to be approved under the EP Act), and the Proponent's view on draft conditions that may be applied to any future proposal that the EPA may declare to be derived.

The SAR was subject to a 15 week public review period from Monday 13 December 2010 and submissions were received from Government Agencies, NGOs and the public during this period. This document outlines the Proponent's *Response to Submissions* and the modification of the proposal and management requirements to be reflected in any approvals, where necessary. When the Response to Submissions and relevant parts of the SAR are accepted by the EPA, the EPA will then prepare a report outlining its assessment and any recommended conditions.

A person who disagrees with the content and/or recommendations in the EPA assessment report may lodge an appeal with the WA Minister for the Environment within 14 days of the release of the EPA report. The Minister will evaluate the merit of the appeals and consult with decision-making authorities on whether the strategic proposal may be implemented and if so, what conditions should be applied.

If there is agreement that the proposal can be implemented, the Minister will issue a statement that the strategic proposal may be implemented and the Minister will prescribe the implementation conditions to be applied. Following this a proponent for projects within the Precinct is able to submit a derived proposal. Details of this process are provided in the next section.

It should be noted that under the EP Act, social and economic factors do not form part of the formal assessment and are thus not prescribed in the derived approvals process.

2.2 Derived Proposal Process

Subject to an approval decision for the BLNG Precinct strategic proposal, commercial operators may refer their development proposal to the EPA, under Section 38 of the EP Act, requesting that their proposal be declared a derived proposal (i.e. derived from a strategic proposal) under Section 39B. When a proposal is referred with a request by the proponent for it to be derived, the EPA will declare it as a derived proposal if:

- The proposal was identified in the strategic proposal that has been assessed by the EPA.
- A decision was made that the strategic proposal could be implemented.

The EPA may choose to not declare the proposal derived if:

- The environmental issues raised have not been adequately addressed.
- There is significant new or additional information that justifies reassessment of the issues raised by the proposal.
- There has been a significant change in the relevant environmental factors since the strategic proposal was assessed (EPA 2010a).

If the EPA declares the referred proposal to be a derived proposal, there will be no further assessment by the EPA, although the EPA may recommend changes to conditions to apply to a derived proposal. The EPA will then publicly record the declaration and notify the State Minister of its decision. The State Minister may then apply relevant implementation conditions (as published in the Statement for the strategic proposal) to the derived proposal and issue a notice that this proposal may be implemented, subject to these conditions, under Section 45A of the EP Act.

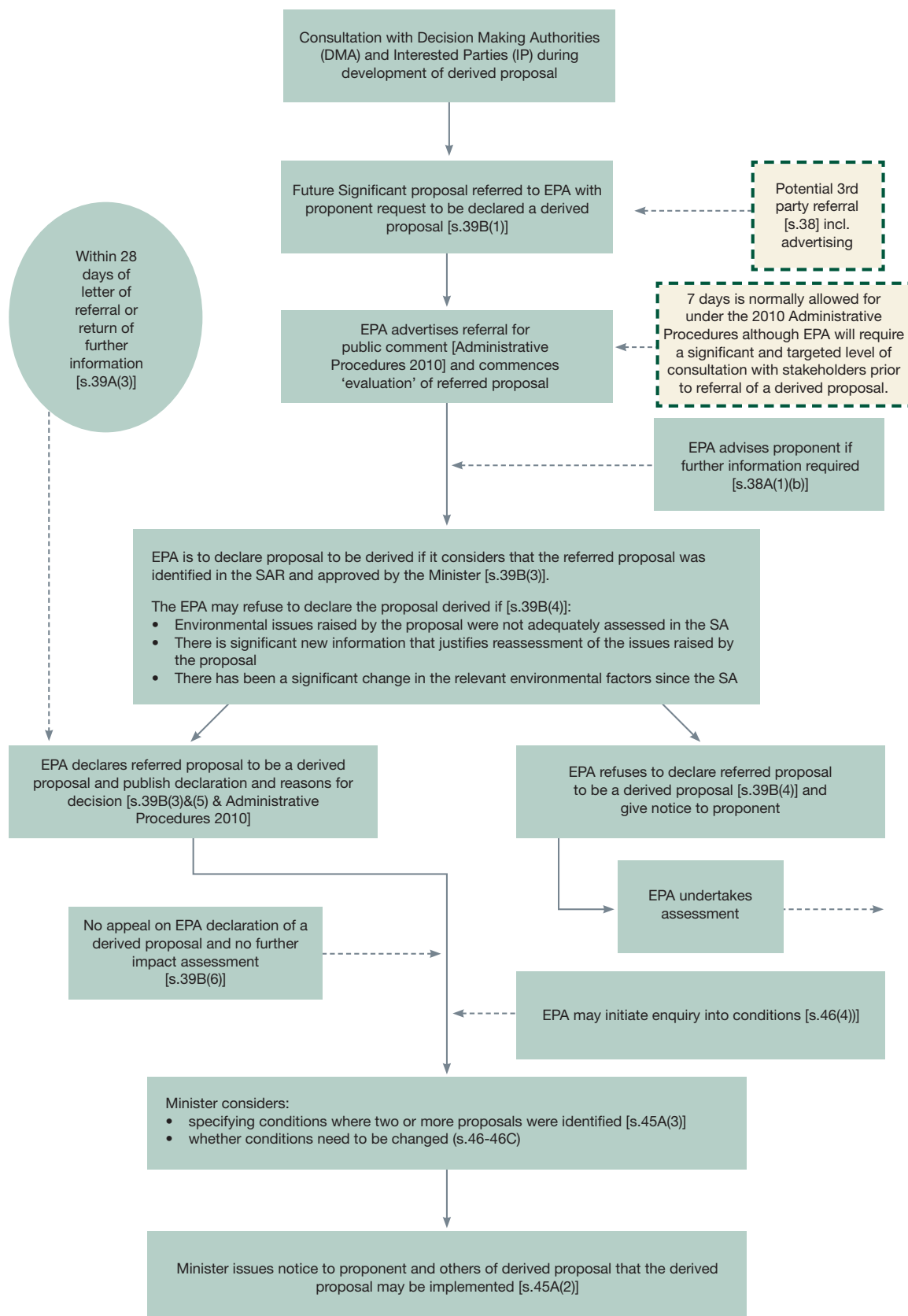
At this stage the Precinct Control Group (see **Section 2.3 'Governance Issues'**) would also monitor the performance of the relevant non-environmental requirements as identified in the Social and Economic Impact Management Plans (see **'Annexure 4 - Management Strategies'**) for implementation by the proponent of the derived proposal.

The derived proposal decision process is summarised in **Figure 2.2 'Derived Proposal Decision Process Flow Diagram'**. The process has been identified from the EP Act and 2010 Administration Procedures (EPA 2010b) following consultation with the Office of Environment Protection Authority (**OEPA**).

Stakeholders would be engaged in the process of developing the derived proposal, prior to the statutory 7 day public comment period. A commitment has been made to require the proponents of derived proposals to consult with stakeholders including what the EPA considers as Decision-making Authorities (**DMAs**) and Interested Parties (**IPs**) during the development of derived proposals and associated management plans

| | |
|---|---|
| 1 | <p><i>New/Strengthened Commitment: Derived Proposal Process</i></p> <p><i>The Proponent will require the proponents of derived proposals to consult with stakeholders, including what the EPA considers as Decision-making Authorities (DMAs) and Interested Parties (IPs), during the development of derived proposals and associated management plans.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further detail).</p> |
|---|---|

Figure 2.2 Derived Proposal Decision Process Flow Diagram



2.3 Governance Issues

The Browse LNG Precinct governance structure sets out how decisions regarding the Precinct will be made over its life cycle. The governance structure will:

- Establish clear lines of responsibility and reporting for the management of impacts including the preparation and implementation of management plans to meet Strategic Assessment commitments and regulatory approvals obligations.
- Efficiently and effectively coordinate the efforts of the relevant State Government agencies and Site Managers in achieving the Precinct's objectives including maximising the delivery of benefits and opportunities arising from the Precinct.
- Provide direction to any proponents wishing to establish at the Precinct as to their responsibilities and State Government requirements.
- Monitor the Precinct's impacts over its life cycle, consider and make recommendations about adjustments to management measures.
- Provide a mechanism for addressing any impacts that may emerge which are not currently the focus of management plans (monitoring, reporting, compliance, adaptive management).
- Provide clear points of contact for issues raised by stakeholders including local communities, Traditional Owners, Site Managers and associated Precinct users, and regulatory agencies.
- Inform the public of the status of the Precinct and the results of impact monitoring including any significant changes to management measures.

2.3.1 Issues Raised

A number of submissions have raised concerns with respect to aspects of governance arrangements as proposed in the draft SAR. These concerns typically relate to the level of representation on various committees in the structure and the ability of representatives to influence outcomes.

Since the publication of the draft SAR, further commitments have been given to the GJJ Native Title Claim Group that they would have representation in all Browse Precinct oversight groups as specified in **Section 2.3.3 'Proposed Governance Structure'**.

| | |
|---|--|
| 2 | <p><i>New/Strengthened Commitment: Governance</i></p> <p><i>The Proponent will ensure that Traditional Owners have representation in all Browse Precinct Oversight Groups.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|---|--|

2.3.2 Previous Governance Model

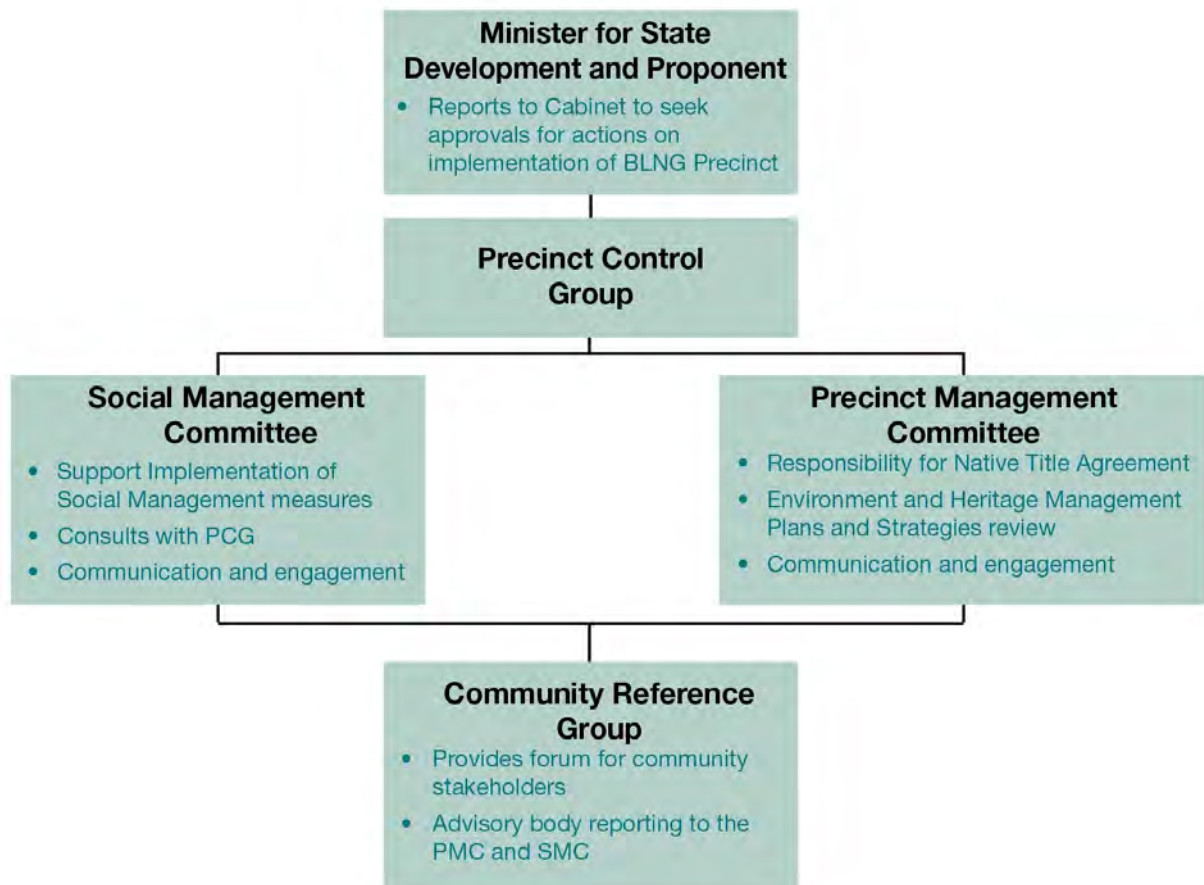
The draft SAR proposed a governance structure overseen by a Precinct Control Group (**PCG**) reporting directly to the Minister for State Development as the representative of the Precinct Proponent. The PCG, consisting of DSD, LandCorp and Broome Port Authority (**BrPA**), represents the key State agencies with direct responsibility for the Precinct. Under that structure, three further committees would have reported to the PCG:

- a Social Management Committee (**SMC**) – responsible for working with stakeholders, including commercial proponents, Government Departments and Traditional Owners, to ensure social management plans and strategies are implemented and adapted as necessary;
- an Operations Coordination Committee (**OCC**) – responsible for the implementation of environmental management plans (**EMPs**); and
- a Precinct Management Committee (**PMC**) – established under the BLNG Precinct Project Agreement with Traditional Owners to facilitate any actions under the agreement including cultural heritage, environmental management, and employment and training obligations.

2.3.3 Proposed Governance Structure

It has also been observed that there is a level of duplication implicit in the previously proposed structure. A simplified structure is now envisaged in response to the submissions received as described in **Figure 2.3 'Proposed Governance Structure'**.

Figure 2.3 Proposed Governance Structure



In response to the range of feedback in submissions in relation to the function and structure of the proposed Precinct management framework proposed in the draft SAR, the following clarifications and modifications are now proposed for the Browse LNG Precinct governance structure:

- The Minister for State Development is the Proponent for the Precinct and is responsible for the implementation of the EP Act and EPBC Act approvals for the Strategic Assessment.
- The Precinct Control Group will be established through Ministerial directive by the Minister for State Development to formalise its capacity to represent the Proponent.
- The Precinct Control Group will report and make recommendations on proposed activities related to the Precinct to Cabinet through the Minister for State Development on the implementation of the Precinct development.
- Traditional Owners (**GJJ**) will be represented on all Committees - notably the Precinct Control Group. This ensures the active engagement and responsibility for recommendations in recognition of the Traditional Owners' status as custodians of the land. It also introduces a direct line of communication with the Minister for State Development as the Proponent.
- The structure will also now be simplified through the removal of the Operations Coordination Committee which reflects a risk of duplication and overlap with the Precinct Management Committee.

- To clarify, where the State has commitments (statutory or otherwise) which must be reinforced with commercial proponents, those obligations will be made explicit through land leasing or licensing arrangements with LandCorp or the Broome Port Authority, as appropriate.
- It is noted that independent advice can also be sought by Committees as required.

3 New/Strengthened Commitment: Governance

The Proponent will establish a BLNG Precinct Governance Structure, in consultation with EPA and SEWPAC and in accordance with the Native Title Agreements, to take on board issues raised during the public review process.

(Refer to **Section 6 'Proposed Changes to Commitments in the SAR'** for further details).

Precinct Control Group

The Precinct Control Group (**PCG**) would recommend actions, plans, and strategies to the Minister for State Development and monitor the delivery of those activities to ensure that Precinct environmental, heritage and social conditions and commitments are met. These include statutory requirements that will be set out in the Plan endorsed by the Commonwealth Minister and the conditions or requirements set under WA State Legislation such as environmental and health protection. It will also make recommendations on other non-statutory commitments related to mitigating social impacts. The PCG would also make recommendations on any derived proposals submitted with respect to the Precinct, or any new commercial proponent considering the Precinct.

Two other committees will provide advice and reports to the PCG:

- the Precinct Management Committee, which is established under the BLNG Precinct Project Agreement; and
- the Social Management Committee, which will be established by the PCG.

The Rules for the Precinct Management Committee are detailed in the BLNG Precinct Project Agreement. The PCG will have the role of finalising the Terms of Reference for the Social Management Committee in consultation with stakeholders.

It would typically make recommendations by consensus, while parties would remain free to raise any concerns directly with the Minister for State Development. From a legal perspective, and without assigning liability to other parties, the State Government must ultimately retain the ability to make decisions with respect to the Precinct.

The PCG will consist of senior representatives of: BrPA, as the Manager of the Port; LandCorp, as the Manager of the Industrial Precinct; DSD, as the overall Precinct Manager; and a nominee of the GJJ Native Title Claim Group.

Precinct Management Committee

The Precinct Management Committee (**PMC**) is to be established under the BLNG Precinct Project Agreement with the GJJ Native Title Claim Group. The PMC will be comprised of representatives for each of the relevant State agencies (DSD, BrPA, LandCorp), the GJJ Native Title Party, the Foundation Proponent and any Additional Proponents. In addition, other members of the GJJ Native Title Claim Group may attend Committee meetings as observers.

Among the functions of the PMC are the following:

- monitor compliance with the Committee Documents and identify areas where compliance can be improved;
- review performance and make recommendations concerning implementation of the Committee Documents; and
- make recommendations about whether amendments should be made to the Committee Documents.

The functions relate to the operational provisions of the Committee Documents:

- the Cultural Heritage Management Schedule;
- the Environmental Management Schedule;
- Employment and Training Management Schedules for each proponent;
- Business Development and Contracting Management Schedules for each proponent;
- the State Employment and Business Development Management Schedule;
- the Cultural Awareness Training Management Schedule;
- the Decommissioning Management Schedule;
- the Land Access Management Schedule; and
- any other document as agreed by the Precinct Management Committee.

Given the overlap of many specified Committee Documents and documents specified in the SAR (such as environmental and social management plans), the agreement of the PMC will be sought to have these included as Committee Documents and to perform additional functions in support of the PCG including:

- coordinate reviews of derived proposals, environmental and heritage management plans or strategies;
- monitor the implementation of management plans related to the environment, cultural heritage, business development and contracting, land access, and cross-cultural training; and
- support the effective implementation of all environmental requirements of the Precinct as approved under EP Act and EPBC Act through the coordination of activities of entities operating at the Precinct.

The Committee can also make formal recommendations to Site Managers (e.g. the commercial proponents, LandCorp or BrPA) in relation to matters that fall within the functions outlined above. The Site Manager must consider any Formal Recommendations received from the Committee under this item and within three months of receiving that Formal Recommendation provide a report to the Committee as to the progress of implementation of that Formal Recommendation or other response. Site Managers will provide the Committee with written reasons if they do not implement the Formal Recommendation (refer to '**Annexure 2 - Native Title Documentation**' and '**Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)**'). The full set of agreements are available on DSD's website at the following link: <http://www.dsd.wa.gov.au/8416.aspx>.

Social Management Committee

The Social Management Committee (**SMC**) provides a mechanism for addressing those social and economic impact issues that do not otherwise have a specific regulatory or contractual responsibility.

Pending development and agreement of Terms of Reference it is expected that the functions of the SMC would include the following:

- support the implementation of social management measures;
- consult and advise the PCG; and
- communication and engagement.

Some of the issues addressed by the SMC (e.g. employment and training) would overlap to some degree with the specific commitments to the GJJ Traditional Owners addressed through the Precinct Management Committee. Synergies will be sought in the delivery of these commitments.

The SMC would include representation from the Precinct Managers, Foundation Proponent and any Additional Proponents, the GJJ Native Title Claim Group and other key regional stakeholders with a focus on social impact issues. These additional committee members will be determined during stakeholder consultation in preparing the Governance Terms of Reference (see below).

Community Reference Group

A Community Reference Group (**CRG**) will be established to assist in building a bridge of understanding between the BLNG Precinct management, Precinct-based LNG companies and the local community. The CRG will provide a forum for community stakeholders not already represented in the Precinct Governance structure to engage in an ongoing dialogue with the Precinct Site Managers on any issues of concern. The CRG would be an advisory body reporting to the PMC and SMC, dependent upon the subject matter. **Figure 2.3 'Proposed Governance Structure'** displays the proposed relationship between the CRG and the Precinct Governance model.

| | |
|---|--|
| 4 | <p>New/Strengthened Commitment: Community Reference Group</p> <p><i>The Proponent will establish a Community Reference Group to assist in building a bridge of understanding between the BLNG Precinct Management, Precinct-based companies and the local community.</i></p> <p>(Refer to Section Table 6.1 'Proposed Changes to the Commitments in the SAR' for further details).</p> |
|---|--|

Governance Terms of Reference

The Proposed Governance Structure will be finalised in consultation with key stakeholders, including the regulatory agencies, to ensure a robust system of accountability including statutory responsibilities for conditions set as part of the approvals process. The structure will also be established through Ministerial directive, and will include terms of reference, to provide clear direction and accountability for each of the committees established.

The terms of reference for the PMC are included as part of the agreements for land access and are provided at **'Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)'**. The full set of agreements are available on DSD's website at the following link: <http://www.dsd.wa.gov.au/8416.aspx>.

The terms of reference for each of the PCG, SMC and CRG will be further considered following consultation with stakeholders and proposed membership.

The following issues will be addressed in the preparation of terms of reference:

- the roles and responsibilities;
- the final composition of its membership;
- selection of a chair person;
- meeting location(s) and frequency of meetings;
- resourcing (e.g. executive officer, funding, sitting arrangements);
- reporting and provision of information to the public; and
- in the case of the Community Reference Group, the issue of community representativeness, the selection criteria for community members, and the terms of membership.

It is noted that the Traditional Owners will establish a separate governance structure to support the management of their Native Title benefits. The form and operation of any such governance structure is a matter for Traditional Owners and as such is not discussed here.

It should also be noted that the Precinct governance structure does not represent the sole mechanism by which parties can provide input with respect to Precinct activities. DSD will liaise as appropriate with significant parties affected by, or with an interest in, the Precinct. It may then take concerns, issues and recommendations back to the relevant committees or directly to Government as the Proponent for consideration.

Traditional Owners' Role in Environment, Safety and Health Stewardship

In addition to the usual processes, the State has given Traditional Owners strong assurances with respect to environmental management. This acknowledges the significance of the environment to the GJJ Native Title Claim Group and the Kimberley Indigenous People and the importance of minimising and managing the impact of the BLNG Precinct on the environment.

Through the Precinct Management Committee a particular responsibility of each party operating within the Precinct (Site Managers) will be to manage the environment and take into account the views of the GJJ Native Title Claim Group during all phases of the implementation of activities. This will take place throughout the life of the project from design to decommissioning and will be supported by ongoing research to improve understanding of the environment and any potential impacts. Site Managers must also monitor activities and adopt practises to reduce impacts to levels acceptable to environmental regulators.

Under the BLNG Precinct Project Agreement, if the GJJ Native Title Party reasonably believes that an activity is likely to cause Serious Environmental Harm then the GJJ Native Title Party may initiate a process to resolve the concern. The GJJ Native Title Party will have the opportunity to seek independent advice with respect to information provided by Site Managers. If the concern cannot be resolved then the GJJ Native Title Party has the opportunity to inform the relevant environmental regulator of the perceived risk.

In the event of a breach by any Site Manager of an environmental law which causes Serious Environmental Harm and a direct impact on the health and safety of members of Indigenous people of the Dampier Peninsula, the commercial proponent must, where practicable to do so, make good that Serious Environmental Harm to the standard prescribed by law. Where it is not practicable to make good, the commercial proponent must take other steps in consultation with the GJJ Native Title Party. (Refer to **'Annexure 2 - Native Title Documentation'** and **'Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)'**). The full set of agreements are available on DSD's website at the following link: <http://www.dsd.wa.gov.au/8416.aspx>.

2.4 Management Plans

2.4.1 Environmental and Social Impact Management

A number of submissions raised concerns at the complexity and lack of clarity in the description of the management strategies and plans in terms of hierarchy, responsibilities and implementation coordination. In order to clarify the concerns, the clarifications, changes and additions to each of the management groups proposed in the SAR (**Parts 3, 4, 5 and 6**) are listed below and expanded upon in this section:

- agency responsibilities and legal instruments for SAR implementation;
- revised State Management Framework - relationships between Strategies and Management Plans;
- draft proposed State Management Strategies; and
- clarification and rationalisation of Social and Economic Management Plans.

A schematic outlining Agency responsibilities and legal instruments for SAR implementation is illustrated in **Figure 2.4 'Schematic of State Government Responsibilities'**. The purpose of this figure is to reinforce an understanding that there are a number of existing State level legislative mechanisms and policy tools that will support the effective management of environmental, heritage, and social impacts identified for the Precinct within the SAR for both State and Commonwealth concerns. The application of these tools is demonstrated in the range of Management Strategies and Management Plans detailed in **Table 2.1 'State Management Strategies – Required for Precinct Management'**, **Table 2.2 'State Framework for Management of Social and Economic Impacts'** and **'Annexure 4 - Management Strategies'**.

A revised State Management Framework has been developed which shows the relationships between Strategies and Management Plans.

These management strategies are split into two categories:

- State Management Strategies – Required for Precinct Management – these strategies are required to facilitate a coordinated approach to the environmental management and monitoring of the Precinct. See **Table 2.1 'State Management Strategies – Required for Precinct Management'**.
- State Framework for Management of Social and Economic Impacts – these strategies include plans, programs and initiatives and will be developed to manage broader Regional social and environmental issues, as part of ongoing development agreements, to distribute benefits of the Precinct to the broader Dampier Peninsula or in order to manage secondary issues arising from the Precinct. These Strategies are detailed in **Table 2.2 'State Framework for Management of Social and Economic Impacts'**.

As a changed commitment, draft proposed State Management Strategies have been developed and are presented in **Annexure 4 - Management Strategies**. Previously in the SAR it was proposed that many of these Strategies would be developed post the Strategic Assessment. As a direct response to submissions concerned with the sequencing of approvals, commencement of Precinct activities and the development of Management Plans, these Management Strategies have now been drafted at this stage in the approvals process and will be finalised through consultation with key stakeholders and the Regulators and relevant Agencies listed in **Schematic of State Government Responsibilities**.

| | |
|---|--|
| 5 | <p><i>New/Strengthened Commitment: Environmental and Social Impact Management</i></p> <p><i>Draft proposed State Management Strategies (Annexure 4 - Management Strategies) have been developed by the Proponent and will be finalised through consultation with the Regulators and relevant Agencies.</i></p> <p>(Refer to Section Table 6.1 'Proposed Changes to the Commitments in the SAR' for further details).</p> |
|---|--|

2.4.2 Social Management Plans

Part 5 of the SAR identifies a range of social and economic management plans to be prepared and implemented either by a specific State Government agency, the Foundation Proponent or any additional proponents. **Table 2.2 'State Framework for Management of Social and Economic Impacts'** provides a summary of the social and economic management plans to be developed as part of the implementation of the SAR and outlines their content. In addition, each of the management plans will address the following:

- management measures to mitigate predicted negative impacts and enhance potential benefits;
- objectives with measures of performance identified;
- monitoring of predicted impacts, evaluation of the effectiveness of management measures, and adaptive management processes;
- reporting and governance arrangements;
- stakeholder engagement that contributed to the development of the plan and what stakeholder engagement will occur during the plan's implementation; and
- demonstrate compliance with any commitments (unless confidential) in the BLNG Project Agreement and Regional Benefits Agreement with the GJJ Native Title Claim Group.

2.4.3 Dampier Peninsula Planning Strategy

The State Government through the Department of Planning and Western Australian Planning Commission is preparing a land use plan for the Dampier Peninsula (**DP**). The process for the development of the plan started in 2007 after Ministerial request following the publication of the Dampier Peninsula Access Management Plan.

The then Department of Planning and Infrastructure initiated the preparation of a DP land use plan. At the commencement of this project this plan was identified with the title of "Dampier Peninsula Land Use and Infrastructure Plan". Consultation with communities on the DP and technical advisory group during 2007 and 2008 resulted in the preparation of a number of internal reports and papers. The project was put on hold pending negotiations for the Browse LNG Precinct and funding issues.

The Department of Planning (**DoP**) reinitiated the project in the second half of 2009, with funding being allocated for the Kimberley Land Council (**KLC**) to undertake Traditional Owner (**TO**) and other Indigenous people of the DP. It was identified at this point that the direction and intent of the plan needed refocusing and, as such, the format of the draft "Dampier Peninsula Land Use and Infrastructure Plan" was amended to follow the Local Planning Strategy guidelines in the Local Planning Manual and the unamended version was converted to internal discussion paper. In doing this, the title has changed to the "Dampier Peninsula Planning Strategy" which is currently a working draft.

Further information is provided in '**Annexure 5 - Dampier Peninsula Planning Strategy**'.

Figure 2.4 Schematic of State Government Responsibilities

| Relevant Government Agencies | Legal Instrument | Relevant SAR Management Arrangements or other State commitments |
|---|---|--|
| Environmental Protection Authority | <ul style="list-style-type: none">Environmental Protection Act 1986, Part IVMinisterial Conditions from Browse LNG Precinct Strategic Proposal (if approved) | <ul style="list-style-type: none">Review proponent's derived proposal against criteria in the EP Act,Review and approval of applicable Commercial Proponent management plansUndertake compliance audit and reviews |
| Department of Environment and Conservation | <ul style="list-style-type: none">State Water Quality Management StrategyConservation and Land Management Act 1984Environmental Protection Act 1986,Contaminated Sites Act 2003Environmental Protection (Controlled Waste) Regulations 2004Environmental Protection (Noise Regulations) 1997Environmental Protection (Unauthorised Discharges) Regulations 2004Pollution of Waters by Oils and Noxious SubstancesWildlife Conservation Act 1950 | <ul style="list-style-type: none">Review of relevant Commercial Proponent Management Plans, as appropriateGrant of Works Approval and Operating Licences for prescribed premisesReview of compliance monitoring results such as Air Monitoring Results & Emission Control Performance Reports and wastewater discharge monitoring resultsSupport DoP in developing the Dampier Peninsula Planning Strategy (previously known as the Dampier Land Use and Infrastructure Plan)Develop and implement the Kimberley Science and Conservation StrategyEstablish and manage terrestrial and marine conservation areas on the Dampier PeninsulaDevelopment of Coulomb Point Nature Reserve Management PlanAssist in the development of the Precinct Surround Fire Management StrategySupport management of recreation use on the Dampier Peninsula |
| Department of State Development | <ul style="list-style-type: none">Represents the Minister for State Development as Proponent for Development under the Environmental Protection Act, Part IVLead Agency FrameworkChair of Precinct Control Group established to make recommendations to the Minister for State Development ensuring conditions set by the Minister for Environment are implemented.Manage implementation of State Agreement Act provisions and Native Title Agreements developed for the Precinct. | <ul style="list-style-type: none">State Environmental Strategies, BLNG Precinct:<ul style="list-style-type: none">Emergency Response StrategyPort Environmental Management StrategyAir Quality Management StrategyTerrestrial Ecological Management Strategy (formerly known as Management and Monitoring Strategy for Vegetation of Medium-High Conservation Significance)Precinct Surrounds Fire Management StrategyPreliminary Closure and Decommissioning StrategyEstablish Dredge Management Advisory GroupVarious surveys to inform the establishment of terrestrial and marine conservation areas on the Dampier Peninsula as part of the Kimberley Science and Conservation StrategyDiversion of Manari RoadSupport the development of the Roebuck Bay Management Plan and DEC's Management of Eighty Mile BeachPrepare Greater Bilby Management Plan if surveys identify population at Quondong Point.Broome Community Services StrategySocio-Economic Impact Monitoring Program (through Social Management Committee) |
| Broome Port Authority | <ul style="list-style-type: none">Port Authority Act 1999Marine and Harbours Act 1981Precinct Control Group responsible for ensuring conditions set by the Minister for Environment are Implemented | <ul style="list-style-type: none">State Environmental Strategies, BLNG Precinct:<ul style="list-style-type: none">Emergency Response Strategy (with DSD)BLNG Precinct Port Environment Management Strategy (with DSD)Review and provide input to relevant Commercial Proponents management and response plans as specified in BLNG Precinct Strategies.Manage operational aspects of the Port in accord with legislative requirementsIndigenous Participation Plans |
| Conservation Commission & Marine Parks and Reserves Authority | <ul style="list-style-type: none">Conservation and Land Management Act 1984Land Administration Act 1997 | <ul style="list-style-type: none">Establish Nature Reserves/ National Parks & Marine Parks (as per Kimberley Science and Conservation Strategy and Native Title Agreements)Prepare management plans and audit DEC performance in implementation. |
| Department of Indigenous Affairs | <ul style="list-style-type: none">Land Administration Act 1997Aboriginal Heritage Act 1972 | <ul style="list-style-type: none">Input into the development of the Dampier Peninsula Planning Strategy (previously known as the Dampier Land Use and Infrastructure Plan)Review and approve proponents Cultural Heritage Management Plans |
| Department of Agriculture and Food Western Australia | <ul style="list-style-type: none">Agriculture and Related Resources Protection Act 1976Soil and Land Conservation Act 1945 | <ul style="list-style-type: none">Advise on weed and feral animal management strategiesAdvise on Quarantine Management Plan |
| Fire and Emergency Services (FESA) | <ul style="list-style-type: none">Bush Fires Act 1954 | <ul style="list-style-type: none">Feed into the development of the Precinct Surrounds Fire Management StrategyFeed into Emergency Response Plan |
| Department of Water | <ul style="list-style-type: none">Rights in Water & Irrigation Act 1914WA State Water Quality Management Strategy | <ul style="list-style-type: none">Licensing of groundwater abstractionGrant of bed and banks permits |
| Department of Planning | <ul style="list-style-type: none">Planning and Development Act 2005State Planning Policy 4.1 (Draft Industrial Buffer Policy, 2009) | <ul style="list-style-type: none">Develop and Finalise the Dampier Peninsula Planning Strategy (previously known as the Dampier Land Use and Infrastructure Plan)Establish industrial (and other) zoning for the BLNG Precinct in accordance with the Dampier Land Use and Infrastructure Plan.Establish land use buffer zones (Industrial buffer zone and the sensitive land use buffer zone) |
| Heritage Council of Western Australia | <ul style="list-style-type: none">Heritage of Western Australia Act 1990 | <ul style="list-style-type: none">Feed into the development of the Dampier Peninsula Planning Strategy (previously known as the Dampier Land Use and Infrastructure Plan) |
| LandCorp | <ul style="list-style-type: none">Western Australian Land Authority Act 1992 | <ul style="list-style-type: none">Allocation of tenure for Light Industrial AreaReserve land for multi-user pipeline corridorsReserve land for multi-user service and road corridorEstablish land use buffer zones (Industrial buffer zone and the sensitive land use buffer zone)State Environmental Strategies, BLNG Precinct:<ul style="list-style-type: none">Air Quality Management Strategy (with DSD)Emergency Response Strategy (with DSD)Terrestrial Ecological Management Strategy (formerly known as Management and Monitoring Strategy for Vegetation of Medium-High Conservation Significance) (with DSD)Precinct Surrounds Fire Management Strategy (with DSD)Preliminary Closure and Decommissioning Strategy (with DSD)Review and provide input to relevant Commercial Proponents management and response plans as specified in BLNG Precinct Strategies.Manage commercial leases for operators at the Precinct.Broome Housing Management Plan (with Department of Planning)Implement Strategies to ensure that Commercial Proponents implement relevant SAR obligationsBroome Housing Management Plan (with Department of Planning)Indigenous Participation Plans |
| Department of Fisheries | <ul style="list-style-type: none">Fisheries Resource Management Act 1994Pearling Act 1990 | <ul style="list-style-type: none">Review the Commercial Proponents Commercial, Recreational and Customary Fishing, Pearling and Aquaculture Management Plan |
| Tourism WA | <ul style="list-style-type: none">Western Australian Tourism Commission Act 1983 | <ul style="list-style-type: none">Broome Tourism and Destination Marketing Strategy |
| Department of Mines and Petroleum | <ul style="list-style-type: none">Dangerous Goods Safety (Major Hazard Facilities) Regulations 2007Dangerous Goods Safety (Storage and Handling) Regulations 2007Dangerous Goods Safety (Explosives) Regulations 2007Petroleum Pipelines Act 1969Petroleum (Submerged Lands) Act 1982 | <ul style="list-style-type: none">Assessment and approval of safety reports for major hazard facilitiesDangerous Goods LicencingBlasting permitsPetroleum Pipeline Licencing |
| Shire of Broome | <ul style="list-style-type: none">Building Regulations 1989Planning and Development Act 2003Health Act 1911Health (Treatment of Sewage and disposal of Effluent and Liquid Waste) Regulations 1974Local Government Act 1995 | <ul style="list-style-type: none">Assessment and approval of buildings, accommodation facilities, local roads, sewage treatment facilities and chlorination facility (unless changed due to State Agreement Act provisions) |
| Department of Housing | <ul style="list-style-type: none">Planning and Development Act 2003 | <ul style="list-style-type: none">Broome Housing Management Plan (with Landcorp) |
| Department of Health | <ul style="list-style-type: none">Health Act 1911Health (Treatment of Sewage and disposal of Effluent and Liquid Waste) Regulations 1974 | <ul style="list-style-type: none">Broome Social Services strategyAssessment of Commercial proponents Precinct Health, Emergency Services, Policing and Security StrategyAssessment and approval of sewage treatment facilities, storage of chlorine and poisonsAdvise DEC on Air Quality mitigation measures |
| Transport | <ul style="list-style-type: none">Port Authorities Act 1999Marine and Harbours Act 1981Shipping and Pilotage Act 1967 | <ul style="list-style-type: none">Establish Broome Port Authority as statutory Authority to manage BLNG Precinct Port AreaProvision of medium scale boating facilities in Broome |
| Department of Commerce | <ul style="list-style-type: none">Industry and Technology Development Act 1998 | <ul style="list-style-type: none">West Kimberley Industry Participation Initiative |
| Department of Training and Workforce Development | <ul style="list-style-type: none">Vocational Education and Training Act 1996 | <ul style="list-style-type: none">Vocational Education and Training Strategy |

Table 2.1 State Management Strategies – Required for Precinct Management

| State Management Strategies – Required for Precinct Operations | | |
|--|--|---|
| State Management Strategy | Strategy Objectives | Related Management Plans |
| Air Quality Management Strategy (formerly Air Quality Management Plans applicable to Commercial Proponents) | To provide a framework for multiple proponents operating within the BLNG Precinct to ensure the sustainable protection of air quality at a local and regional basis. | Commercial Proponent Air Quality Management Plans |
| Emergency Response Strategy | To provide an overarching approach to response planning across commercial proponents, agencies and operators in the event of an emergency situation at the Precinct or immediate environs. | Commercial Proponent Emergency Response Plans Commercial Proponent Hydrocarbon and Chemical Spill Response Plans BLNG Precinct Fire Management Strategy |
| Terrestrial Ecological Management Strategy (formerly the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance) | To maintain vegetation of medium to high conservation significance associated with direct and indirect impacts within defined limits of acceptable change throughout the life of the Precinct. | Commercial Proponent Ecological Surface Water Requirements Management Plans Commercial Proponent Terrestrial Fauna Management Plans Commercial Proponent Rehabilitation Plans Commercial Proponent Construction Environmental Management Plans Commercial Proponent Hydrocarbon and Chemical Spill Management Plans |
| Fire Management Strategy BLNG Precinct Surrounds | To provide a coordinated approach to managing the fire regime of Dampier Peninsula for the benefit of the environment, Precinct and community safety and recreational use. | Commercial Proponent Emergency Response Plans |
| Closure and Decommissioning Strategy | To facilitate a coordinated approach to the safe closure and decommissioning of the BLNG Precinct, focused on minimising environmental impacts (in consultation with Traditional Owners). | Commercial Proponent Waste Management Plans Commercial Proponent Final Closure Plans Commercial Proponent Rehabilitation Plans Commercial Proponent Visual Amenity Management Plans |

| State Management Strategies – Required for Precinct Operations | | |
|--|--|---|
| State Management Strategy | Strategy Objectives | Related Management Plans |
| BLNG Precinct Port Environmental Management Strategy (formerly the BLNG Precinct Port Environmental Management Plan) | To provide a coordinated approach to the management of environmental matters within the port boundary during operations, in line with the <i>Port Authority Act 1999</i> . | <p>Commercial Proponent Port Facilities Construction Environmental Management Plans</p> <p>Commercial Proponent Dredging and Spoil Disposal Management Plans</p> <p>Commercial Proponent Vessel Management Plans</p> <p>Commercial Proponent Invasive Marine Species Management Plans</p> <p>Commercial Proponent Quarantine Management Plans</p> |

Table 2.2 State Framework for Management of Social and Economic Impacts

| State Framework for Management of Social and Economic Impacts | |
|---|---|
| Impact Category | Related Management Actions |
| Workforce Behaviour | <ul style="list-style-type: none"> Precinct Worker Behavioural Management Plan Cultural Awareness Training Program |
| Workforce Accommodation | <ul style="list-style-type: none"> LNG Proponent Accommodation Plan Broome Housing Management Plan |
| Community Services and Infrastructure | <ul style="list-style-type: none"> Broome Community Services Strategy Precinct Health, Emergency and Security Management Plan Transport Management Plan |
| Local content (Vocational Education and Training, Employment and Procurement) | <ul style="list-style-type: none"> Indigenous Participation Plans LNG Employment and Training Strategy Vocational Education and Training Strategy Industry Participation Initiative West Kimberley Industry Participation Initiative |
| Dampier Peninsula | <ul style="list-style-type: none"> Dampier Peninsula Planning Strategy Recreational Management Strategy |
| Broome Tourism and Charter | <ul style="list-style-type: none"> Broome Tourism and Destination Marketing Strategy |
| Marine Resource Use | <ul style="list-style-type: none"> Commercial, Recreational and Customary Fishing, Pearling and Aquaculture Management Plan |
| Human Health | <ul style="list-style-type: none"> Health Risk Assessment and Management Plan |
| Stakeholder Engagement | <ul style="list-style-type: none"> Precinct Engagement Plan LNG Precinct Engagement plans |

| State Framework for Management of Social and Economic Impacts | |
|---|--|
| Impact Category | Related Management Actions |
| Social Impact Monitoring | <ul style="list-style-type: none">• Precinct Socio-economic Impact Monitoring program• LNG project-level Socio-economic Impact Monitoring Program |

2.5 Land Access and Informed Consent

Concerns were raised in a number of submissions about the level of Traditional Owner (TO) support or consent for the project.

Since the establishment of the Northern Development Task Force in June 2007, Traditional Owners have been actively engaged in the process for the establishment of the BLNG Precinct. The Traditional Owners Task Force, comprising senior 'law bosses' from Kimberley coastal native title claims, was established by the Kimberley Land Council (KLC) to ensure that there was comprehensive and appropriate consultation with Traditional Owners throughout the BLNG Precinct site evaluation and selection process. Although this process identified concerns about the possible impact of the Precinct on Indigenous communities and heritage, there was community support for development, emanating from a desire to move away from welfare dependency through employment, business development, and other opportunities that would arise from a BLNG Precinct Project Agreement.

The area required for the Precinct is Unallocated Crown Land and includes the seabed out to the three nautical mile (NM) State territorial limit. It is subject to a registered claim under the *Native Title Act 1993* (Cth) (NTA) by the GJJ people. The State was required to comply with the procedural rights set out by the NTA to secure the appropriate land tenure (under the *Land Administration Act 1997* (WA)) for the Precinct.

On 30 June 2011 the GJJ Native Title Claim Group gave its consent to the BLNG Precinct and agreed to surrender their native title rights and interests in the land and waters required for the Precinct, in return for substantial benefits and continuing engagement in the management of the Precinct, including environmental, social and heritage management. The agreements are summarised in **Section 1.2.4 'Benefits to Traditional Owners'** in this *Response to Submissions Summary Report* and details of these agreements are attached at '**Annexure 2 - Native Title Documentation**' and '**Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)**'. The full set of agreements are available on DSD's website at the following link: <http://www.dsd.wa.gov.au/8416.aspx>. The Precinct represents a small percentage of the total GJJ native title claim area which covers approximately 251,500ha of land and water.

The State Government's preference was always to obtain land access by agreement and the decision of the GJJ Native Title Claim Group to consent to the Precinct came after four years of consultation and negotiation. Although this agreement requires the surrender of native title rights and interests, when the Precinct closes, the land will be returned to the Traditional Owners in a form of tenure that will best meets their needs and aspirations.

The State continues to work closely with the KLC as the Native Title Representative Body acting on behalf of the GJJ Native Title Claim Group. With the objective of continuing the outcome of informed decision-making over its traditional lands, the GJJ Native Title Claim Group has been given a substantial role in the overall governance of the Precinct as an equal member of the Precinct Control Group, in addition to specific powers to seek further information from Site Managers throughout the project life, and in particular where there are concerns about the potential for environmental harm.

The GJJ and members of its Traditional Owners' Negotiation Committee have asserted their commitment to building healthy communities based on the responsible development of their traditional lands and natural resources. The GJJ is working to achieve economic empowerment for its community, and in doing so avoiding a future based upon welfare dependency. In order to maximise the benefits to Indigenous peoples and to ensure their continuing engagement in the management of the Precinct, each of the State Government entities with a significant role in the Precinct will prepare and implement an Indigenous Participation Plan in relations to their Precinct-related activities. Refer also to **Section 4.7 'Social Factors'** and **Section 4.8 'Heritage Factors'** of this document.

6 ***New/Strengthened Commitment: Indigenous Participation Plan***

Each of the State Government Entities with a significant role in the Precinct (i.e. LandCorp, BrPA, and Main Roads) will prepare and implement an Indigenous Participation Plan, containing effective components or initiatives for achieving an Indigenous workforce strategy.

(Refer to **Section 6 'Proposed Changes to Commitments in the SAR'** for further details).

3 Stakeholder Engagement Process

3.1 Past Stakeholder Engagement Process

Public participation in decision-making in relation to the BLNG Precinct can be traced back to the NDT process which effectively comprised of a screening phase of an environmental and SIA to inform selection of an appropriate BLNG Precinct development site. The Final Site Evaluation Report (NDT, 2008d; SAR **Appendix B-6**) summaries the consultation process.

Consistent with the Terms of Reference for the Strategic Assessment, consultation during the assessment has comprised two main sub-processes: (i) high level briefings and communication on the Precinct assessment project; and (ii) specific consultations in support of the SIA (DSD, 2010c; SAR **Appendix A-3**).

The relationship between the high level briefings/communication and progress of studies of heritage, environment and SIA that comprise the Strategic Assessment are represented in **Figure 3.1 'Relationship of High Level Briefings and Strategic Assessment Component Studies'**.

Figure 3.1 Relationship of High Level Briefings and Strategic Assessment Component Studies



3.1.1 Northern Development Taskforce Stakeholder Engagement

The Government of Western Australia established the Northern Development Taskforce (**NDT**) in June 2007. The NDT managed an across-government planning process and stakeholder consultation in regard to the selection and development of a suitable location or locations for the processing of Browse Basin Gas reserves.

The key objectives of the NDT consultation strategy were to:

- inform the community that the Taskforce was engaging in a consultative, transparent process of site selection which would lead to beneficial outcomes for environmental, indigenous and community values;
- assist in the comprehensive evaluation of priority sites for a gas processing Precinct to service the Browse Basin; and
- obtain a response to the strategic environmental assessment of the West Kimberley, as it relates to a gas processing Precinct and the identification of potential National Heritage values.

The NDT had a close working relationship with the Commonwealth Government, in particular, the Commonwealth Department for the Environment, Water, Heritage and the Arts (**DEWHA**), now Commonwealth Department of Sustainability, Environment, Water, Population and Communities (**SEWPAC**), and the Department of Resources Energy and Tourism. Senior officers from DEWHA attended the initial Issues scoping workshop in Broome, 17-18 October 2007, at which the Taskforce met with representatives from the environmental Non-Governmental Organisations (**NGOs**), the KLC, the Tourism sector and the community.

This resulted in the 2008 Strategic Assessment Agreement between the Commonwealth and State Governments. The Terms of Reference for the Strategic Assessment were published for public comment and finalised in June 2008. The Taskforce's Terms of Reference were made publicly available at www.doir.wa.gov.au/ndt. This site included information and responses to frequently asked questions and notices and notes on meetings and Taskforce processes.

Terms of Reference for each of the working and reference groups, except the Industry group, stated that the groups were required to participate in:

- review of draft site selection criteria and consideration of a short list of sites based on available information;
- identification of a preferred site; and
- consultation during strategic environmental assessment processes for review of a preferred multi-user Precinct site, and review of National Heritage values.

A summary of stakeholder participation in NDT working group meetings is provided in **Table 3.1 'Summary of Stakeholder Participation in NDT Working Group Meetings'**.

Table 3.1 Summary of Stakeholder Participation in NDT Working Group Meetings

| Summary of Stakeholder Participation in NDT Working Group Meetings | |
|--|--------------------------------------|
| Working Group and Participating Stakeholders | Meeting Dates |
| Environment (General), NGOs: <ul style="list-style-type: none">• Cultural, Heritage and Environmental Advocacy for the Kimberley (now known as Save the Kimberley)• World Wildlife Fund for Nature Australia• Environs Kimberley• Pearl Sea Coastal Cruises• The Wilderness Society Inc.• Conservation Council of Western Australia• Mineral Policy Institute Inc. | 13 December 2007 12 February 2008 |

| Summary of Stakeholder Participation in NDT Working Group Meetings | |
|---|---|
| Working Group and Participating Stakeholders | Meeting Dates |
| <ul style="list-style-type: none"> Australian Conservation Foundation Inc Commonwealth Department of Environment, Water, Heritage and the Arts (now known as Department of Sustainability, Environment, Water, Population and Communities or SEWPAC) | |
| <p>Environment, Experts:</p> <ul style="list-style-type: none"> Department of Environment and Conservation Marine Policy and Planning Branch, DEC Western Australian Museum Des Mills Marine Environmental Reviews Commonwealth Department of Environment, Water, Heritage and the Arts (now known as Department of Sustainability, Environment, Water, Population and Communities or SEWPAC) Curtin University Australian Institute of Marine Science The University of Western Australia Centre for Whale Research (WA) Inc. Department of Fisheries Morgan Consulting Kimberley Land Council | <p>Combined: 18 December 2007; 30 January 2008</p> <p>Marine: 7 March 2008, 19 March 2008, 16 April 2008</p> <p>Terrestrial: 22 February 2008, 16 April 2008.</p> |
| <p>Indigenous:</p> <ul style="list-style-type: none"> Kimberley Development Commission Office of Native Title Department of Indigenous Affairs LandCorp | <p>1 November 2007</p> <p>22 February 2008</p> |
| <p>Community Reference Group:</p> <ul style="list-style-type: none"> Shire of Broome Shire of Derby/West Kimberley Kimberley Development Commission Department for Planning and Infrastructure Cultural, Heritage and Environmental Advocacy for the Kimberley (now known as Save the Kimberley) Broome Chamber of Commerce Inc. Kimberley Development Commission Department of Education and Training Department of Environment and Conservation Department of Health Kimberley Land Council Office of Minister for Environment Kimberley Aboriginal Law and Cultural Centre | <p>5 February 2008</p> <p>7 March 2008</p> |

| Summary of Stakeholder Participation in NDT Working Group Meetings | |
|--|---|
| Working Group and Participating Stakeholders | Meeting Dates |
| <p>Industry Reference Group:</p> <ul style="list-style-type: none"> • Chevron Australia Pty Ltd • Woodside Energy Ltd • BHP Billiton Ltd • INPEX Corporation • BP Australia Pty Ltd • Conoco Phillips Pty Ltd • Shell Development (Australia) Pty Ltd • Nexus Energy Ltd • Total E&P Australia • North Australia Economic Development Forum • Australian Petroleum Production & Exploration Association Ltd • Arc Energy Ltd • Gryphon Management Australia Pty Ltd • Rio Tinto • Osaka Gas Co. Ltd | <p>24 July 2007</p> <p>30 November 2007</p> <p>19 March 2008</p> <p>24 April 2008</p> |
| <p>Tourism Working Group:</p> <ul style="list-style-type: none"> • Broome Visitor Centre • Tourism Western Australia • Kimberley Marine Tourism Association • Australia's North West • Broome & The Kimberley Holidays • Derby Visitor Centre • Australian Pacific Touring Pty Ltd | <p>30 November 2007</p> <p>7 March 2008</p> <p>20 May 2008</p> |
| <p>Fisheries Working Group:</p> <ul style="list-style-type: none"> • Department of Fisheries • Western Australian Fishing Industry Council • Department of Environment and Conservation • Pearl Producers Associations Inc. • Recfishwest • Department of Indigenous Affairs • Cygnet Bay Pearls • Blue Sea Pearls • Paspaley Pearling Co. Pty Ltd • Clipper Pearls Pty Ltd • Northern Demersal Scalefish Fishery • Kimberley TAFE • Kimberley Marine Tourism Association | <p>13 March 2008</p> <p>4 April 2008</p> <p>19 May 2008</p> |

| Summary of Stakeholder Participation in NDT Working Group Meetings | |
|--|--------------------|
| Working Group and Participating Stakeholders | Meeting Dates |
| <p>Issues Scoping Workshop:</p> <ul style="list-style-type: none"> • Shire of Derby/West Kimberley • Department of Environment and Water Resources (NT Govt.) • Department of Planning and Infrastructure • Kimberley Land Council Inc • Kimberley Marine Tourism Association • Cultural, Heritage and Environmental Advocacy for the Kimberley (now known as Save the Kimberley) • Mineral Policy Institute Inc. • Tourism Western Australia • Department of Indigenous Affairs • World Wide Fund for Nature Australia • Kimberley Development Commission • Commonwealth Department of Environment, Water, Heritage and the Arts (now known as SEWPAC) • Department of Industry and Resources • Department of Education and Training • Department of Environment and Conservation • Western Australian Indigenous Tourism Operators • Kimberley Aboriginal Law and Cultural Centre • Shire of Derby/West Kimberley • Kimberley Language Resource Centre • The Wilderness Society Inc. • Conservation Council of Western Australia • Pearl Sea Coastal Cruises | 17/18 October 2007 |

3.1.2 Social Impact Assessment Engagement Activities

The Social Impact Assessment (**SIA**) served as the primary mechanism for community participation during the development of the SAR. The following is an overview of the engagement activities undertaken.

The first phase of consultation (January – May 2009) provided information to stakeholders on the assessment process and focussed on profiling and assessing existing conditions. Stakeholders included the Shire of Broome council and officers, Broome-based State Government departments and agencies, Broome-based service providers, and the local Chamber of Commerce.

The second phase of consultation (June 2009 – January 2010) included six workshops in Broome, mainly with service providers, to inform them of the proposed development of the Precinct and the potential development scenarios, and to provide an opportunity for input to the identification of impact issues. Each workshop focussed on a different theme (i.e. sport and recreation, sense of place, land and housing, health, and education and training).

A number of community sessions were held where the broader community were provided an opportunity to access information about the Strategic Assessment process. These included:

- North West Expo (2009 and 2010);
- DSD SIA Open Day;
- Shire LNG Forum; and
- shopping centre information sessions (Paspaley Plaza 4-5 December 2009; Boulevard Shopping Centre 29-30 January 2010).

The engagement process included the provision of fact sheets and community updates (two-weekly) in the Broome Advertiser. The fact sheets were made available at the Shire offices, the library and at all community events as well as DSD's website.

In addition, each of the specialist studies for the SIA (tourism, fishing, pearling and aquaculture) included their own consultation activities. Engagement activities specifically focused on obtaining input from Aboriginal communities and stakeholders were an integral part of the Aboriginal Social Impact Assessment (**ASIA**) commissioned by the KLC and funded by the State Government. All native title claim groups with interests in Broome and the Dampier Peninsula (i.e. Goolaraballoo & Jabirr Jabirr (**GJJ**), Yawuru, Nyul Nyul, Bardi Jawi and Nimunburr) were contacted by letter, with follow-up contact by phone and/or e-mail, and invited to participate in the ASIA.

The format of the participation activities reflected the preferences of the different groups. Some participation took the form of widely-advertised, daylong meetings with the group concerned, which in some cases attracted attendees from throughout the West Kimberley and from outside the region (for example from the Pilbara). In other cases, the group preferred meetings with a native title claim group steering committee or equivalent body, or were happy for a meeting of the native title group to be combined with a community meeting. The community meetings held for the ASIA are summarised in **Table 3.2 'ASIA Community Meetings (September 2009 – January 2010)'**.

Table 3.2 ASIA Community Meetings (September 2009 – January 2010)

| Date | Name of meeting |
|----------|---|
| 07/09/09 | Nyul Nyul, Nimunburr and Djaberra Djaberra |
| 08/09/09 | Beagle Bay community |
| 21/09/09 | Goolaraballoo & Jabirr Jabirr |
| 13/10/09 | One Arm Point community, Bardi Jawi, Mayala |
| 15/10/09 | Lambadina community, Bardi Jawi, Mayala |
| 20/10/09 | Djarindjin community, Bardi Jawi, Mayala |
| 27/10/09 | Derby, Warawa, Nykina Mangala, Mayala |
| 30/11/09 | Derby 2 nd round meeting, Warawa, Nykina Mangala, Mayala |
| 01/12/09 | Djarindjin community 2 nd round meeting |
| 02/12/09 | One Arm Point community 2 nd round meeting, Bardi Jawi |
| 03/12/09 | Beagle Bay community 2 nd round meeting |
| 04/12/09 | Lambadina community 2 nd round meeting |
| 17/12/09 | Nimunburr |
| 19/01/10 | Broome community |

The ASIA encountered some difficulties in its efforts to engage with the Yawuru Native Title Group. The ASIA team met with the Chair of the Yawuru Native Title Holders Corporation and other directors and staff on a number of occasions to explore options for engagement. At that time, the Corporation was busy in the midst of finalising a settlement in relation to Yawuru native title interests in Broome. Unfortunately, by the time those negotiations had concluded, further engagement with the Yawuru Corporation on the ASIA could not be arranged. However, some limited engagement of Yawuru people occurred through:

- consultations with those members of the GJJ Native Title Claim Group who have Yawuru affiliations because of intermarriage between the groups;
- the Broome community meeting for all Indigenous members of Broome, including Yawuru people; and
- attendance at the Broome Community Information Sessions between 24 and 26 February 2011 which are discussed below.

In addition DSD undertook half day visits to Bidyadanga, One Arm Point, Djarindjin, Lambadina and Beagle Bay in March 2011 to provide opportunities for people to ask questions and make comment on the proposal.

The State will continue to engage with Yawuru to identify issues that may impact on them, and their potential role within the Governance arrangements.

3.1.3 Public Review Period

Distribution and Access to the SAR Documentation

Full printed sets of the SAR with a CD containing all appendices were available for public examination at a range of locations including Broome Library and the Battie Library in Perth. The SAR was also distributed to the following agencies and organisations in Broome and elsewhere in the Region:

- Broome: Department of Environment and Conservation, Broome District Office; Broome Port Authority; Australia's North West; Broome Shire; Broome Library; Environs Kimberley; Department of Education, Employment and Workforce Relations; Kimberley Development Commission; Kimberley Land Council; Kimberley TAFE Library; Broome Community Resource Centre; Electorate Office of Carol Martin MLA.
- Kununurra: Department of Environment and Conservation; Department of Water.
- Derby: Derby Library and Derby/West Kimberley Shire Office.
- Fitzroy Crossing: Kimberley Aboriginal Law and Culture Centre.

Copies were also provided to a range State and Commonwealth agencies and organisations such as environmental NGOs based in Perth. A number of full sets were provided to individuals on request with many more receiving the Executive Summary which was accompanied by a CD containing the full SAR and all Appendices. In addition to facilitating access to the hard copies of the SAR, on-line access for reading and commenting was also provided through a separate Internet portal.

DSD established a physical presence in its offices for key periods during the public review period. This provided the community with the opportunity to ask questions directly or to be advised of how and where to access particular issues of interest to community members.

Stakeholder Engagement at the Release of the SAR for Public Review

DSD made a presentation on the SAR to Government agencies in Perth (December 2010). Agencies in attendance were:

- LandCorp
- Main Roads
- Department of Environment and Conservation (**DEC**)
- Department of Water (**DoW**)
- Woodside
- Department of Planning (**DoP**)
- Environment Protection Authority (**EPA**)
- Tourism WA
- Department of Indigenous Affairs (**DIA**)
- Department of Fisheries (**DoF**)
- Department of Mines and Petroleum (**DMP**)
- Department of Health

DSD made a presentation at the Broome launch of SAR (9/10 December 2010). Attendees represented the following organisations:

- Shire of Broome
- Department of Planning (**DoP**)
- Kimberley Development Commission (**KDC**)
- LandCorp
- Department of Housing
- Broome Port Authority (**BrPA**)
- Tourism WA
- Hands Off Country
- World Wildlife Fund Australia (**WWF Australia**)
- Fire and Emergency Services
- Kimberley Marine Tourism
- Autore Pearling
- Shire of Derby
- Woodside
- Office of Ken Baston, MLA
- Office of Barry Haase, MP
- Broome Chamber of Commerce
- Department of Indigenous Affairs (**DIA**)
- Department of Health
- Department of Education and Training (**DET**)
- Watercorp
- Save the Kimberley

Community Information Sessions

DSD coordinated Community Information Sessions for the public to find out more information about the SAR and the BLNG Precinct. These were held in Broome on 24, 25 and 26 February 2011 and gave members of the public the opportunity to talk one to one with representatives from DSD and Woodside Energy Ltd, including people who had helped prepare the Strategic Assessment Report. The 24 February 2011 session (approximately 60 attendees) included a 40-minute question and answer session, during which any member of the public could ask questions about any aspect of the Browse LNG Precinct. Between 10-20 people attended each of the community information sessions on Friday 25 and Saturday 26 February 2011.

Advertising

The public review period and requests for submissions were advertised locally and in The West Australian as required under EPA processes. This occurred at the commencement of the public review period and at different points during the review period.

The Community Information Sessions were advertised via a letterbox drop to all residential post office boxes in Broome in the week 14 to 18 February 2011, and via DSD Community Updates in the Broome Advertiser on 10, 17 and 24 February 2011.

Throughout the public review period, information on various aspects of the SAR was published in DSD Community Updates in the Broome Advertiser.

Radio messages specifically targeted to engage Indigenous communities, publicise visits by DSD to communities, and encourage awareness of the public review period, were broadcast on the Pilbara and Kimberley Aboriginal Media (**PAKAM**) during March.

3.2 Future Stakeholder Engagement

DSD, representing the Minister for State Development as Precinct Proponent, is committed to ensuring that there are appropriate levels of community engagement throughout key periods of the development of the Precinct. This will be coordinated through the Precinct Control Group. DSD is aware that it is likely that there will be many activities occurring at the same time (perhaps by different proponents) that may be overwhelming for the community. DSD will look for opportunities to create synergies with respect to community engagement and will also look towards a range of mechanisms for engagement that provide flexibility for the community while still maintaining open and broad access to information.

The potential scope of community engagement can be seen from current and proposed actions for the future proponents as described in **Section 3.2.1 'Opportunities for Engagement with Future Commercial Proponents'** and **Section 3.2.2 'Opportunities for Engagement with the Foundation Proponent'**.

The SAR also provides the commitment for stakeholder engagement in the development of key management plans including the Greenhouse Gas Abatement Plan and the Dredging and Dredge Spoil Disposal Management Plan. Further engagement will also occur through the development process for derived proposals.

3.2.1 Opportunities for Engagement with Future Commercial Proponents

Commercial proponents of projects wishing to locate at the Browse LNG Precinct will be expected to undertake stakeholder engagement during the development of their derived proposals.

The objectives of this engagement are described below:

- provide stakeholders with a greater understanding of the derived proposal process and their opportunities for feedback;
- inform and seek input from stakeholders of the evaluation process and the additional studies and investigations proposed to support the derived proposal process;
- update key stakeholders of the intent, progress and findings of studies and investigations that are being conducted post submission of the Strategic Assessment Report (**SAR**);
- identify key issues and proposed/potential management strategies; and
- inform and seek input from stakeholders of the outcomes of the monitoring process, in comparison to those presented in the SAR, including likely impacts, proposed mitigations and implementation conditions.

A guide to project stakeholders is captured in **Figure 3.2 'Project Stakeholders'**.

Engagement should include stakeholder consultations in the early stages of defining the proposal, so that potential issues can be identified as the proposal is developed and that stakeholder views are presented to regulators with derived proposals.

Figure 3.2 Project Stakeholders



3.2.2 Opportunities for Engagement with the Foundation Proponent

The Foundation Proponent at the Precinct, Woodside, has developed and is implementing its stakeholder engagement program. This includes:

- establishment of a Broome office with a dedicated community relations and Indigenous affairs teams;
- Browse Social Impact Assessment;
- establishment of the Marine Users Working Group;
- support for the kimberleybiz.com.au portal, in partnership with the Kimberley Development Commission and Broome Chamber of Commerce;
- Shire of Broome consultation plan;
- community forums and briefings; and
- website and public information telephone line.

These initiatives will continue as the BLNG Development progresses.

3.2.3 Precinct Engagement Plan

In the case of the BLNG Precinct there are a wide variety of stakeholders. A stakeholder is any group or individual potentially affected by the achievement of the Precinct's objectives or any group or individual who can affect the Precinct meeting its objectives.

As the BLNG Precinct transitions from strategic proposal to approved project, DSD will prepare and implement a BLNG Precinct Engagement Plan. The engagement plan will be designed in consultation with a range of stakeholders (e.g. local government, state agencies, NGOs, GJJ and Yawuru representatives, and LNG project proponents). Following an initial round of stakeholder consultation, a draft Engagement Framework will be sent to these stakeholders for their review and comment and subsequently be made available for public comment before being finalised.

The Engagement Plan will address the following:

- objectives and principles;
- how the Plan will provide different levels of engagement (e.g. information /education, consulting, partnering, collaboration);
- actions to remove barriers to effective engagement with Indigenous people and other traditionally under-represented sectors of the community;
- monitoring and adaptive management of the Plan;
- reporting mechanisms;
- linkages to the Precinct Governance structure; and
- the relationship of the Precinct Engagement Plan with the engagement processes of the Foundation Proponent and any Additional Proponents.

The following is a preliminary list of Precinct engagement objectives that will be refined through stakeholder consultation during preparation of the Engagement Plan:

- to foster mutual trust and respect with internal and external stakeholders;
- to increase the Precinct's public accountability and transparency in its decision-making;
- to be a good neighbour and to contribute to sustainable development in the region;
- to increase stakeholder knowledge and understanding of the ways in which the Precinct will manage its impacts over the life cycle of the Precinct;
- to gain a better understanding of stakeholder values, perceptions and issues; and
- to gain access to local knowledge.

One component of the Engagement Plan will be the establishment of a Community Reference Group as part of the Precinct Governance structure (see **Section 2.3 'Governance Issues'**).

7

New/Strengthened Commitment: Precinct Engagement Plan

The Proponent will define and develop a BLNG Precinct Engagement Plan to ensure all stakeholders are involved in the Precinct development.

(Refer to **Section 6 'Proposed Changes to Commitments in the SAR'** for further details).

4 Key Themes and Response to Issues Raised

4.1 Overview of Key Themes and Issues

The following section presents a summary of the key concerns arising from the public consultation process. This includes concerns that were common across a significant proportion of submissions and those that have a regulatory and/or policy context.

Each sub-section generally follows a similar structure which comprises a brief introduction to the concerns raised and where possible and appropriate, a summary response is provided. Detailed responses to individual questions or comments received are contained in **Appendix A**.

4.2 Site Selection and Approvals Process

4.2.1 Strategic Assessment Process

The Strategic Assessment has been undertaken over a four year period and is one of the most comprehensive industrial site selection process ever undertaken in Australia. The strategic approach considered the avoidance or minimisation of impacts across a range of factors from the outset. This differs from a traditional approach whereby a site is identified on technical grounds alone and, subject to not containing fatal flaws in the environmental approvals context, is then analysed and defended as being acceptable.

Issues taken into account during the site selection process included:

- the suitability of locations in terms of environmental and Indigenous heritage constraints;
- proximity to the Browse Basin gas fields;
- suitability for heavy industry and shipping;
- impacts on existing communities and on community and industry uses; and
- technological innovations which may be available.

Technical and economic analyses were undertaken on the basis of a 50Mtpa Precinct as this was considered sufficient to cater for a high growth scenario for development of Browse Gas over the next 100 years.

The SAR was prepared in accordance with the Terms of Reference established under the State and Commonwealth Governments' Strategic Assessment Agreement, signed in February 2008. This Agreement provides the broad scope for the assessment of the Precinct Plan and associated future proposals, under both the *Western Australian EP Act 1986* and the *Commonwealth EPBC Act 1999*.

Some submissions have criticised the lack of project specific details contained in the SAR. It should be noted that the SAR is a strategic level document. It does not presume any particular proponent, engineering design, or technology as it is likely that multiple proponents will occupy the Precinct utilising a variety of approaches.

Instead the SAR has made conservative assumptions in order to define the extent of likely impacts. In many cases there is a high level of certainty regarding environmental outcomes. Where little baseline information is available a precautionary approach to assessment and management has been taken to reach the required level of certainty regarding environmental outcomes. This will define the parameters within which all potential projects must operate. Regulatory agencies will determine whether derived proposals fit within the limits set by the Precinct and whether and how those impacts may be further minimised. The objective was to plan for the worst case scenario to accommodate development well into the future.

4.2.2 Site Selection

A rigorous site selection process was undertaken by the State Government which considered a range of development options including floating LNG and sites in the Pilbara and Darwin, in addition to 43 sites in the Kimberley.

Following extensive technical, environmental and social studies, a site near James Price Point was selected as being the most suitable location. The provision of advice under section 16 (e) of the EP Act 1986 by the EPA on 19 December 2008, and the Premier's subsequent announcement of a site for the Browse LNG Precinct in the vicinity of James Price Point, followed a considerable 12 month site selection and assessment process. A number of studies that consider the location of the Precinct are detailed in **Table 4.1 'Summary of Site Selection Analyses Conducted'** below.

Table 4.1 Summary of Site Selection Analyses Conducted

| Summary of Site Selection Analyses Conducted | | |
|--|--------------------------------------|---|
| Date | Author | Description |
| May 2008 | Gaffney, Cline and Associates (GCA) | <p>GCA was commissioned to independently review previous site selection processes by interested potential LNG proponents and to comment on the technical suitability of the sites considered. This included analysis of the use of the Burrup Peninsula in the Pilbara and offshore options that would require floating LNG or gravity based structures.</p> <p>The Report concluded that there was insufficient land available for a new single operator in the Pilbara, and that offshore options (Scott Reef and Echuca Shoals) which would require FLNG or Gravity Based Structure (GBS) required too many technical "firsts" to recommend them.</p> <p>For further information, refer to SAR Appendix B-1.</p> |
| July 2008 | Northern Development Taskforce (NDT) | <p>Interim report which detailed the process and criteria to be used in the selection of a preferred site and provided a preliminary technical assessment of 43 sites previously identified by industry and Government as having some potential for development. The Report recommended 11 sites for further evaluation of their suitability, based on an analysis of the technical and environmental constraints identified at each site.</p> <p>For further information, refer to SAR Appendix B-2.</p> |
| October 2008 | NDT | <p>A two-part Site Evaluation Report was prepared following comprehensive site evaluation and stakeholder consultation involving representatives with professional expertise in oil and gas, the environment, heritage, fishing, pearling, planning, tourism and Aboriginal culture.</p> <p>Report recommended four sites, all of which were supported by the Traditional Owners for further evaluation, as having potential to be used as a site for a multi-user gas processing facility.</p> <p>For further information, refer to SAR Appendix B-3 and SAR Appendix B-4.</p> <p>The Site Evaluation Report was subject to a public comment period with 243 written and 46 verbal submissions received.</p> |

| Summary of Site Selection Analyses Conducted | | |
|--|---------------|---|
| Date | Author | Description |
| November 2008 | WorleyParsons | <p>WorleyParsons conducted a Browse Onshore LNG Precinct Browse Siting Study, which involved data collection, review and consolidation. It included engagement with industry to consolidate both current and prospective development plans to define the scale and potential timing of development within the BLNG Precinct. The study included a site visit and technical review. The outcome of this study fed into the final NDT report.</p> <p>For further information, refer to SAR Appendix B-5.</p> |
| December 2008 | EPA | <p>EPA s16(e) advice. EPA provided independent advice on the NDT site evaluation process and the four sites short-listed for the Browse LNG Precinct:</p> <ul style="list-style-type: none"> • James Price Point; • Gourdon Bay; • North Head; and • Anjo Peninsula. <p>Based on available data, the EPA considered that the environmental issues at James Price Point and Gourdon Bay were likely to be manageable.</p> |
| December 2008 | NDT | <p>Final Site Selection Report was released which made recommendations on the nomination of a preferred location in the Kimberley for the establishment of a multi-user LNG processing precinct.</p> <p>Report recommended James Price Point as the preferred location of the Browse LNG Precinct.</p> <p>For further information, refer to SAR Appendix B-6.</p> |
| January 2009 | GHD | <p>DEWHA commissioned a study on 'Comparative Analysis of the Feasibility of Alternative Locations for the Development of a Liquefied Natural Gas Precinct' by GHD. The study considered alternative sites to locate a gas processing facility outside the Kimberley, including sites in the Pilbara, Northern Territory, and offshore options including floating LNG. It also included a comprehensive discussion about the economic viability of LNG facilities.</p> <p>The report concluded that economics dictate that any proposed site greater than 500km from the gas field is prohibitively expensive to develop from a greenfield situation. This in turn dictates selection of a site because any economically viable proposal must be either within 500km or already have significant industrial infrastructure present.</p> <p>For further information, refer to SAR Appendix B-7.</p> |
| July 2010 | WorleyParsons | <p>The Browse LNG Precinct Master Plan report (WorleyParsons, 2010) included a review of previous studies undertaken to inform site selection. It documents the basis of design and key features of the Browse LNG Precinct. It provides flexibility</p> |

| Summary of Site Selection Analyses Conducted | | |
|--|---------------|---|
| Date | Author | Description |
| | | <p>for Government to consider plot plan proposals by potential users to accommodate varying technology options, approaches to design, construction and development methodologies, while maintaining well defined land and water parameters.</p> <p>WorleyParsons prepared a Master Plan addressing the following key aspects of the precinct:</p> <ul style="list-style-type: none"> • Gas processing technology and footprint scenarios; • Numbers of potential proponents and how they might be integrated; • Onshore laydown and construction support areas; • LNG marine facilities; • Corridors connecting key components of infrastructure; and • Construction marine support facilities. <p>Importantly the Master Plan led to the agreement in December 2009 of an agreed footprint for the Precinct to the South of James Price Point. The Finalised Master Plan was released in September 2010.</p> <p>For further information, refer to SAR Appendix B-8.</p> |
| December 2010 | DSD | <p>Part 2 of the Strategic Assessment Report includes additional analysis and review of previous studies undertaken to inform the site selection process.</p> <p>This was undertaken by a range of experienced and qualified DSD officers and external consultants engaged to support the development of the SAR. It included input from engineering, economic, social and environment experts with a contemporary working knowledge of the LNG industry in Western Australia and in particular capacity constraints in the Pilbara with respect to LNG processing and port facilities.</p> <p>This analysis supported the conclusion that for the broader benefit of Western Australia and the Kimberley, and for technical feasibility and economic viability reasons the development on the Dampier Peninsula provided the best overall solution to accommodate a 50 mtpa capacity Precinct.</p> <p>For further information the SAR Part 2 Section 4.2.</p> |
| July 2011 | WorleyParsons | <p>An additional Report on Floating LNG options was commissioned by DSD in order to provide more contemporary information on this option given that since some of the previous assessments there have been developments including the decision by Shell to make Final Investment Decision to use FLNG for its Prelude development.</p> <p>While this showed that this was an economic option for small reserves, development cost savings for land based facilities for larger developments such as envisaged for BLNG compared to multiple FLNG facilities were in the order of 50% (for a 20 mtpa development).</p> |

| Summary of Site Selection Analyses Conducted | | |
|--|--------|---|
| Date | Author | Description |
| | | <p>It also concluded that while individual technology elements for FLNG were proven, there are no current completed FLNG projects, making funding approvals harder.</p> <p>For further information see: http://www.dsd.wa.gov.au/7909.aspx</p> |

Further details on the site selection process are available online from the DSD website at: <http://www.dsd.wa.gov.au/browseLNG/>.

A key theme arising from the submissions included the concern that alternative sites were not considered and / or were overlooked.

The site selection process used analyses and input by Western Australian government agencies, Commonwealth government agencies, Traditional Owners, environmental NGOs and industry, to identify the most suitable location for the BLNG Precinct (**Part 2, Section 4** of the SAR).

Environmental organisations including the Australian Conservation Foundation, Wilderness Society, World Wildlife Fund, Conservation Council and Environs Kimberley were all extensively consulted with respect to the site selection process, participating in the West Kimberley Environment Working Group. These groups signed a Joint Position Statement which acknowledged the significant potential for beneficial outcomes for Traditional Owners from an LNG development and advocated that the LNG development should occur at a single location in order to minimise the footprint of development. The position acknowledged the need to conduct a cumulative assessment of the Kimberley's environmental and cultural values, and to apply consistently high standards of environmental and cultural management to any such development consistent with the methodology and outcomes intended of the current Strategic Assessment process.

The process and rationale for identifying the preferred site in the vicinity of James Price Point was based on a number of considerations including:

- site selection technical considerations;
- environmental considerations;
- social and economic considerations; and
- Indigenous considerations.

A range of development options were considered to determine the suitability of the State's proposal as well as to define the preferred location for the proposed development. A two year site selection process was undertaken by the State Government considering 43 sites within the Kimberley (including offshore at Scott Reef, the Maret Islands or at Wilson Point in the Camden Sound). In addition, this process also considered options for:

- a floating LNG (**FLNG**) processing facilities;
- sites in the Pilbara region to the south of the Kimberley (Onslow, Burrup Peninsula, Cape Lambert or Port Hedland); and
- sites to the north-east of the Kimberley in the Northern Territory (Middle Arm, Glyde Point or Bynoe Harbour).

Through this selection process the 11 sites within the Kimberley were short-listed and then further refined to four sites following extensive technical, environmental and social studies. James Price Point was selected as the most suitable location based on:

- EPA advice in 2008 that environmental impacts and risks are likely to be manageable at the location;
- distance from the local population (there are no people living within 10 kilometres of the site);
- distance to existing infrastructure (60 kilometres to Broome Air Port);
- proximity to the gas fields; and
- suitability for heavy industry and shipping.

The review of sites outside the Kimberley region indicated that these options would:

- be cost prohibitive;
- be technically challenging;
- very likely constrain the development of the Browse Basin; and
- limit the opportunity to deliver important economic and social benefits to the West Kimberley.

A number of submissions made specific reference to various options relating to piping the gas to existing plants outside of the Kimberley (including the use of existing facilities on the Burrup Peninsula or using the BHP Boodarie site in Port Hedland), and offshore floating LNG facilities.

A site outside the Kimberley was not selected because:

- The comparative distance to the gas fields (e.g. the gas fields are between 250km and 500km to James Price Point and in excess of 800km and 1000km to the Pilbara and Darwin respectively). The greater distances are regarded as cost prohibitive given that the additional length of the subsea pipeline is estimated to cost \$4 million/km, and gas which is transported offshore by pipeline, over distances of 400km or more, requires compression stations which are estimated to cost up to \$1 billion.
- Space restrictions within lease boundaries, shipping channel restrictions, LNG berth availability and pipeline constraints associated with the use of existing ports/facilities, could also constrain the development of Browse Basin.
- The State is committed to maximising the benefits to the West Kimberley from the large Browse Basin resource, leading to increased investment, business and employment.

Such options also do not take into account the compounding factor of multiple projects within the ultimate Precinct development. For example, it could require up to eight product pipelines (consisting of four gas or multi-phase pipelines and four liquid pipelines) to transport sufficient gas for the Precinct to operate at its maximum production capacity of 50Mtpa. Piping the gas an additional 500km to the Pilbara could therefore require an additional 4000km of pipeline, along with pumping stations, which would significantly increase costs and impose greater impacts on the marine environment.

Burrup Peninsula

The use of existing facilities on the Burrup Peninsula was not supported because:

- It is a prohibitive distance from the Browse Basin (over 800km).
- If used as a backfill option for the North West Shelf project, it would delay the development of Browse by 10 to 15 years while the resources of the Carnarvon basin fields were exhausted.
- It deters the efficient development of North West Shelf resources.
- It would restrict competition, as currently operating projects offer limited commercially viable alternatives for the development of third party gas.
- It would restrict the development of Browse, as it would be constrained to the capacity of the pipeline and the cost of transporting the gas.
- The Government remains committed to delivering fundamental economic and social change to Indigenous communities in the Kimberley through development of the Precinct at James Price Point.

The Conservation Council also urged against the use of the Burrup Peninsula for such considerations (see archived presentation: <http://www.dmp.wa.gov.au/documents/000081.Johanna.BACKEN.ppt> on the <http://www.dsd.wa.gov.au/browseLNG website/>).

Port Hedland

The disused BHP Boodarie site in Port Hedland was not selected due to the following:

- It is a prohibitive distance from the Browse Basin (over 800km).
- The existing port is constrained. Specifically, the industrial area is too far from the port to make the (very expensive) cryogenic pipelines viable.
- It would restrict the development of Browse, as it would be constrained to the capacity of the pipeline and the cost of transporting the gas.
- BHP proposes that much of the Mining Act tenure will be required for its future expansion associated with the Outer Harbour development.
- It is not envisioned that a major LNG facility would be appropriate for this site.
- The Government remains committed to delivering fundamental economic and social change to Indigenous communities in the Kimberley through development of the Precinct at James Price Point.

Floating LNG

The option of an offshore Floating Liquefied Natural Gas (**FLNG**) facility was considered during the site selection process and has been further raised in submissions to the Strategic Assessment Report. In assessing the option of FLNG, factors that were considered include the ability of such technology to meet the requirements of the project, environmental issues and the broader Government strategic and social development objectives.

FLNG facilities are seen to offer some potential for processing close to the gas field. However, the technology at this stage is unsuitable for large gas resources, such as those Browse Basin gas fields, that have been identified for development at the Precinct. Industry generally considers floating facilities as suitable for small, stranded or remote reserves. As such, to meet the demands of the project would require a substantial number of FLNG facilities to be located at the Browse Gas fields, thus expanding the industrial footprint within the marine environment and the associated risks to potentially unacceptable levels.

In addition, the use of FLNG would not meet the important social development objectives of the State Government as it would severely limit the benefits that such a project could bring to the Kimberley region.

Summary of Site Selection and Development Options

While the options considered above may offer some opportunity for specific projects, depending upon their access to technology (for example the recent announcement of the use of floating LNG for the development of Shell's Prelude gas field) or other considerations such as project cost structures (for example the use of existing facilities in the Pilbara), these options would not deliver the intended outcomes of the Browse LNG Precinct; that is to provide an economic proposition for the development of up to 50Mtpa of LNG. Only the Precinct outcome would provide a commercial opportunity for more than one LNG proponent while avoiding multiple project footprints along the sensitive Kimberley coast. Significantly only the Precinct outcome would deliver the real and tangible benefits of education, training, jobs, and business opportunities for Traditional Owners as acknowledged in the Joint Position Statement by environmental organisations.

It should be reiterated that the Strategic Assessment site selection is the Government process of determining the most appropriate site for the location of an LNG Precinct for the development of Browse Basin gas resources. This does not advocate for, or presume the development of, any particular project. Ultimately it is the decision of individual companies that will determine where and how individual projects get developed, and the only limitation the State will place on this is that, subsequent to securing the land at the preferred location for the Precinct, it intends to progress legislation to restrict LNG development elsewhere along the Kimberley coastline. The true commercial test for the Precinct will therefore be the outcome of final investment decisions made following the relevant strategic approvals processes for the proposed Precinct location.

Further details regarding the site selection process and identification of issues and constraints for options outside the Kimberley Region and options within the Kimberley Region can be found in **Part 2, Section 4** of the SAR, respectively.

A reoccurring theme within the submissions was that the SAR lacks detailed investigation and 'down-plays' the impacts.

The Proponent considers that the approach to the assessment of impacts from the proposed Browse LNG Precinct was comprehensive and detailed. For example, the whale studies are believed to be the most comprehensive ever undertaken in the Western Australian population of humpbacks, and overall knowledge has been significantly increased in the Kimberley.

At a strategic level, the SAR was undertaken to consider the social and environmental impacts which could arise from the Precinct. The SAR incorporates:

- A range of studies, scientific reports and consultations were completed as part of the initial site selection and was supplemented by extensive site-specific field studies.
- Analysis taking into account baseline environmental (including social) data, population modelling and Precinct design considerations to forecast the likely impact on the local and regional community. These studies included (but were not limited to):
 - **Environmental Studies:** Wet/Dry season environmental studies, habitat mapping, noise loggers, metocean data, near shore water studies,
 - **Heritage Studies:** High level Aboriginal cultural values survey and comprehensive site identification studies including ethno-biological, archaeological, anthropological and non-Indigenous site assessment;
 - **Palaeontology Studies:** the Western Australian Museum was contracted to undertake an assessment of the fossil content in the intertidal exposures of the Broome Sandstone at James Price Point;
 - **Master Plan:** to document the Common User Precinct requirements such as the Gas Processing Industrial Precinct, Port and Marine facilities, workforce accommodation and regional service upgrade; and
 - **Social Impact Assessment (SIA):** involved an internationally accepted process of research, planning and management to anticipate and manage social change (including Indigenous impacts, population, employment, housing, community facilities and services).

Advice from the EPA in December 2008 concluded that environmental impacts and risks are likely to be manageable in the James Price Point area. Further scoping and impact assessment of the environmental and social factors of the specific gas processing facilities will be informed by detailed engineering and project design by individual project proponents, which will be subject to the EPA's approval.

4.2.3 Consultation Process

Effective community engagement has been a priority for State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome, and has held many more meetings with local businesses, community and Indigenous organisations and individuals. Examples include:

- **October 2007** - An issues scoping workshop is carried out and attended by environmental NGOs, the Kimberley Land Council (KLC), representatives from the tourism sector, and members of the community in Broome;
- **July 2008** - A three day site evaluation workshop is hosted in Broome and attended by various community stakeholders;
- **July to September 2009** - SIA workshops are conducted in Broome. Service providers and other relevant people including community representatives (in the areas of sport and recreation, infrastructure, housing and land, health, education and heritage/sense of place) participate in the workshops hosted by DSD and Woodside;
- **September 2009** - Community members are invited to the SIA Open Day hosted by DSD in Broome, with the opportunity to receive information and provide input into the process;
- **December 2009** - DSD hosts two SIA public consultation days at the Paspaley Plaza Shopping Centre;
- **January 2010** - DSD hosts SIA public consultations at the Broome Boulevard Shopping Centre over two days;
- **February 2011** - Community Information Sessions are conducted at Lotteries House in Broome. Representatives from DSD, LandCorp, Main Roads WA, Department of Fisheries and Woodside attend and answer questions regarding the Precinct; and
- **March 2011** - DSD conducts several information sessions and workshops at Indigenous communities on the Dampier Peninsula and south of Broome.

Throughout all of these processes, opportunities were provided to ask questions and answers were provided at the time or subsequently. It should also be noted that the SAR public comment period is an important part of the public consultation process and it is a requirement that all issues raised in public submissions are responded to.

Part 2, Section 9 of the SAR and *Annexure C: Stakeholder Engagement* of the SIA in SAR **Appendix D-2**, contains further information on the extensive community engagement carried out as part of the Strategic Assessment process for the Browse LNG Precinct, and is available online from:
http://www.dsd.wa.gov.au/documents/Browse_SAR_Part2_Strategic_Assessment_Process.pdf.

4.3 Project Description

Three main themes emerged in relation to the project description. Firstly, some concern was raised regarding the available detail of specific Precinct features such as jetty length, breakwater, dredging, water supply and blasting. The potential for flow on effects as a result of locating the BLNG Precinct near James Price Point such as the development of off-shore platforms, and increasing demands on community infrastructure and services was also cause for significant interest. Finally, concerns over the BLNG Precinct being the '*thin edge of the wedge*' was raised in several submissions, whereby development of the BLNG Precinct is perceived to open up the Kimberley to other additional unrelated industry.

Please note that the proposal description has been updated since the SAR was released and its key characteristics are provided in **Table 4.2 'Summary of Key Proposal Characteristics'**.

4.3.1 Specific Plant Details

While **Section 2, Part 2.5** of the SAR provides a general description of the project, several submissions were concerned with the lack of specific plant information presented in the SAR, and challenged the value of scientific studies undertaken in the absence of this information.

The Strategic Assessment Report contains a full project description regarding likely project characteristics, used to inform the impact assessment and environmental safeguards, to provide confidence in the impact assessment conclusions and predicted environmental outcomes.

It is inherent in the nature of a strategic assessment that precise details of future proposals may not be known. The Strategic Assessment process offers the benefit of allowing the regulators, stakeholders and the community to assess up front the likely total cumulative impact of the BLNG Precinct at its maximum capacity. To compensate for the uncertainty in specific project details, a conservative approach was used for modelling and other studies employed to determine what impact the Precinct may have so that at all times the absolute maximum possible predicted impact was described.

Aspects related to project specific details will be addressed through derived proposals. Project proponents will be required as part of the process to consult broadly prior to submission of derived proposals.

4.3.2 Cumulative Impact (Category B and C Activities)

Many submissions were concerned with impacts arising from the demand for power, water, waste disposal, health services, police, and other community and amenity services associated with the BLNG development, causing hardship for existing residents and visitors to Broome and the surrounds.

The activities, facilities and other characteristics that are a part of, or related to, the Browse LNG Precinct and considered within this scoping exercise were split into three different categories:

- **Category A - LNG Precinct:** These are the core elements of BLNG Precinct, including associated infrastructure necessary to process and export hydrocarbons. This category includes all actions within the scope of approvals under the Strategic Assessment Agreement.

- Category B - Indirect Activities/Actions as a result of the BLNG Precinct (e.g. Broome Airport, regional roads and housing): These activities/actions are considered in the impact assessment but do not form part of the approvals process.
- Category C - Related Projects (e.g. road to the Precinct and pioneer camp): These projects are outside the scope of the Strategic Assessment, but form part of the cumulative impact assessment.

The scoping exercises and subsequent impact assessment outlined in the SAR apply only to Category A - LNG Precinct. Consistent with the Scope for the SAR (SAR **Appendix A-2**), only this category of actions is in the scope of the approvals under the Strategic Assessment Agreement. The impacts of Categories B and C (i.e. indirect activities and related projects) were considered in the Strategic Assessment to address potential cumulative impacts. However, they are not subject to permits and approvals under the BLNG Precinct.

The proponents of these associated activities and projects will need to obtain any required approvals before these activities can proceed.

For example:

- Main Roads is currently undertaking the planning and project management for the construction of an access road connecting the Browse LNG Precinct with the existing Broome-Cape Leveque road. Main Roads has submitted separate applications for environmental and other approvals for the road as required. These have included consideration of the impact on any potential bilby habitat.
- Woodside is planning for a 600-person pioneer accommodation facility ahead of the development of the permanent construction and operational workforce facilities.
- Any commercial proponent requiring new waste disposal or quarrying facilities will be required to obtain all required environmental approvals and permits for the source facility, as appropriate under required legislation, particularly the EP Act. Alternatively, material will be sourced or disposed of in a facility owned or operated by a third party that has all required approvals in place.

4.3.3 'Thin Edge of the Wedge'

Several submissions described the perception that once the BLNG Precinct was approved and built, the development of further LNG projects, mineral projects (bauxite, iron ore, coal etc) and heavy industrial activities would shortly follow, all to the detriment of the Kimberley. Collectively, this process referred to the BLNG Precinct as being '*the thin edge of the wedge*'.

One of the primary objectives in developing the Browse LNG Precinct is to provide a single location for the processing of LNG resources, thereby avoiding *ad hoc* development at multiple locations on the Kimberley coast. LNG processing will not be permitted elsewhere on the Kimberley coast.

With respect to potential industrial developments other than those discussed within the SAR; these developments would have to undergo their own separate approval process were they to proceed. Only LNG processing and related activities will be permitted in the proposed Browse LNG Precinct. Accordingly, the LNG Precinct will only export LNG and related products, and will not be acting as a port facility to facilitate the export of other resources or goods from the Kimberley.

4.3.4 Key Characteristics

This section provides a description of the major BLNG Precinct components and activities relating to the construction, commissioning, operation and decommissioning of BLNG Precinct facilities that may occur under the Precinct Plan. The activities associated with the construction, commissioning, operation and decommissioning of the above facilities, including maintenance and fire management, are termed Category A activities and are the subject of this assessment.

The key characteristics are provided in **Table 4.2 'Summary of Key Proposal Characteristics'** and the generic layout of the BLNG Precinct is shown in **Figure 4.1 'Generic Layout of BLNG Precinct'** Both have been included to clearly define the key proposal characteristics as described in the SAR **Part 2 Section 5**, and to provide a spatial

reference for the location of the proposal and its elements. The table format varies from **Table 5-1** in the SAR **Part 2**, with the aim of meeting the EPA's expectations as described in the Draft Environmental Assessment Guideline No. 1 'Defining a Proposal' (EPA 2009a).

Some amendments have been made to the proposal in response to comments received during the public review period, which are captured within **Figure 4.1 'Generic Layout of BLNG Precinct'**. These changes relate to the location of the northern and southern pipeline corridors by removing the potential optionality described in **Figure 5-2** of the SAR **Part 2**. The location of the northern and southern pipeline corridors have been agreed in consultation with the Traditional Owners and form part of the Native Title Agreement. Subsequently, all feed pipelines will be located within the pipeline corridors depicted in **Figure 4.1 'Generic Layout of BLNG Precinct'**

Indirect activities and projects related to the BLNG Precinct are described in the SAR **Part 2, Section 6**.

Table 4.2 Summary of Key Proposal Characteristics

| Summary of Key Proposal Characteristics | |
|--|--|
| Element | Description |
| General | |
| Industrial blocks for converting natural gas to LNG ⁽¹⁾ , including storage and export facilities | <ul style="list-style-type: none"> LNG production up to 50 million tonnes per annum. 2 x industrial blocks each 500ha. Up to 7x 200,000m³ LNG storage tanks. Up to 7x 120,000m³ condensate storage tanks. Up to 3x 60,000m³ LPG storage tanks. Flare structures (as necessary for variety of LNG production systems). Other hydrocarbon production facilities. |
| Common user area ⁽²⁾ | <ul style="list-style-type: none"> Up to 1000ha. |
| Terrestrial area to be cleared | <ul style="list-style-type: none"> Up to 3037ha, this includes up to 132.4ha of Monsoon Vine Thicket community. |
| Supporting infrastructure | <p>Supporting infrastructure associated with the Activities described in this table including:</p> <ul style="list-style-type: none"> Wastewater outfall for up to 30GL per annum of produced water, condensed water, stormwater runoff, desalination brine, sewage and greywater. Water supplies for Precinct activities including groundwater bore fields and/or desalination infrastructure to produce up to 8GL per annum. Wastewater treatment facilities. Access and haul roads within the Precinct (excluding main Precinct Access Road). Administration and plant buildings. Concrete batching plants, rock screening and crushing facilities. Electricity generation plants. |
| Port area ⁽³⁾ | <ul style="list-style-type: none"> Up to 1000ha within defined port area comprising: <ul style="list-style-type: none"> Up to 21 million cubic metres of dredging. Up to 3 piled jetties up to approx 3.5km in length. Up to 6 loading berths. Shipping channel (1 x main multi-user). Turning basin(s). Breakwater(s) (as required in final design). Wastewater disposal pipelines and diffusers. Up to approximately 1,300 product export shipments per annum. |
| Integrated Marine Facility ⁽⁴⁾ (IMF) | <ul style="list-style-type: none"> Marine offloading facility (MOF). |

1 Includes LPG and condensate production, other hydrocarbon products, storage and export at variable rates, other ancillary facilities required to support production of up to 50Mtpa of LNG and provision for carbon dioxide export for offsite storage

2 Includes lay down areas and internal buffer zones between plants

3 Includes load out infrastructure

4 Includes connecting causeway, support vessel harbour including marine support facilities

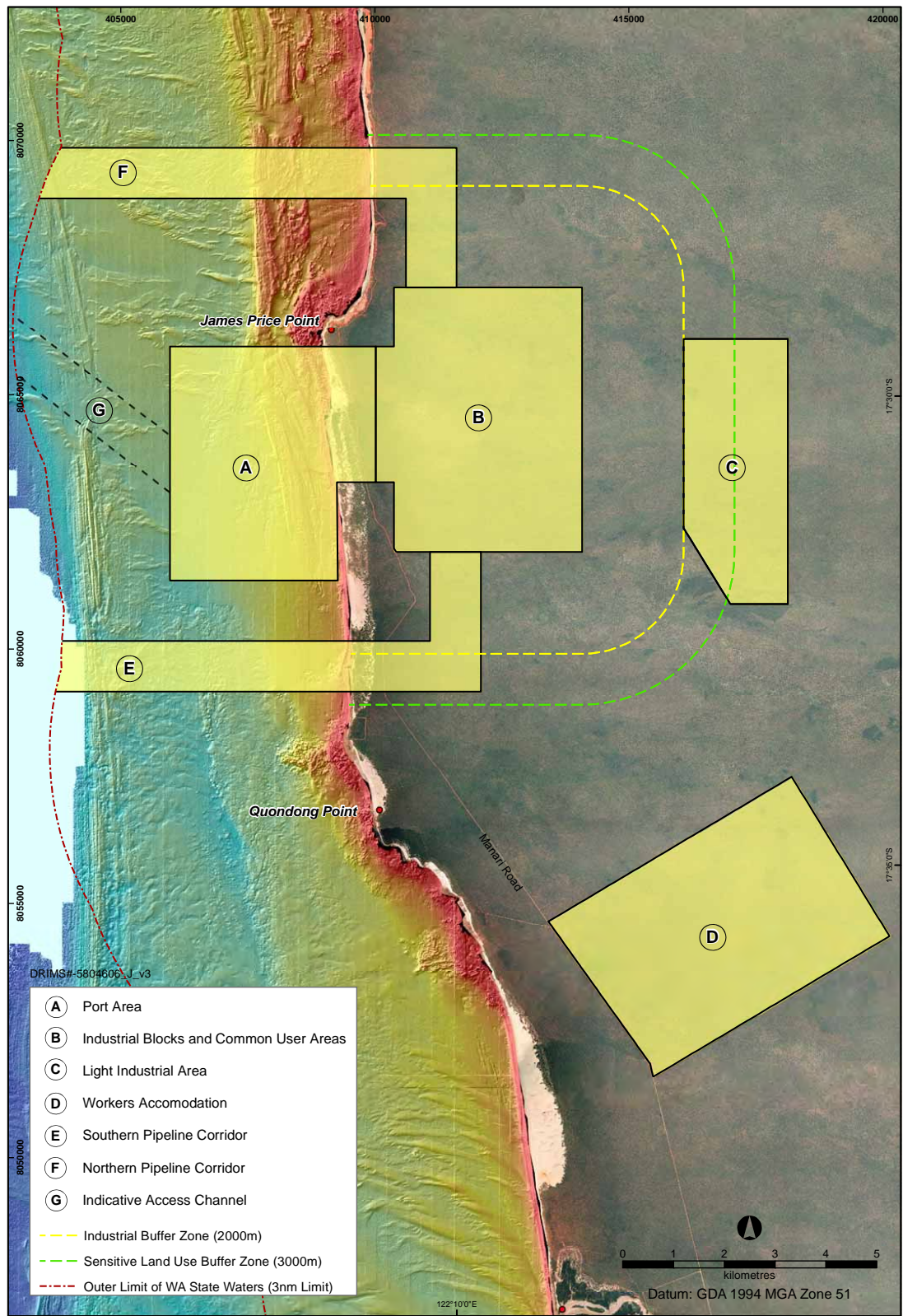
| Summary of Key Proposal Characteristics | |
|--|---|
| Element | Description |
| | <ul style="list-style-type: none"> Roll-on roll-off facility (RORO). Breakwater/ seawall (as required). |
| Area of direct/indirect marine BPP and BPPH loss | <ul style="list-style-type: none"> Up to 1138ha in the zone of high impact where recovery within 5 years is considered unlikely of hard and soft corals, algae, filter feeders, seagrass and mixed assemblages. |
| Dredging and Spoil Disposal | <ul style="list-style-type: none"> Up to 21 million cubic metres of dredge material and periodical maintenance dredging as required. Foundation development requiring approximately 18 months of dredging⁽⁵⁾. Spoil to be placed over an area outside State waters of up to 600ha with location to be determined through Commonwealth Sea Dumping Permit process. |
| Light industrial area (LIA) | <ul style="list-style-type: none"> Clearing of up to 200ha for third party contractors supporting precinct activities. Uses as per Shire of Broome Industrial Zone classification (e.g. fuel and transport depot, warehouses). |
| Workers accommodation ⁽⁶⁾ | <ul style="list-style-type: none"> Clearing of up to 200ha accommodating up to 8000 personnel for construction workforces and approximately 1000 personnel for routine operations. |
| Pipeline corridors | <ul style="list-style-type: none"> Up to 250ha for a southern and northern pipeline corridor containing a total of up to 16 pipelines for gas, MEG, liquids, services and potentially CO². |
| Ancillary infrastructure outside the Precinct | <ul style="list-style-type: none"> Up to 297ha within up to 10 km of the Precinct for the purpose of construction and operation of ancillary infrastructure including minor roads, service corridors, Manari Road diversion and groundwater bore field. |
| Industrial land use buffer zone ⁽⁷⁾ | <ul style="list-style-type: none"> Not less than 2000m from Precinct boundary – no permanent land uses or activities permitted within. |
| Sensitive land use buffer zone ⁽⁷⁾ | <ul style="list-style-type: none"> Not less than 3000m from Precinct boundary – no sensitive land uses permitted (e.g. housing) but compatible industrial uses allowed. |

5 Subject to weather and dredge availability

6 Includes pioneer camp, construction camp and permanent accommodation

7 Established by Proponent based on guidance from the WAPC and EPA

Figure 4.1 Generic Layout of BLNG Precinct



4.4 General and Policy Issues

4.4.1 Emergency Response

Submissions on the SAR relating to emergency management focused on a few key issues including:

- coverage of oil spill modelling during cyclonic periods when increased northerly winds and waves increase risk of failures and the likelihood of any spilt oil reaching Broome;
- provision of more detail on oil spill management/response strategies;
- given the Montara and Gulf of Mexico (Deepwater Horizon) incidents how can the oil spill risk be considered manageable; and
- potential impacts on tourism due to an oil spill.

The readers attention is drawn to the three main areas that oil spills are covered in the SAR:

- **Sections 2.3.4.2 to Section 2.3.6.2 within Part 3** of the SAR;
- **Section 4** within **Part 7** of the SAR; and
- **SAR Appendix G-3.**

The report on Hydrocarbon Spill Modelling (SAR **Appendix G-3**) in particular describes the detailed assessment undertaken by the Proponent.

Well Blow-out Risks

The Montara (Australia's northern waters) and Gulf of Mexico (Deepwater Horizon) incidents have heightened the concern and focus on large scale oil spills from oil and gas activities. Both of these events were the result of a loss of control of oil and gas from a well during drilling. As such until the wells were capped the events were 'continuous' as the contents of the oil and gas reservoir were able to leak into the ocean.

The SAR for the Browse LNG Precinct does not seek approval for the drilling of oil and gas wells as this is not an activity contemplated at the Browse LNG Precinct. Such activities are subject to separate stringent approvals from the State and Commonwealth Government. Unlike a well blow-out, and spill volumes from the Browse LNG Precinct will be limited to stored condensate volumes within facilities such as pipelines (which would be shut down in the event of a spill) or condensate tankers (ships). These spills have been incorporated into the spill assessments presented in the SAR.

Cyclone Inclusions

The period modelled for estimation of the oil spill risks was from 1st August 2007 running until the 1st September 2008 (**Section 5.5, SAR Appendix G-3**). This modelling period included three cyclones (*Melanie* 26 December 2007 - 2 January 2008 - Category 2; *Nicholas* 11 - 20 February 2008 - Category 3; and *Ophelia* 1 - 6 March 2008 - Category 2) that passed the north west coast of WA. Based on modelling results, the estimated annual probability of oil reaching Roebuck Bay was predicted to be less than one in every 10 000 years, with the minimum time for oil to get to Roebuck Bay being 10 days. Consequently, this is considered to provide sufficient time to mobilise the necessary response resources.

In addition, Ports such as those proposed for the Browse LNG Precinct will close when cyclones threaten the coast with ships leaving coastal areas, moving out to sea to avoid an approaching cyclone. Consequently, the probability of a spill of sufficient volume to reach Roebuck Bay occurring during a cyclone is remote (note that the oil spill modelling did not factor in this mitigation measure).

Oil Spill Response and Management

There is a clearly defined oil spill response structure within Australia. The Commonwealth Government has developed the National Marine Oil Spill Contingency Plan (http://www.amsa.gov.au/Marine_Environment_Protection/National_plan/) that outlines how marine oil spills are managed in Australia. The Australian Maritime Safety Authority (AMSA) is responsible for maintaining the plan. The basis of this plan is a tiered response based on the size of a spill. The tiers are:

- Tier 1 - up to 10 tonnes - a small spill requiring a local response where the combat agency will generally have the available equipment to respond to the spill.
- Tier 2 - between 10 and 1000 tonnes - a medium spill requiring regional and/or national assistance. Interstate resources will be facilitated by the Statutory Agency through Marine Environment Pollution (MEP), AMSA.
- Tier 3 - above 1000 tonnes – a large spill requiring national assistance generally requiring local, regional, national and possibly international assistance. Interstate and international resources will be facilitated by the Statutory Agency through MEP.

As outlined in '**Annexure 4 - Management Strategies**', the State Government has drafted an Emergency Response Strategy including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures. In addition the State Government has committed to the resourcing and maintenance of hydrocarbon spill response equipment with the capacity to effectively respond to a Tier 2 (10 -1000t) event.

Commercial proponents within the Browse LNG Precinct are required to develop a Hydrocarbon and Chemical Spill Contingency Plan which will sit under the Broome Port Authority Emergency Response Plan. The Proponent's Hydrocarbon and Chemical Spill Contingency Plan must be developed to the satisfaction of the Western Australian Minister for Environment (**Table 2.3-4 in Part 3** of the SAR).

In addition, most of the Australian oil industry subscribes to Australian Marine Oil Spill Centre (AMOSC). AMOSC maintains a stockpile of Tier 3 oil spill response equipment. Under an agreement between AMSA and AMOSC oil spill resources (both equipment and personnel) are available, if required, to the Commonwealth and Western Australia for incidents.

Although the development of the Precinct will increase the risk of an oil spill, these risks already exist from shipping movements along the coast and fuel imports that occur through the Port of Broome. The estimated annual increase in the likelihood of a spill reaching either Cable Beach or Roebuck Bay is estimated at one in 10,000 years.

4.4.2 Greenhouse Gas Emissions

A number of common concerns related to the greenhouse gas emissions emerged from the submissions received. The majority of the concerns centred around:

- the predicted scale of emissions from the BLNG Precinct;
- the role of LNG, and Browse specifically, in delivering a global net greenhouse benefit through the displacement of coal fired power; and
- lack of detail regarding proposed abatement measures.

These are summarised below. Detailed responses to specific questions by all who submitted comments are provided in **Appendix A**.

The Predicted Scale of Emissions from BLNG Precinct

A number of comments were received in relation to the amount of greenhouse gas potentially generated by the BLNG project both in absolute terms and as a proportion of WA's total emissions. In addition to concern at the scale of emissions, some of these comments raised concern at the potential impact of the Commonwealth's emissions reduction commitments.

It is noted that the strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which

was the basis for inclusion of other scenarios with ultimate capacities of 15, 25 and 35Mtpa. Maximum respective increases to WA's greenhouse emissions (relative to 2007) are 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. More specific details will not be available until future proposals are designed to sufficient detail and submitted to EPA as derived proposals for evaluation.

Importantly, these emissions calculations do not take into account potential abatement or advances in technology. All future proponents will be required to prepare a Greenhouse Gas Abatement Plan (**GGAP**) to the satisfaction of the Minister of the Environment that will detail best practice measures to reduce and manage emissions. This plan will be subject to a period of public review prior to finalisation.

As outlined in **Part 4, Section 2.9.3** of the SAR, the Commonwealth government has committed to an unconditional 5% reduction of CO₂-e emissions target by 2020, below 2000 levels. In absolute terms, this represents an emissions target of 525MT CO₂-e. The most conservative, maximum case scenario of 50Mtpa production comprises 7.4% of the Commonwealth target. The lowest case scenario of 12Mtpa production comprises only 2.2% of this target.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG Precinct should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions.

The Role of LNG, and Browse Specifically, in Delivering a Global Net Greenhouse Benefit Through the Displacement of Coal-fired Power

Comments were received that questioned observations contained in the SAR that LNG could deliver greenhouse benefits at the global level.

The production of natural gas from the Browse LNG Precinct would contribute in a very positive sense to the efforts to combat climate change. The InterGovernmental Panel on Climate Change, Stern, and others agree that natural gas and LNG, which produce substantially less carbon dioxide equivalents (CO₂-e) than coal or oil, are important bridging fuels on the road to a lower carbon economy. Replacement of coal in particular, is identified as one of the key "stabilisation wedges" required to reduce overall global emissions to a level which will prevent the worst of the predicted impact.

This is echoed in WA's Greenhouse Gas Reduction Strategy which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal-fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emissions and commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90).

The dynamics of the global energy market are affected by a wide range of policy and price signals which influence demand and supply. Nevertheless, history can often provide a useful guide, and real-world examples of where LNG has made a positive contribution to overall emissions do exist. For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001). Another example also comes from the European Union (**EU**), which is currently subject to an emissions trading scheme. In the summer of 2005, Germany, which is highly reliant on coal for power generation, actively sought to purchase power from the Netherlands, which has a high proportion of gas-fired generation. In the EU, data is available to demonstrate that fuel switching from coal to gas is not only occurring, but is a key contributor to emissions reductions in this region.

Looking forward, the increase in global energy demand particularly in developing economies requires an increase in all fuel types that can operate at baseload, including LNG. These economies, such as China and India, also have active policies that support increasing the proportion of LNG in their energy supply mix. So while guarantees

about specific future energy scenarios cannot be made, it is reasonable to be guided by both historical, real world examples as well as global policy trends in suggesting that LNG can have a net positive effect on global greenhouse gas levels.

Ultimately, LNG plays an important role in transitioning to a less greenhouse intensive energy supply mix. Increasing the availability of LNG on the market is an important step in that transition.

Lack of Detail Regarding Proposed Abatement Measures

A number of comments were received querying the detail of specific abatement measures that would be implemented as part of the BLNG development. Incorporated in these questions was a particular interest in geosequestration as an abatement measure.

In line with EPA guidance and recent environmental approvals in Western Australia, it is noted that any proponents of derived proposals for the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (GGAP), to the satisfaction of the Western Australian Minister for Environment. Aligned with this is EPA's environmental assessment objective to ensure that greenhouse gas emissions emitted from proposed projects are adequately addressed in the planning/design and operation of projects and that:

- best practicable measures are applied to maximise energy efficiency and minimise emissions;
- comprehensive analysis is undertaken to identify and implement appropriate offsets; and
- proponents of derived proposals undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time.

A GGAP is currently under development by the Foundation Proponent and will address the following:

- targets for greenhouse gas emissions;
- inventory of greenhouse gas emissions;
- best practice measures to reduce greenhouse gas emissions including controls to maintain plant reliability and reduce venting and flaring;
- strategies to incorporate greenhouse considerations in plant design, technology selection and operation;
- evaluation of the feasibility of greenhouse gas emissions reductions, carbon sequestration and/or capture opportunities;
- compliance with any National scheme for reduction of CO₂-e emissions;
- independent verification of emissions in line with National schemes for managing and reporting greenhouse gas emissions;
- regular monitoring and external reporting, auditing of greenhouse gas emissions and performance; and
- periodic review of the effectiveness of improvement measures through the regular monitoring of greenhouse gas emissions and adaptive management of emissions, aimed at reducing greenhouse gas emissions per tonne of LNG produced where practicable.

The Proponent recognises the broader public concern with respect to greenhouse gas and has therefore committed to a period of public review for GGAPs prepared by proponents of derived proposals.

Although reservoir CO₂ geo-sequestration offers the single biggest opportunity for greenhouse gas abatement in this instance, its implementation requires that the identified injection sites be technically and economically viable. For example there are no depleted oil or gas reservoirs in the region that could support a geosequestration scheme for the BLNG Precinct. Consequently the geosequestration options would need to consider unproven traps or geological features that would give sufficient certainty for the containment of the CO₂ until it is effectively permanently sequestered.

Each proponent as part of their GGAP will need to consider abatement opportunities as outlined above.

4.5 Marine Factors

This section addresses the major and recurring themes arising from the public submissions on the marine aspects of the Strategic Assessment Report (SAR) (primarily **Part 3**, **Part 7** and the relevant Appendices). The list of themes is not exhaustive and is limited to those which have been deemed to be 'key' (i.e. where concerns on conservation significant species or habitats have been raised) or which represent a significant proportion of the submissions. The subsections below provide further clarity and information on these themes to address the concerns voiced by the public and statutory government agencies on the SAR. A synthesis of key issues and concerns raised with respect to marine factors is presented in **Table 4.3 'Key Concerns Raised by Submissions - Marine Factors'**.

The future management procedures and mitigation measures (proposed Management Plans and Governance) related to these themes is discussed further in **Section 2 'Management Response'**. This section is intended to confirm that the level of investigations and impact assessment has been appropriate for a Strategic Environmental Assessment (SEA). There is a forward process, through future derived proposal applications, that will address additional validity studies, modelling, and licensing as required by State and Commonwealth regulatory agencies and through consultation with relevant stakeholders.

Table 4.3 Key Concerns Raised by Submissions - Marine Factors

| Factor | Summary of Key Concerns Raised by Submissions | Cross Reference |
|-----------------------------------|---|--------------------------------|
| Marine Fauna | <ul style="list-style-type: none"> The extent and scientific rigour of the studies conducted on megafauna. The potential impact of increased vessel movements, underwater noise, and oil spills. | Summary Report (Section 4.5.1) |
| | Fish <ul style="list-style-type: none"> Impact of port construction and operations on endangered sawfish. Impact of dredging activities on key local fish aggregation areas (i.e. the 'Peanut' and 'Puddle'). | |
| | Marine Mammals <ul style="list-style-type: none"> Extent and scientific rigour of the studies conducted on marine mammals. Potential impact of increased vessel movements on marine mammals, particularly during migration periods. Potential impact of underwater noise. Loss of foraging habitat for Dugongs as a result of dredging activities. | |
| | Marine Reptiles <ul style="list-style-type: none"> Extent and scientific rigour of the studies conducted on turtle distributions and abundance, particularly potential nesting. Potential impact of increased vessel movements on marine turtles, particularly during migration periods. Loss of foraging habitat for turtles as a result of dredging activities. | |
| Marine Ecosystem Integrity | <ul style="list-style-type: none"> Predicted impacts to benthic habitats and the potential flow on effects to herbivorous marine fauna. | Summary Report (Section 4.5.2) |

| Factor | Summary of Key Concerns Raised by Submissions | Cross Reference |
|-----------------------------|---|--------------------------------|
| | <ul style="list-style-type: none"> Impact of large-scale spill on marine ecosystem integrity along the Dampier Peninsula. Predicted impacts to benthic habitats and the potential flow on effects to herbivorous marine fauna. | |
| | Benthic Primary Producers <ul style="list-style-type: none"> Adequacy of benthic habitat surveys to fully characterise the baseline conditions, particularly considering the predicted extent of impacts from dredging activities. Potential for recovery of BPPH communities within the predicted Zone of Moderate Impact post dredging. | |
| | Tidal Regimes, Wave Climate, Currents and Hydrodynamics <ul style="list-style-type: none"> Impact on local coastal geomorphology, in particular the potential for erosion of the beaches adjacent to the port infrastructure. | |
| Marine Water Quality | <ul style="list-style-type: none"> Wastewater discharges from operations. The robustness of hydrocarbon spill modelling and the preparedness of the proponent to both prevent and manage a major oil spill. Reduction in water quality associated with routine wastewater discharge over the lifetime of the project. Impact of non-routine discharges and spills on water quality. | Summary Report (Section 4.5.3) |
| | Marine Sediments <ul style="list-style-type: none"> Potential for remobilisation of contaminants within seabed sediments during routine maintenance dredging. Contamination of sediments from routine wastewater discharge over the lifetime of the project. | |

4.5.1 Marine Fauna

The potential impact on marine megafauna (i.e. marine mammals, marine turtles and fish) from the Precinct construction and operational activities is a recurring theme from the submissions. In particular, the extent and scientific rigour of the megafauna surveys undertaken to support the SAR has been questioned. In addition, the potential impact of increased vessel movements, underwater noise, and potential oil spills on marine fauna has been consistently raised as an ongoing concern. The sub-sections below provide additional details on the surveys and further rationale for the impact assessment conclusions.

Humpback whales – Submitters raised a number of concerns in regards to humpback whales including the belief that James Price Point forms part of a migration corridor and is also a key calving area where resting whales were often sighted close to shore. The level of understanding of the population of whales was also considered inadequate by some submitters.

Knowledge of the humpback whales along the Kimberley region has increased considerably since the mid-1990s. Since cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley *et al*, 2009). Data collected over recent years has demonstrated that humpback whale population is steadily increasing (Hedley *et al*, 2009). To complement the existing data on humpback whales in the Kimberley region, a range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009 as part of the Strategic Assessment process, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula (refer SAR **Part 3, Section 1.4.4.4** for details). Additional surveys have also been undertaken during 2010 and will continue into 2011 to further define humpback whale distribution and abundance off the west coast of the Kimberley. This consolidated survey program is, to the knowledge of the Proponent, the most comprehensive study undertaken on Western Australia's humpback whales.

It is acknowledged that the broader regional marine environment is of particular significance for humpback whales, as they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km northeast of James Price Point) as calving, staging and resting areas (DEH, 2005). However, there is no evidence to suggest that James Price Point and its environs is a significant calving ground. Significantly higher numbers of calves recorded at Pender Bay (0.09 calves per km) than at James Price Point (0.03 calves per km) throughout the 2009 survey supports the assertion that their calving grounds lie to the north of Lacepede Islands and Beagle Bay and not at James Price Point (RPS, 2010a; SAR **Appendix C-8**). The 2009 migration corridor survey showed that the majority of humpback whales passing the Dampier Peninsula coast follow a corridor that extends from approximately 8 to 42km from the shore within the 10 to 50m depth contours (RPS, 2010a; SAR **Appendix C-8**). Approximately 95% of humpback whales travel further than 8km off the James Price Point Coastal area, with a mean distance for adults of 27km from the shore and 24km for calves indicating that calves were travelling slightly closer to shore (RPS, 2010a; SAR **Appendix C-8**).

In addition, the marine megafauna surveys were replicated in 2010 and will continue through 2011 to gather further data on relative abundances of marine megafauna and the migratory pattern of humpback whales within the Dampier Peninsula. The early results of these surveys (though not yet published) appear to support the findings and conclusions of the surveys undertaken in 2008 and 2009. Aerial surveys are planned to continue during construction to determine the impact (if any) on migration pathways of humpback whales and behaviour of other megafauna. The Proponent will actively encourage knowledge sharing to inform conservation initiatives and commercial proponents will be required to publish all survey data for marine megafauna, within a reasonable time frame of results becoming available.

| | |
|---|--|
| 8 | <p>New/Strengthened Commitment: Ecological Marine Environmental (Marine Fauna)</p> <p><i>The Proponent will require all commercial proponents to publish all survey data for marine megafauna, within a reasonable time frame of results becoming available.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|---|--|

Snubfin Dolphins – Submitters raised a number of concerns in regard to the dolphin's susceptibility to vessel strikes due to its preference for foraging in shallow waters and what impact this might have on the populations of this endemic northern Australian species.

Australian snubfin dolphins (*Orcaella heinsohni*) are endemic to the Australian/Papua New Guinean region, and in Australia the species has a broad habitat range across Northern Australia (including Queensland, Northern Territory and northern WA). Based on stranding and observational data, the Australian snubfin dolphin is known to occur within waters off the West Kimberley (Parra *et al.* 2002; Parra *et al.* 2004). Several studies verify that Australian snubfin dolphins mainly occur in protected shallow waters close to the coast, river and creek mouths and are strongly linked to mangrove systems (Parra and Corkeron, 2001; Parra *et al.* 2002; Parra, 2006; Parra *et al.* 2006a and 2006b). A recent study by Parra (2006) on the habitat preferences of snubfin dolphins, observed most schools of snubfins were sighted within 10km of the nearest point of land, in waters less than 10m deep and within 10km from the nearest river mouth. Similarly, the same habitat preferences were observed in snubfin dolphins studied extensively in other coastal areas, such as Townsville and the Great Sandy Straits (Parra *et al.* 2002; Parra, 2006; Parra *et al.* 2006b). The closest comparable habitat to James Price Point is at Barred Creek (approximately 20km south of James Price Point).

Aerial and vessel-based marine megafauna surveys were undertaken during the period of July to mid-October 2009, with a focus on James Price Point but also extending along the offshore waters of the Dampier Peninsula. No snubfin dolphins were recorded during any of the aerial surveys undertaken in 2009; however some were observed from vessels in the sheltered waters off Roebuck Bay (approximately 65km south of James Price Point) on several occasions (RPS, 2010d; SAR **Appendix C-10**). Aerial surveys undertaken between June and October 2010, observed one group of snubfin dolphins (comprising of six individuals) in very shallow water (less 10m), approximately 1.6km from the mouth of Barred Creek (RPS, 2010e, unpublished). This data, which was not considered in the development of the SAR, confirms the ability of the aerial surveys to sight and identify inshore coastal dolphins and supports the hypothesis that snubfin dolphins preferentially occur in protected shallow waters close to the coast, river and creek mouths.

Taking into account the extensive survey effort and available literature, it is concluded that this species is seldom found outside of shallow sheltered bays and inlets. It is known that individuals often travel between areas and therefore it is acknowledged that individuals may occasionally occur within the coastal waters adjacent to James Price Point. However, it is highly unlikely that they utilise the waters offshore from James Price Point for feeding or breeding, given nearby preferential habitats at Roebuck Bay, Barred Creek and Willie Creek (RPS 2010d; SAR **Appendix C-10**). As such, it is considered that the activities associated with the Precinct development and operations are not likely to significantly impact on snubfin dolphins. Indirect impacts, such as the potential increase in recreational boating within Roebuck Bay have the potential to be of greater concern to snubfin dolphins than activities associated with the development itself. Nevertheless, the management measures proposed to mitigate potential impacts on other marine mammals more relevant to the BLNG Precinct project area will also benefit this species to reduce the risk of impacts and achieve acceptable outcomes.

The centre piece of the recently released Kimberley Science and Conservation Strategy is the creation of the Kimberley Wilderness Parks. These will include the State's largest interconnected system of marine and terrestrial parks covering 3.5 million hectares.

In this Strategy is the commitment to establish four new, multiple-use marine parks in the Kimberley at Camden Sound, North Kimberley, Roebuck Bay and Eighty Mile Beach. The State Government through DEC, with assistance from DoF, in partnership with traditional owners and stakeholders including community will be involved in establishing these reserves.

The Proponent is confident that the establishment of the multiple-use marine at Roebuck Bay will provide the appropriate settings for recreational and conservation activities to co-exist. The science and impact assessment findings contained within the SAR are available for use by the DEC to ensure all measures are considered in the planning process. Additionally, the species and habitats that are MNES will also be managed for.

A summary of other current conservation initiatives can be found in **Table 1.1 'Summary of Kimberley Conservation Initiatives'**.

Sawfish – Submitters raised some concerns in regard to the potential impact of the nearshore Precinct infrastructure on migrating sawfish.

Whilst James Price Point occurs within the range of all three listed sawfish species, there is no evidence of key feeding, pupping or nursery habitats occurring in the area, and therefore, on a regional scale, the area does not appear critical for populations of these species. Extensive surveys conducted at James Price Point support this, with no species of sawfish being recorded (Cappo *et al.* 2010; RPS 2010). Tracking of both dwarf and green sawfish in Pilbara and Kimberley marine waters has indicated that these species typically display strong site fidelity around mangrove habitats, moving in and out of mangroves with the prevailing tide (Stevens *et al.* 2008). It has been hypothesised that mangroves may offer feeding opportunities or shelter from predation on high tides (Stevens *et al.* 2008). Whilst this study was conducted in areas where mangroves were present, it does indicate that sawfish are likely to aggregate near mangrove habitats and therefore coastal areas without mangroves, such as James Price Point, may support fewer sawfish on a regional scale than areas with established mangrove communities. The importance of the Fitzroy River and King Sound (>500km and 220km from James Price Point respectively), as nursery areas, for freshwater and dwarf sawfish, also suggests that the abundance of these species may be relatively low, on a regional scale, in the vicinity of James Price Point (Whitty *et al.* 2008, Morgan *et al.* 2009).

Notwithstanding the absence of preferential habitat (and hence relatively low importance of the James Price Point area to sawfish on a regional scale), there is the potential that the proposed development activities may impact on individual sawfish in the vicinity. Given that the range of all three species extends both north and south of James Price Point, it is possible that sawfish move parallel to the shore through the area. This would appear particularly likely for the freshwater and dwarf sawfish which appear to have important nursery areas north of James Price Point (i.e. in the Fitzroy River and King Sound, respectively) but which have also been caught from south of James Price Point. Morgan *et al.* (2009) have indeed suggested that adult female freshwater sawfish may undertake seasonal migrations back to the mouth of the Fitzroy River for pupping. Therefore, negative interactions may arise through coastal infrastructure of the project affecting sawfish movement in shallow water, although it should be noted that the indicative concept for the port (SAR **Part 7, Figure 3-3**) suggests that the breakwater will not be connected to the shoreline with a gap of up to 3km and that the jetty will be of a trestle pylon design thus allowing unhindered movement of demersal marine fauna. In addition, given that sawfish have been caught in deep offshore waters by trawl fisheries (Morgan *et al.* 2009), it seems likely that these species would be capable of navigating around coastal infrastructure by moving through deeper water.

Marine Turtles – Submitters raised a number of concerns in regard to impacts on sea turtles as a result of increased vessel activity and potential strikes. The level of baseline data specific to turtles used to inform the impact assessment was also considered inadequate by some submitters.

As part of the Strategic Assessment process, surveys were undertaken to understand the distribution, abundance and seasonality of marine turtles, with a particular focus on the James Price Point coastal area. As part of these surveys, beach studies were conducted along the James Price Point coastal area in November 2009, January 2010 and February 2010 to cover the entire breeding season for green and flatback turtles (refer to **Appendix C-2** of the SAR). Additional beach surveys along the James Price Point coastal area were also undertaken during the 2010/2011 nesting season (i.e. November 2010 to January 2011). Though this data has not been published, the results (discussed below) support the conclusions from the earlier surveys. The extent of these surveys are therefore considered to provide an adequate basis to inform the assessment.

The key findings from these surveys concluded that there are no significant green or flatback turtle nesting areas within the James Price Point coastal area, which differs substantially to the significant green and flatback turtle rookeries at the Lacepede Islands. Many of the characteristics of the James Price Point coastal area are considered unsuitable for nesting, largely as a result of periods of inundation during spring high tides, incline of the beach, rocky substrate around the coastal zone and limited space for nesting between the aeolian sands and the intertidal platform.

The James Price Point coastal area is largely considered to be used by inter-nesting turtles from nearby rookeries or post-nesting turtles migrating north or south to foraging areas and does not support consistently high densities of turtles. Probable turtle foraging habitats have been identified off Carnot Bay (approximately 41km north of James Price Point), Cape Latreille (approximately 39km south of James Price Point), Roebuck Bay (approximately 66km south of James Price Point) and Lagrange Bay (approximately 134km south of James Price Point), based on high

turtle densities in these areas during the non-breeding period (July - October 2009). Satellite tracking identified that the majority of post-nesting turtles (green and flatback turtles) nesting at the Lacepede Islands migrated in a northeasterly direction to foraging grounds as far as Coburg Peninsula in the Northern Territory (approximately 1,281km northeast of James Price Point). These areas will not be affected by the BLNG Precinct.

In addition, it is understood that turtles, like other large marine fauna which exhibit significant surface activity, are vulnerable to ship strikes. However, the Strategic Assessment Report undertook a risk based approach to the impact assessment process and therefore the probability of such an event occurring was the determining factor for the assessment of this risk. It was concluded that, based on the predicted vessel movements (1,300/annum) and management measures to be implemented (e.g. vessel speed restrictions), the likelihood of ship strikes impacting on marine turtle populations was considered low.

As outlined in **Part 3, Section 2.7.4, Tables 2.7-3 to 2.7-5** of the SAR, a number of management plans are proposed with respect to turtles. As stated previously, the Proponent will actively encourage knowledge sharing to further inform conservation initiatives.

Dugongs – Submitters raised a number of concerns in regard to the potential impacts of a reduction in seagrass habitat, predicted from the dredging activities, on dugongs. The level of baseline data specific to dugongs used to inform the impact assessment was also considered inadequate by some. The dugong surveys undertaken to inform the SAR were the most comprehensive surveys on dugong distribution outside of Shark Bay and provide a good snapshot of the seasonal distribution of dugongs along the Dampier Peninsula. The study methodology was designed in collaboration with recognised dugong specialists to enable the prediction of absolute numbers within the region (and sub-region).

The SAR (**Part 3, Section 1.4.4**) provides a summary of the known population trends and transitory movements of dugongs in a local and regional context. Resident populations are known to occur at Beagle Bay and the Montgomery Islands (Mustoe and Edmunds, 2008 and RPS, 2010c; SAR **Appendix C-9**) and large numbers of dugongs have been recorded in Roebuck Bay (RPS 2010c; SAR **Appendix C-9**). However, the extent to which such individuals travel along the coast to the James Price Point area is not well understood, though it is thought that movements may be linked to the seasonal availability of seagrass meadows along the Dampier Peninsula. A study undertaken in collaboration with the Department of Environment and Conservation, Edith Cowan University and the Bardi Jarwi rangers at Beagle Bay (Campbell *et al.* 2010), provide some evidence for the ability of resident Beagle Bay dugongs to travel to the waters offshore from Coulomb Point. However, it is known that dugongs may range over comparatively large areas but preferentially forage over relatively small ones. Further marine megafauna surveys will be undertaken in 2011 to repeat those undertaken in 2009. The results of these surveys will be used to inform future derived proposals.

As outlined in **Part 3, Section 2.6.3.1**, the criteria for assessing underwater noise impacts on Sirenians (dugongs) are currently consistent with those for cetaceans. The Proponent will encourage future commercial proponents to consider the relevance of information on the auditory sensitivity of manatees as a suitable proxy for dugongs for future underwater noise assessments for derived proposals.

Vessel Interactions – Submitters raised a number of concerns in relation to impacts specifically on marine mammals from increased shipping activity and the likelihood of vessel strikes.

It is understood that humpback whales, like other large cetaceans which exhibit significant surface activity, are vulnerable to ship strikes. However, the strategic assessment process utilised a risk based approach and therefore the probability of such an event occurring was the determining factor for the assessment of this risk. It was concluded that, based on the predicted vessel movements (1,300 export shipments per annum) and management measures to be implemented (e.g. vessel speed restrictions), the likelihood of ship strikes was low. This conclusion is supported by the weight of historical evidence which demonstrates that there have only been five reported vessel collisions (only one incident involved a humpback whale, IWC 2008) in Western Australia between 2006 and 2008. In the corresponding years (2006, 2007 and 2008) there were a reported 5583, 5520 and 5158 port calls respectively by all ships involved in coastal and international shipping in Western Australia (Australian Government - Department of Infrastructure, Transport, Regional Development and Local Government. Australian Sea Freight Information sheet - 2005-6, 2006-7 and 2007-8). Submitters were concerned that the reporting of ship strikes was under reported for either intentional reasons or because they were unaware of the strike event. Although this is possible,

the lack of large numbers of injured or dead whales (which tend to rise to the surface and are generally observed and reported upon in the general media) along the migration route and shipping lanes close to the WA coast line, suggests that vessel strikes are not significantly higher than these figures. Recent data (Country Report on Ship Strikes – Australia; IWC/63/CC12) from the latest IWC meeting in 2011 (C63) states that there was only one ship strike on large cetaceans in 2010 (IWC, 2011). Thus it is evident that the vast majority of humpback whales successfully cross major shipping corridors along the Western Australian coastline and continue their migration (SAR **Part 3, Figure 2.6.5**), with little evidence of mortality from vessel strikes or adverse interactions.

It is acknowledged that vessel strikes on smaller marine mammals (including dugongs and dolphins) are more common in areas where smaller, faster, recreational type vessels operate. However, vessel movements associated with the construction and operation of the Precinct development will be dominated by large, slower construction vessels and hydrocarbon tankers, which pose a significantly lower risk to faster, more agile marine mammals.

Therefore, it is considered unlikely that the additional vessel traffic associated with the BLNG Precinct development would have a significant impact on marine mammal populations. Although the relative risk of vessel strikes on marine mammals will be proportionally increased by the Precinct development, the mitigation measures that will be implemented (e.g. through vessel management plans) are intended to ensure that such incidents are minimised and that an appropriate adaptive management response by the Port Authority and future proponents is in place.

Underwater Noise – Submitters raised a number of concerns in relation to underwater noise and the predicted impacts on marine fauna (humpback whales in particular) during both construction (blasting, pile driving, dredging) and operational (shipping) phases of the project.

The SAR identifies that the construction and operation of the BLNG Precinct will include activities that will emit underwater noise and vibration above background (ambient) levels. The underwater noise assessment identified and assessed the predicted noise levels associated with piling, blasting, dredging and vessel movements, as these activities were deemed to be either the most noise intensive sources (i.e. nearshore blasting and piling) or the most common activities with predicted long exposures periods (i.e. vessel movements and dredging).

It was considered that the high intensity impulsive noise emitted during blasting and piling may overlap the frequency range of hearing in humpback whales and therefore has the potential to cause physiological injuries at close ranges. Blasting and piling activities are likely to emit noise levels above the Temporary Threshold Shift (**TTS**) levels (defined in SAR **Table 2.6-5, Part 3, Section 2.6.3.1**) for up to 200m and 250m respectively from the source. These activities would be limited to the BLNG Precinct Port area and therefore noise emitted during these activities is likely to result in only the localised displacement of humpback whales from the BLNG Precinct Port area. It should be noted that the majority of animals (95%) were observed migrating at a distance of at least 8km off the coast, with adults and calves travelling a mean distance of 27km and 24km from the coastline, respectively. Therefore at this distance, noise emitted from blasting and piling activities would be significantly less than that considered to cause any physiological impacts. Consequently, construction and operational activities are unlikely to have a significant impact on humpback whale populations.

Construction techniques, phasing and schedule will be more defined as part of engineering studies associated with any future derived proposals. During such studies, additional scenarios (including cumulative sources) will be incorporated into the noise assessments undertaken at that time. **Section 5 'Cumulative Environmental Impacts'** describes the outcome of analysis of cumulative impacts for key factors undertaken since the publication of the SAR.

4.5.2 Marine Ecosystem Integrity

The predicted impacts on benthic habitats (particularly seagrass) and the potential flow on effects to herbivorous marine fauna (i.e. dugongs and turtles) was a key concern raised in the submissions. This section provides further clarification on the extent of these predicted impacts associated with the nearshore construction activities.

Benthic Primary Producer Habitats (BPPH) – Submitters raised a number of concerns regarding the predictions of loss, potential for recovery and broader ecosystem function of benthic habitat due to impacts from dredging activities.

A detailed dredging impact assessment was undertaken in close consultation with the OEPA, and is presented in the SAR (**Part 3**, with full details in SAR **Appendix C-13**). The application of a conservative sediment transport modelling process applied in the SAR (due to the uncertainty in geotechnical or infrastructure information at the time) identified a maximum prediction of the scale of impact associated with these works, appropriate for the Strategic Assessment. **Part 3, Figure 2.4-6** of the SAR demonstrates the sensitivity of the system to varying model inputs.

It should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. Nevertheless, the SAR acknowledges the predicted impacts on benthic communities, demonstrating that permanent impacts on benthic communities will be restricted to the footprint of the 'indicative port area' and pipeline corridors (SAR **Part 3, Figure 2.4-1**). It should be noted that the Zone of Moderate Impact corresponds to the area in which changes in water quality (i.e. a reduction in benthic light availability) may result in the temporary loss of BPPH, which is expected to recover within a five year period, as defined by the EPA in the Environmental Assessment Guideline No. 3 (EPA, 2009).

Whilst the removal of such habitats is expected to temporarily reduce benthic primary production in the area, this is not expected to impact on regional ecosystem function and integrity, given the prevalence of this habitat type within the wider bioregion. Regionally significant areas such as Roebuck Bay, the Lacepede Islands Group and Pender Bay are not expected to be impacted by the dredging activities. **Figure 2.3-2 (Part 3)** portrays the furthest predicted extent of the Zone of Influence, where changes in water quality may be apparent but no environmental impact is predicted.

Seagrass Loss and Recoverability - The SAR assessed the indirect impact of the proposed dredging activities in relation to marine fauna (specifically dugongs) and the potential loss of foraging habitat. The SAR also assessed the potential for permanent and temporary loss of seagrass to indirectly impact dugongs through a subsequent loss of foraging habitat. The permanent and temporary loss of seagrass is not expected to significantly impact on the overall food resource availability for dugongs given the prevalence and natural variability of seagrass within the wider Canning Bioregion. Though it is not possible to predict the numbers of dugongs likely to be temporarily effected by the loss of seagrass communities off James Price Point, studies have indicated that dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range (Gales *et al.*, 2004; Preen and Marsh, 1995). In addition, the Nearshore Regional Dugong Survey Report (RPS, 2010c; **Appendix C-9**) concluded that dugong presence is sporadic along much of the West Kimberley coast. Whilst it is known that dugongs are likely to be present around James Price Point, it is noted that this presence is in relatively low numbers compared to other areas along the West Kimberley coastline, such as Beagle Bay, Carnot Bay and Roebuck Bay (see **Section 4.1.2** and **4.2.1** of SAR **Appendix C-9**). No loss of seagrass, either permanent or temporary, is predicted to occur within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay.

Similarly, the James Price Point coastal area is largely considered to be used by inter-nesting turtles from nearby rookeries or post-nesting turtles migrating north or south to foraging areas and does not support consistently high densities of turtles. Probable turtle foraging habitats have been identified off Carnot Bay (approximately 41km north of James Price Point), Cape Latreille (approximately 39km south of James Price Point), Roebuck Bay (approximately 66km south of James Price Point) and Lagrange Bay (approximately 134km south of James Price Point), based on high turtle densities in these areas during the non-breeding period (July-October 2009). Satellite tracking identified that the majority of turtles (green and flatback turtles) nesting at the Lacepede Islands migrated in a northeasterly direction to foraging grounds as far as Coburg Peninsula in the Northern Territory (approximately 1,281km northeast of James Price Point). These areas will not be affected by the dredging activities.

Within the project area and typically throughout tropical Australia, seagrass meadows are predominantly ephemeral and comprised of structurally small species of low biomass (i.e. *Halophila spp.*). *Halophila ovalis* is the fastest growing tropical seagrass species and prefers slightly more exposed conditions than other *Halophila* species (Vermaat *et al.*, 1995). These tropical seagrass beds are known to be resilient habitats able to recover rapidly after disturbance (Coles *et al.*, 2007) and are often pioneering colonisers of bare substrates (Birch and Birch, 1984; Huisman, 2000; Waycott *et al.*, 2004; and Waycott *et al.*, 2005). Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredging activities (Coles *et al.*, 2007; Unsworth *et al.*, 2009). Given that the underlying physical sediment characteristics within this zone are not predicted to be altered, it can be expected that seagrass and other BPPH will recover.

4.5.3 Water Quality

Several submissions have raised concerns over the potential impacts associated with the various wastewater discharges from the operational Precinct facilities. Concerns were also raised about the robustness of hydrocarbon spill modelling and the preparedness of the Proponent to both prevent and manage a major hydrocarbon spill. Particular reference was made to the recent oil and gas related incidents at Montara (Northern Territory) and the Gulf of Mexico (USA). The wider impacts on coastal and marine ecosystems and the associated fauna were of also of concern. Further clarification on the extent of these predicted impacts and impact assessment conclusions are provided below.

It is acknowledged within the SAR that routine wastewater discharges have the potential to produce a localised zone of reduced marine water quality within the Precinct Port Area. Specific wastewater treatment methodologies have yet to be finalised as they are dependent upon the specific characteristics of the wastewater stream. Nonetheless, the results of the modelling study (**Part 7** of the SAR) indicate that the active mixing zone is predicted to remain within 300m of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point).

Routine monitoring of water quality at the discharge location, to ensure compliance to the relevant ANZECC/ARMCANZ 2000 guidelines, would be conducted throughout the operation of the outfall. In addition to measurements of water quality, ecotoxicity testing of marine organisms will be conducted to determine the Whole Effluent Toxicity (**WET**) of the discharge water and routine ecotoxicity sampling would be conducted within the BLNG Precinct port area during outfall operation to determine whether contaminant levels in marine organisms remain within acceptable limits with reference to the ANZECC/ARMCANZ 2000 guidelines.

A Marine Wastewater Discharge Management Plan (**MWDMP**) is proposed to be developed to ensure that the disposal of treated wastewater from the construction and operation of the Precinct facilities is undertaken and managed in a way that reduces the environmental impacts to as low as reasonably practicable. It is proposed that this plan will include a more detailed characterisation of the wastewater streams, having the benefit of input of progressed engineering studies. The MWDMP will be submitted to the OEPA for consideration and assessment.

It should also be noted that the information presented in the SAR is relevant to inform the impact assessment and management framework for the strategic proposal of the Precinct development. The Proponent acknowledges that, subsequent to the Strategic Assessment process, secondary approvals under *Part V* of the *EP Act 1986* will be sought for specific operational activities (e.g. wastewater discharge).

In response to comments received from OEPA, more stringent water quality criteria have been committed to for marine wastewater discharges. Specifically:

- Commercial operators within the Precinct shall ensure that beyond the boundary of the Low Ecological Protection Area (i.e. outside the discharge mixing zone) toxicants meet the ANZECC/ARMCANZ (2000) 95% species protection values for at least 95% of time.
- In addition, the Marine Wastewater Discharge Management Plan objectives would change to the following, to reflect the more stringent water quality criteria:

- maintenance of ecosystem integrity with spatially-assigned levels of protection; and
- ensuring the treated discharge meets appropriate environmental protection guidelines (i.e. 95% level of species protection ANZECC/ARMCANZ 2000 for 95% of the time) at the edge of the Low Ecological Protection Area (i.e. outside the discharge mixing zone).
- Undertaking biennial ecotoxicity testing within the Browse LNG Port area to identify discharge parameters to be improved in order to achieve a target of 99% level of species protection beyond the Browse LNG Port Area.

| New/Strengthened Commitments: Marine Water Quality | |
|---|--|
| 9 | <p><i>The Proponent is committed to apply more stringent water quality criteria to marine wastewater discharges than was proposed as a condition in the SAR. This is expected to form the basis of the EPAs recommended conditions for wastewater discharges.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
| 10 | <p><i>Broome Port Authority will consult with the Department of Fisheries and commercial fishers in the development of Emergency Response Plans.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |

Hydrocarbon spill response – Additional information on the hydrocarbon spill modelling and proposed management measures are provided in **Section 4.4.1 'Emergency Response'** of this document.

4.6 Terrestrial Factors

This section addresses the major and recurrent themes determined from the public submissions on the terrestrial aspects of the SAR (primarily **Part 4** and the relevant Appendices). The list of themes is not exhaustive and is limited to those which have been deemed to be 'key' (i.e. where recurrent concerns on conservation significant species or habitats have been raised) or which represent a significant proportion of the submissions. The subsections below provide further clarity and information on these themes to address the concerns voiced by the public and statutory government agencies on the SAR. A synthesis of key issues and concerns raised with respect to terrestrial factors is presented in **Table 4.4 'Key Concerns Raised by Submissions - Terrestrial Factors'**.

The future management procedures and mitigation measures (proposed Management Plans and Governance) related to these themes is discussed further in **Section 2 'Management Response'**. This section is intended to confirm that the level of investigations and impact assessment has been appropriate for a Strategic Environmental Assessment (**SEA**). There is a forward process, through future derived proposal applications, that will address additional validity studies, modelling, and licensing as required by State and Commonwealth regulatory agencies and through consultation with relevant stakeholders.

Table 4.4 Key Concerns Raised by Submissions - Terrestrial Factors

| Factor | Summary of Key Concerns Raised by Submissions | Cross Reference |
|---------------------|---|--------------------------------|
| Terrestrial Fauna | <ul style="list-style-type: none"> The extent and scientific rigour of the terrestrial fauna surveys. Minimising impacts to Significant Fauna Habitat. Adequacy and scientific rigour of the studies conducted on terrestrial fauna. Potential impact on the Bilby. Potential impact on terrestrial fauna populations of endemic, habitat-specific small reptiles. Potential impact on birds. | Summary Report (Section 4.6.1) |
| | Species of Ethno-biological Significance <ul style="list-style-type: none"> Impact on the Traditional Owners ability to harvest gubinge. | |
| Terrestrial Ecology | <ul style="list-style-type: none"> Limited understanding of the James Price Point area, ecosystems and species and the potential impact of the Precinct on conservation significance flora, vegetation and fauna. Invasion of new weeds and increased extent of existing weeds, in particular their impact on monsoon vine thickets. | Summary Report (Section 4.6.2) |
| | Terrestrial Flora and Vegetation <ul style="list-style-type: none"> Direct and indirect impact on flora and vegetation, particularly the monsoon vine thicket. Potential impact to rare and endangered flora and fauna. Potential impact to monsoon vine thicket Threatened Ecological Community. Potential impact to groundwater dependent ecosystems (monsoon vine thicket and drainage basin vegetation communities). | |

| Factor | Summary of Key Concerns Raised by Submissions | Cross Reference |
|--------------------|--|--------------------------------|
| | <p>Groundwater</p> <ul style="list-style-type: none"> Groundwater management and impacts from drawdown and contamination. Reference to appropriate groundwater legislation, policy and guidelines. Consultation with regulators, particularly DEC in regard to potential impacts from groundwater abstraction on conservation values. Potential impacts of intersecting groundwater and the requirement for further investigation. Insufficient studies and understanding of groundwater hydrology. Potential impact of groundwater abstraction. Adoption of water use efficiency methods. <p>Surface Water</p> <ul style="list-style-type: none"> Lack of understanding and information regarding the sensitivity of surface water hydrology to the Precinct. Indirect impacts to monsoon vine thicket resulting from altered surface water flows. | |
| Air Quality | <ul style="list-style-type: none"> Concern about the health risks due to air emissions and the apparent lack of a health risk and health impact assessment. Concern about commitments and means to manage. Need for more detailed and comprehensive baseline monitoring studies. | Summary Report (Section 4.6.3) |

4.6.1 Terrestrial Fauna

The potential impact on terrestrial fauna (including conservation significant fauna and migratory bird species) from the BLNG Precinct construction and operational activities is a recurring theme from the submissions. In particular, the extent and scientific rigour of the terrestrial fauna surveys undertaken to support the SAR was challenged. There was a general theme in some comments that the Precinct will damage rare and endangered fauna and that further studies are required.

The sub-sections below provide additional context and further rationale for the impact assessment conclusions.

Terrestrial Fauna Surveys - Submitters raised a number of concerns in regard to the extent and scientific rigour of the terrestrial fauna surveys undertaken to support the SAR. The level of understanding of the terrestrial ecological values was also considered by some submitters as inadequate. Comments were received requesting that terrestrial fauna investigations be conducted consistent with EPA Guidance Statement No. 56 prior to ground disturbance and referral of derived proposals, to inform the design, construction and operation of developments within the Precinct.

Extensive wet and dry season fauna studies have been completed in the James Price Point coastal area (SAR **Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework for this strategic proposal. Furthermore, terrestrial fauna investigations conducted to date to inform the Strategic Assessment were consistent with the EPA Guidance Statement No. 56.

In addition, targeted fauna investigations in the BLNG Precinct development area, including searches for conservation significant fauna based on work to date, are proposed to inform the forward derived proposal approvals process. This information will be used to assist in the definition of detailed management and monitoring objectives and targets for future proponents, as well as providing additional input to the design of Precinct infrastructure.

Minimising Impacts to Significant Fauna Habitat - Submitters raised concerns that the Precinct will irreversibly damage rare and endangered fauna. The following information is provided for context.

No *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* listed threatened fauna species have been directly recorded in the James Price Point coastal area, however there is indirect evidence (possible foraging holes) of greater bilby (*Macrotis lagotis*) (Endangered – EPBC Act (Commonwealth), Schedule 1 *Wildlife Conservation (WC) Act 1950*) activity in the vicinity of the project area and south towards Quondong Point (SAR **Part 4, Section 2.6.1.2**). The number of foraging holes recorded suggests they may belong to a small number of transient individuals present in the area, rather than a resident colony (SAR **Part 4, Section 2.6.3.1**). Other EPBC Act listed threatened species that may occur in the area are outlined in detail in the SAR (**Part 4, Section 2.6.1.2**). The majority of conservation significant fauna species under consideration have broad habitat requirements and are expected to occur elsewhere on the Dampier Peninsula. Therefore, development of the BLNG Precinct is not predicted to result in significant impacts on populations of rare or endangered fauna. The SAR proposes a range of management measures, including requirement for future proponents to implement a Fauna Management Plan, in consultation with DEC.

Consideration is made in the SAR in regard to the proposed location and design of Precinct infrastructure relative to conservation values. There are opportunities to minimise impacts on good quality Pindan vegetation within the BLNG Precinct by optimising the placement of associated infrastructure. The SAR provides for this in regard to the potential presence of, and preservation of habitat for, the masked owl (northern) (*Tyto novaehollandiae kimberli*) and greater bilby (*Macrotis lagotis*), both of which are listed as Vulnerable under the EPBC Act (**Part 6, Section 3.7**).

Proposals to protect potential habitat for the golden bandicoot (*Isoodon auratus auratus*) and golden-backed tree rat (*Mesembriomys macrurus*) include the realignment of Manari Road away from its existing route through monsoon vine thickets between Quondong Point and James Price Point and the rehabilitation of the old road to restore monsoon vine thicket (**Part 6, Section 3.7**). It is proposed that proponents of derived proposals also develop and implement Construction Environmental Management Plans, which may include environmental management measures such as minimising disturbance and maintaining linkages where possible and avoidance of clearing in sensitive areas as far as practicable (**Part 4, Section 2.4.4, Table 2.4-9**).

Community analysis of the faunal assemblage of the monsoon vine thicket habitat type indicated that it is distinct from those of Pindan vegetation habitats further inland (**Part 4, Section 2.6.3.1**). As detailed in **Section 4.6.2 'Terrestrial Ecology'** of this report, the conservation significance of this community was considered with the site selection, layout and design of the Precinct with the objective to minimise disturbance to this vegetation community. Based on current clearing estimates, it is considered unlikely that the removal of this habitat type would have a significant impact on locally occurring fauna species. Proposed measures and commitments to minimise disturbance to the monsoon vine thicket are also described further in **Section 4.6.2 'Terrestrial Ecology'** of this Summary Report.

Greater Bilby - Submitters raised a number of concerns in regard to the greater bilby. In particular, a targeted search for bilbies was recommended to be undertaken in the area of the Precinct.

The SAR (**Part 4, Section 2.6**) summarises the results of the fauna surveys to date in relation to the greater bilby. While there is no conclusive evidence of greater bilby presence during the fauna surveys to date, some foraging holes were observed in recent surveys that may be indicative of this species, although they may be varanid lizard holes.

In recognition of this inconclusive evidence, the Proponent has undertaken a further targeted survey effort, in particular south towards Quondong Point (refer SAR **Part 6, Table 3-3**) as management commitments. This survey effort has also included targeted searches for bilbies in the vicinity of the BLNG Precinct area and will inform management and monitoring actions.

Migratory Birds - Concerns were raised regarding the welfare of migratory shorebirds of the East Asian-Australasian Flyway. In particular in relation to Roebuck Bay (a Ramsar site 56 kilometres south of the proposed BLNG Precinct at James Price Point), and Eighty Mile Beach (another Ramsar wetland 197 kilometres south of the proposed BLNG Precinct at James Price Point), potentially impacted upon by the proposal. The potential impact of gas flares and other lighting on migrating birds was also raised as a concern.

A migratory bird study has been specifically undertaken to understand the distribution and abundance of migratory birds within the James Price Point coastal area and to determine the regional importance of the area to inform the Strategic Assessment (SAR **Appendix C-1**). The SAR acknowledges the importance of Roebuck Bay and Eighty Mile beach as important feeding and resting sites for migratory shorebirds and an integral part of the East-Australasian Flyway (SAR **Part 4, Section 1.4.5.6**). The use of the East-Australasian Flyway by migratory shorebirds is also documented in SAR **Appendix C-1**.

Part 4, Section 2.6 of the SAR provides a detailed assessment of the potential impacts on migratory birds and associated habitat, and the proposed management response. The assessment drew on a range of studies and investigations undertaken at a local and regional level to characterise the known and likely occurrence of bird species (see SAR **Part 4, Section 1.4.5 Fauna Habitats** for detail). In a regional context, it is well established that the local area has relatively low significance as a summer feeding site for migratory shorebirds relative to other areas including Eighty Mile Beach and Roebuck Bay. The James Price Point coastal area provides habitat for a suite of species that are widespread and well-represented on the Dampier Peninsula (SAR **Appendix C-1**), and the area is not regarded as primary habitat in comparison to other coastal areas and offshore islands. The SAR considers the potential impacts relevant the BLNG Precinct development, with particular reference to managing direct and indirect disturbance on habitat for conservation significant fauna that have potential to occur in the area.

The proposed LNG Precinct is unlikely to directly affect the usage of the Roebuck Bay and Eighty Mile Beach Ramsar sites by migratory birds due to it being located sufficiently far away from these sites (56km from Roebuck Bay, the closest Ramsar site). The SAR acknowledges that disturbance of Roebuck Bay and Eighty Mile Beach may occur indirectly due to the development from increased recreation use arising from any increase in population in Broome. Proposed measures to minimise such impacts include ongoing support for the development of the Roebuck Bay Management Plan and the DEC's management of Eighty Mile Beach.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including migratory birds. Refer to SAR **Part 4, Table 2.6-4, Table 2.6-5, Table 2.6-6 and Table 2.6-7** for a complete summary. The SAR **Part 6** (in particular **Table 3-3 and 3-4**) also outlines management arrangements for terrestrial species including migratory birds.

The SAR acknowledges that any potential impact on terrestrial fauna species, including migratory birds, due to light emissions is expected to be restricted to the BLNG Precinct site and immediate area. The lighting design for individual facilities within the BLNG Precinct is not yet confirmed at this strategic proposal stage. The Proponent proposes that future commercial proponents prepare and implement a Visual Amenity Management Plan that addresses (among other items) "...a lighting strategy to reduce light spill, sky glow and direct light from the BLNG Precinct infrastructure", recognising that lighting management is of particular relevance to off-site visual amenity and social factors. It is reasonable to expect that this lighting strategy would provide commensurate mitigation for other environmental factors in the local area of influence, including migratory birds.

4.6.2 Terrestrial Ecology

Flora and Vegetation

The direct and indirect impact on flora and vegetation, including species and communities of conservation significance, from the BLNG Precinct construction and operational activities is a recurring theme from the submissions. In particular, the impacts on conservation significant flora and vegetation, specifically the monsoon vine thicket Threatened Ecological Community (**TEC**), has been consistently raised as an issue.

As part of the site selection and strategic assessment process, extensive consecutive wet and dry season flora and vegetation studies have been completed in the James Price Point coastal area (SAR **Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR. These studies sought

to build on historical botanical knowledge of the area and were provided as Appendices to the SAR. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal.

The sub-sections below provide additional details on the key themes raised and further rationale for the impact assessment conclusions.

Vegetation Clearing – Submissions were received raising concerns about the extent of clearing required for the BLNG Precinct. The maximum extent of vegetation clearing required for the BLNG Precinct, pipeline corridors, workers accommodation, light industrial area and ancillary infrastructure is described in the SAR as 3,037ha (SAR **Part 4, Section 2.4.2.2, Table 2.4-3**). Whilst the total extent of vegetation loss cannot be accurately quantified at this early stage of BLNG Precinct layout definition, the extent of clearing will be within that defined in the SAR **Table 2.4-3** and **Table 2.4-4 (Part 4, Section 2.4.2.2)**. The conservation significance of the coastal vegetation types was considered in the site selection, layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance of key ecological communities, such as the monsoon vine thicket TEC.

The Proponent is committed to the implementation of the Dampier Peninsula Planning Strategy (previously known as the Dampier Peninsula Land Use and Infrastructure Plan) by the State Government, and the establishment of additional nature reserves and/or National Parks, by the State Government, within the Dampier Peninsula to secure representative vegetation of the Peninsula in reserves.

Comprehensive mitigation and management measures have been identified (SAR **Part 4, Section 2.4.4, Tables 2.4-6** and **2.4-9**) to manage potential impacts on flora and vegetation, including the development and implementation of:

- Terrestrial Ecological Management Strategy (formerly the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance);
- Construction Environmental Management Plan(s) to be implemented by future proponents; and
- Rehabilitation Plan, Weed management Plan and Ecological Surface Water Requirements Management Plan.

Rare and Endangered Flora – Submitters raised concerns that the Precinct will damage rare and endangered flora. No flora species listed under the EPBC Act or species listed as Declared Rare Flora (**DRF**) have been recorded in the James Price Point coastal area (SAR **Part 4, Section 1.4.3.4**). Two EPBC Act listed species occur in the Dampierland bioregion; *Keraudrenia exastia* and *Pandanus spiralis* var. *flammeus*. Although appropriate habitat for *Keraudrenia exastia* is widespread in the area, the nearest known population is over 33km south of the southern end of the James Price Point coastal area (SAR **Part 4, Section 1.4.3.4, Table 1-8**). This species also has not been identified in the area to date, despite intensive searches for further populations including targeted searches for the species in 2009 (SAR **Part 4, Section 1.4.3.4, Table 1-8**). *Pandanus spiralis* var. *flammeus* is unlikely to occur within the BLNG Precinct due to the absence of preferred habitat and substrate (SAR **Part 4, Section 1.4.3.4, Table 1-8**). *Keraudrenia exastia* and *Pandanus spiralis* var. *flammeus* are considered highly unlikely to occur in the James Price Point coastal area and therefore the BLNG Precinct is not considered to pose a threat to rare and endangered flora.

Monsoon Vine Thicket – Submitters raised a number of concerns in regard to the direct and indirect impacts on monsoon vine thicket and the management of these impacts, particularly in relation to groundwater abstraction and recognising the uncertainty in the Groundwater Dependent Ecosystem (**GDE**) status and local inter-relationships.

The monsoon vine thickets in the James Price Point coastal area are representative of the State TEC 'Vine thickets on coastal sand dunes of Dampier Peninsula' which is currently listed as Vulnerable by the DEC (SAR **Part 4, Section 1.4.2.5.1**). The monsoon vine thicket TEC also has recently been listed on the Department of Sustainability, Environment, Water, Population and Communities (**SEWPAC**) priority assessment list and is currently being assessed to determine if it should be listed as a Commonwealth TEC under the EPBC Act. The review process is expected to be completed by September 2012.

The SAR acknowledges that some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the foredunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community, as more than 90% of the known extent of monsoon vine thickets will remain (SAR **Part 4, Section 2.4.3.1**).

It should be noted that the conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts (including altered surface and groundwater flows and quality, fragmentation and edge effects, weed invasion and altered fire regimes) on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests). For example, to address potential indirect impacts on the monsoon vine thicket from groundwater abstraction, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan in consultation with the Department of Water (DoW) (SAR **Part 4, Section 2.3.4, Table 2.3-3**), which will incorporate a groundwater monitoring program designed to monitor for potential impacts on groundwater (e.g. water quality and drawdown), saltwater interfaces, and groundwater dependent ecosystems.

A Terrestrial Ecology Management Strategy (formerly the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance) (refer to **Table A4.3 'Draft BLNG Precinct Terrestrial Ecological Management Strategy'** for an outline of this strategy), with particular reference to remnant monsoon vine thicket vegetation, will be developed in consultation with DEC and will provide a management framework for proponents of derived proposals. The effectiveness of the strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process. To inform this strategy, a Vegetation Monitoring Program (VMP) has been initiated by the Foundation Proponent in addition to commitments documented in the SAR, to collect baseline data at selected sites considered to be at risk of indirect impacts from the proposed BLNG development. This program is expected to continue throughout the planning, construction and operational period of this project. Further development of the VMP will be undertaken in consultation with DEC.

By drawing on the results of ongoing monitoring, an adaptive management framework will be implemented to ensure that any changes to the condition and health of the monsoon vine thicket are within the defined limits of acceptable change. This will be undertaken in consultation with DEC and other key agencies.

In addition, in recognition of its high level of sensitivity, the monsoon vine thicket TEC has been a key focus area in all ecological assessments completed to date by the Proponent. This focus on the monsoon vine thicket TEC will continue in additional studies likely to be required by future proponents of derived proposals to inform management planning relevant to their individual activities.

New/Strengthened Commitments: Terrestrial Ecology (Monsoon Vine Thicket)

- | | |
|-----------|---|
| 11 | <p><i>The Foundation Proponent has initiated a Vegetation Monitoring Program (VMP) which will continue throughout the planning, construction and operational period of this project.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|-----------|---|

Groundwater Dependent Ecosystem Review

Taking into consideration theme comments regarding the Groundwater Dependent Ecosystem (GDE) status and water dependence of the vine thicket and drainage basin ecological communities, and as agreed with DEC, an additional review has been undertaken to inform the Proponent's *Response to Submissions*. The review has been undertaken consistent with the GDE Toolbox and framework for assessing environmental water requirements of GDEs, drawing on currently available tools available at this stage of project development.

This review provides a synthesis of available information combining data from scientific literature, field observations, an appraisal of remotely sensed data to infer potential use of groundwater by vegetation, and a conceptualisation of the groundwater environment. For this current phase, to inform the strategic proposal of the BLNG Precinct, this work is intended to respond to the following key points raised by DEC:

- What is the key issue?
- What are the key potential threats to the MVT and drainage basin vegetation communities?
- Are the impacts to the MVT and drainage basin communities manageable (as demonstrated by other comparable vine thicket GDEs)?

This additional information is presented as part of this *Response to Submissions Summary Report* (refer to '**Annexure 6 - Groundwater Dependent Ecosystem Review**').

Groundwater Issues

It is acknowledged in the SAR that a number of water supply options are subject to investigation (**Part 2, Section 5**) which formed the basis of the impact assessment in **Part 4, Section 2.3.2.2**. The water source options include groundwater abstraction, desalination of saline groundwater and desalination of seawater, or a combination of these options. Several submissions raised concerns over the lack of detailed groundwater studies and the potential impacts of groundwater abstraction for the construction and operation of the BLNG Precinct on the environment and other users. Further clarification on the management of groundwater abstraction is provided below.

The use of groundwater is controlled under the *Rights in Water Irrigation Act 1914 (RIWI Act)*, administered by the DoW (**Part 4, Section 2.3.3.4**). The DoW determines the level of groundwater abstraction that may occur without unacceptable environmental impacts and this limit is defined as the sustainable yield of the aquifer (**Part 4, Section 2.3.3.4**). This licence process provides certainty that the environmental impacts of the proposed groundwater licence application will be assessed by the DoW and that no unacceptable environmental impacts will be approved. The DoW will not approve licence applications for groundwater abstraction beyond the sustainable yield. In addition, DoW will also assess the licence to ensure that groundwater abstraction does not prejudice other current or future needs for water.

The information presented in the SAR is relevant to a strategic proposal of the BLNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. The SAR (**Part 4, Section 2.3.3.4**) acknowledges that detailed hydrogeological (groundwater) field investigations, analysis and interpretation including the installation and testing of investigation bores and wells, and development and calibration of a numerical groundwater model will be undertaken by future proponents of derived proposals applying to take and use groundwater. The studies will be influenced by the need to build the necessary baseline data, together with the need to establish a groundwater bore network to enable the monitoring of the following potential impacts associated with construction and operation of the BLNG Precinct. These groundwater studies will be required to inform the licencing requirements under the RIWI Act.

Prior to the abstraction of groundwater for the BLNG Precinct, commercial proponents will develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with DoW. The management plan will involve a groundwater monitoring program designed to monitor for potential impacts on groundwater and include a framework for an adaptive management response.

As part of this process, an operating strategy detailing how potential impacts on groundwater will be managed and monitored, and containing a water conservation and efficiency plan, will be prepared by the future Precinct proponents and submitted as part of the groundwater licence applications to DoW. The Proponent acknowledges

that, as part of this forward process, water supply options analysis is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations. In particular as a new commitment based on comments from DoW, the licence application will follow the DoW's "Pilbara water in Mining guideline", 2009.

| | |
|----|--|
| 12 | <p>New/Strengthened Commitment: Terrestrial Ecology (Groundwater)</p> <ul style="list-style-type: none"> <i>The Proponent will ensure that groundwater licence applications follow DoW's "Pilbara water in Mining guideline", 2009.</i> <i>The Proponent will consult with the DEC in assessing the potential impacts from groundwater abstraction on conservation values.</i> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|----|--|

In addition, the BLNG Project Agreement provides that, with respect to groundwater extraction from the Broome aquifer operations at the Foundation Proponent Project, after seeking independent advice and consultation, the GJJ Native Title Party may, in certain circumstances, direct proponents not to draw water from the Broome aquifer if it considers the risks to be unacceptable.

4.6.3 Air Quality

Responses to the SAR relating to air quality presented three main themes: concern about commitments and means to manage emissions (especially benzene and other air toxins); the need for more detailed and more comprehensive baseline monitoring studies; and concern about the health risks due to air emissions.

Management of Benzene Emissions

The SAR has identified high levels of emissions of benzene from the Precinct, especially during condensate ship-loading. The SAR Air Quality Study has shown that these emissions may lead to ground-level concentrations beyond the Precinct Buffer Zones that are higher than the assessment criteria adopted by the SAR for benzene. Submissions expressed concern at the risks these emissions and resulting ambient impacts present for human health. Submissions asked for more detail about the emissions and specific means that will be employed to ensure that the emissions are minimised and the impacts managed. Submitters sought reassurance that the local and regional population will be protected and that people's health will not be compromised.

As a strategic document the SAR's objective is to identify and assess all significant impacts that may result from the development of the Precinct, and show that these impacts can be managed so that the environmental and other human values are maintained to acceptable levels.

The SAR has identified that benzene emissions are a significant factor and as such, any derived proposal will be required to demonstrate that benzene emissions, as well as other air toxics, will be managed appropriately. The responsibility for developing management plans and programs to demonstrate their effectiveness will fall to the proponents of the future derived proposals and will need to demonstrate best practice measures to minimise emissions.

As such, the Proponent has committed to developing an air quality management strategy for the Precinct that will address benzene along with other significant emissions. The BLNG Precinct Air Quality Management Strategy will provide for monitoring of emissions, confirmation of assumptions made for the SAR, and public reporting. Identification of critical issues, such as benzene and related air toxins, by the SAR will ensure that any and all referrals of derived proposals under the SAR will have incorporated best practice management from the earliest stages of project design.

The following information is submitted to provide additional context, with reference to commercially available control measures to achieve acceptable levels. It should be noted that the assessment of BTEX emissions completed for the SAR was based on a number of conservative assumptions, and the Proponent expects future commercial proponents to further refine modelling based on their proposed activities and to demonstrate the application of best practice measures to meet acceptable levels as committed at this strategic proposal stage.

The air quality assessment clearly identified that the primary contributing source of elevated benzene concentrations is intermittent release of VOC emissions during condensate ship-loading. There are a number of commercially available technologies for treating VOC emissions from ship-loading, including for example (Rudd and Hill, 2001):

- reducing volatility;
- vapour balancing;
- thermal oxidation;
- absorption;
- adsorption;
- membrane separation; and
- cryogenic condensation.

Vapour emissions recovery is not a novel process, and has been employed across a range of industry sectors, in particular for effective control of loading emissions of liquid petroleum products. In the context of the Browse development, the most practical measure currently being considered by the Foundation Proponent is thermal oxidation, subject to further investigation as engineering definition progresses.

On review of current specifications and industry practice, the Proponent has identified recovery of VOCs from ship-loading is considered best practice as opposed to venting.

A range of international references are available to further define best practice (refer to for instance European Commission IPCC BAT Guidance, 2006): "BAT is to apply vapour balancing or treatment on significant emissions from the loading and unloading of volatile substances to (or from) trucks, barges and ships. The significance of the emission depends on the substance and the volume that is emitted, and has to be decided on a case-by-case basis." Similarly the USEPA AP-42 identifies: "Measures to reduce loading emissions include selection of alternate loading methods and application of vapour recovery equipment. The latter captures organic vapours displaced during loading operations and recovers the vapours by the use of refrigeration, absorption, adsorption, and/or compression. The recovered product is piped back to storage. Vapours can also be controlled through combustion in a thermal oxidation unit, with no product recovery." (USEPA, 2007).

As precedent examples of effective application of VOC reduction in an LNG industry context, Qatari LNG producer RasGas specifies VOC destruction programmes as a control measure for VOCs implemented for its LNG facilities in Ras Laffan. These recovery systems were implemented to achieve a significant reduction in vented and flared emissions (RasGas, 2010). This is one of a number of practical control options that is being investigated in the context of Browse.

With respect to what standard will be applied, consistent with the SAR impact assessment it is recognised that the EU annual average criterion for benzene (5ug/m³) is relevant to this pollutant, and is an internationally recognised standard, reflecting latest epidemiology and population level health exposure research, to achieve human health end points.

In summary, the Proponent is confident that commercially available and practicable measures can be implemented to achieve acceptable outcomes, and meet the EPA's environmental objective to "minimise the impacts that atmospheric emissions may have on the environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards".

The SAR commits commercial proponents to further refine conservative assessment as engineering details for individual facilities are matured, to ensure benzene emissions are actively managed and reduced to achieve best practice measures (**SAR Part 4, Section 2.8.3**). Refer also to the BLNG Precinct Air Quality Management Strategy (**Table A4.1 'Draft BLNG Precinct Air Quality Management Strategy'**) for additional details on the governance framework to be implemented by the Precinct Control Group.

Further to the above, the Proponent notes the context of EPA Guidance Statement No.55 (EPA, 2003), that:

- “The EPA recognises that some projects are assessed at a conceptual design or pre-feasibility stage, when precise details of process engineering and waste management reduction technologies are not available. In [this] case, it is unlikely that the EPA will be able to ascertain whether best practice requirements have been met and the Authority may need to recommend the application of Environmental Conditions for further detailed examination of the issue prior to the licensing stage.” (EPA, 2003; s.3.2).

In the context of this strategic proposal, the Proponent submits that the BLNG Precinct is at this stage of conceptual design when precise details of process engineering and consequent control technologies are not yet confirmed. Taking this into account, and recognising the clear commitment for future commercial proponents to demonstrate best practice as part of a forward regulatory process, the common objective at this SAR assessment stage is to define the acceptable outcomes to be achieved (i.e. meeting acceptable concentrations outside the buffer zones) to protect human health and amenity.

The Proponent is confident that these outcomes are acceptable and achievable to meet EPA's expectations.

In recognition of the need for proponents of derived proposals to address the emissions of Volatile Organic Compounds (**VOCs**) to the satisfaction of the EPA, an additional commitment has been developed to provide assurance that all commercial operators will reduce VOC emissions resulting from ship-loading activities, which are deemed to be the most significant contributor of VOC emissions from the proposed BLNG Precinct. Specific standards and efficiency data will be provided by future commercial proponents when engineering design is sufficiently mature.

| | |
|-----------|---|
| 13 | <i>New/Strengthened Commitment: Air Quality</i> <ul style="list-style-type: none">• <i>Commercial proponents will install emission control equipment to reduce VOC emissions from ship-loading activities. Such equipment shall be designed to ensure benzene emissions achieve the EU annual average criteria of 5ug/m³ beyond the sensitive landuse buffer zone.</i>• <i>Commercial proponents will install VOC thermal destruction equipment on major sources of VOC emissions, being the acid gas removal unit and mono-ethylene glycol regeneration unit. Such equipment shall be capable of achieving the EU annual average criteria of 5ug/m³ beyond the sensitive landuse buffer zone.</i> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|-----------|---|

Conservative Hydrogen Sulphide Modelling

Highly conservative air emissions modelling undertaken for the SAR (**Part 4, Section 2.8**) predicted that hydrogen sulphide (**H₂S**) concentrations would be well below the levels identified by the WA Health Department to present a concern for health. Nonetheless, the conservative modelling did provide that H₂S concentrations may exceed the amenity-based NSW guidelines to the east of the proposed BLNG Precinct, and to a lesser extent to the west. It should be noted that these amenity-based criteria are derived to protect the public from annoyance at sensitive receptors. Health effects occur at much higher concentrations, typically at 500 times the odour threshold.

Specifically, conservative modelling has predicted that H₂S may exceed the adopted NSW single residence criteria (1-second 99th percentile of 4.8µg/m³) up to 9km east of the buffer zone and in a contained area intersecting the shipping channel to the west. For the more stringent criteria applicable for an urban area with >2,000 people (or very sensitive land uses such as hospitals), the 1-second 99th percentile criteria of 1.38µg/m³ would be exceeded up to between 20 and 30km to the east of the buffer. It is important to note that, as outlined in the SAR assessment, there are no known residential receptors to the east of the Precinct area that would present an issue of short-term intermittent elevation of an amenity-based criteria.

Effectively this means that human receptors in this zone of exceedance may be subject to an instantaneous (1 second) peak concentration of H₂S comparable to those experienced by residents in some Perth suburbs due to bore water usage. Importantly, no adverse health impacts are anticipated.

It should be noted that a highly conservative estimate of 20.5ppm of H₂S in the gas-field was used as a basis for the air emissions modelling for the SAR. In practice it is expected that a more realistic, but still very conservative, estimate of the H₂S concentration would be 13ppm and that even at 10ppm the concentrations would still be above the average for the gas-fields. Measured H₂S concentrations from the gas-field drilling program are in the range of 4 – 7ppm.

The predicted number of hours per year in which an exceedance of a 1-second H₂S concentration would occur under the various H₂S input feed gas concentrations are shown in **Table 4.5 'Sensitivity of Hydrogen Sulphide Modelling Results to Gas-field Composition'** against both the NSW single residence and NSW Urban criteria. The percentage time of the number of hours within which short-term exceedances may be predicted over a full modelled year, are also summarised. This demonstrates the low number of total hours where a single peak above amenity-based guidelines could be expected over a full annual basis.

Table 4.5 Sensitivity of Hydrogen Sulphide Modelling Results to Gas-field Composition

| | Maximum Annual Hrs Exceeded Outside Buffer Zone (% time of year) | | |
|---|--|-------------|-------------|
| Gas-field Composition (% of H ₂ S) | @20.5ppm | @13ppm | @10ppm |
| Single Residence (4.8 µg/m ³) | 160 (1.8%) | 100 (1.14%) | 60 (0.68%) |
| Urban Area (1.38 µg/m ³) | 300 (3.4%) | 250 (2.85%) | 200 (2.28%) |

On this basis H₂S emissions are considered acceptable to meet EPA's expectations.

Reservoir H₂S can react to reduce carbon-steel pipelines and fittings to iron sulphides in the gas stream. Consequently, a very highly conservative estimate of reservoir H₂S is essential for the engineering design of the plant to inform selection of appropriate materials. A collateral effect of the absorption of H₂S in carbon steel pipelines and fittings is that it will likely be a considerable time after commencement of production before reservoir H₂S is measured in significant quantities at the onshore LNG facility.

The SAR impact assessment of H₂S emissions is based on a number of deliberately conservative assumptions:

- A very high estimate of reservoir H₂S concentration has been adopted for the plant design, more than twice the actual H₂S concentration measured in the gas to date.
- H₂S impacts are assessed for the full 50Mtpa development. Although some of the supporting gas fields may have high H₂S content, given the proposed production schedules, it is unlikely that all will reach peak concentrations simultaneously.
- A high reservoir CO₂ case was used, which increases the volume of gas released and decreases dispersion characteristics to some degree.
- Only 90% availability was assumed for Thermal Combustion Units (TCUs) as a group. In effect, 10% of the reservoir CO₂ and associated H₂S was assumed to bypass emission controls. [It should be noted that this item has less influence on the conservatism of the H₂S modelling relative to the influence of input assumptions for feed gas composition].

A modelling strategy with the following less conservative assumptions is likely to significantly reduce potential exceedances of the NSW H₂S criteria, while still being considered conservative. Modelling these revised inputs would also provide more realistic (i.e. less highly conservative) estimates of H₂S impacts associated with the BLNG Precinct activities:

- a reservoir H₂S concentration of 10ppm; and
- applying the 90% TCU availability on a probabilistic basis for each TCU individually.

It is envisaged that future commercial operators will refine the H₂S modelling inputs to more accurately reflect potential emissions of H₂S from their proposed facilities as part of their derived proposal referral to the EPA. Ongoing monitoring of reservoir H₂S content at the upstream facilities will also provide future commercial operators an early warning of potentially higher levels reaching the onshore facility, which will allow engineering controls to be applied, such as enhancement of TCU plant or similar, if required.

Comprehensive Baseline Monitoring Studies

A number of submissions expressed concern that the SAR has provided insufficient information about the existing air quality at and around James Price Point. Submissions maintained that the baseline monitoring station that has been established at the Precinct site includes monitoring equipment that does not meet accepted standards for air quality monitoring.

James Price Point is a relatively remote location far from local population centres. This presents challenges for on-site studies undertaken for the SAR. In particular, there is no stable supply of electricity to power continuous air quality analysers and provide the climate control essential to maintain accuracy.

Consequently, baseline monitoring is currently being undertaken at James Price Point using the best means available. A surface meteorological tower data and low-volume particulate monitor have been installed, utilising solar and battery power, and passive sampling devices have been deployed for selected Volatile Organic Compounds (VOCs) such as benzene. Installation of generators to drive monitoring equipment is not practical as the air quality samples would be dominated by generator emissions.

More comprehensive monitoring studies will become possible as the Precinct and ancillary facilities are developed.

The BLNG Precinct Air Quality Management Strategy, and corresponding air quality management plans by commercial proponents, will provide for source and ambient monitoring to demonstrate that derived proposals are consistent with the SAR and that environmental targets are being achieved.

The Strategic Assessment (specifically **Part 4, Section 1.5.2.2**, and **Section 2.8.1.2**) provides a full description of the existing ambient air quality in a local and regional perspective, to place the predicted BLNG Precinct emissions into context.

The available data indicates that ambient air quality in the area is currently largely unaffected by industrial emissions. There are no major anthropogenic emissions sources in the Precinct area or generally within the Dampier Peninsula. Fires are the dominant source of pollutants in the region, on a seasonal basis, recognising the contribution of dry season fires.

Health Impact Assessment for Air Emissions

Many submissions expressed concern about the potential impacts of toxic air emissions, especially benzene, on human health.

Air emissions are an important factor, among others, that would contribute to an assessment of human health impacts. A full health impact study would necessarily cover other exposure pathways, as well as other relevant health factors in the community. The SAR incorporates a high level discussion of human health impacts in the SIA, SAR **Part 5, Section 4.9**.

In a population health context, short-term guidelines serve to raise an alert that the issue requires further investigation. Annual exposure guidelines provide a better indication of the total exposure of the population to benzene by inhalation.

Exceedance of short-term guidelines has raised the issue to be explicitly addressed by specific management measures in derived proposals. At a strategic level, however, the longer-term annual guidelines are not exceeded outside the Precinct buffer zones, which suggests that total impacts and residual risk are manageable.

Health impacts are discussed further in **Section 4.7.2 'Human Health'** of this document.

4.7 Social Factors

Public submissions on the Browse SAR raised a wide range of social and economic issues and concerns. The dominant themes were the following:

- The absence of a formal regulatory framework for social impacts and the SAR's heavy reliance on the future preparation of a wide range of management plans to address the potential social impacts makes it difficult for the community to make informed judgements about the acceptability of the proposal.
- Concerns were expressed that emissions from the Precinct would increase environmental health risks on vulnerable communities that already have poor health status.
- Fears that the Precinct will result in significant increases in the cost of living in the Shire of Broome which already experiences a higher cost of living than Perth, including problems with accommodation affordability and availability.
- There were questions and speculations about how the Precinct might change the character, lifestyle and social cohesion of the Broome community which is valued by residents and tourists. Many of these concerns were associated with the Precinct's large construction workforce and fears this would exacerbate problems with anti-social behaviour and place further pressure on already stretched social services.
- There was scepticism regarding the ability of the West Kimberley, and the Kimberley region more generally, to realise the potential opportunities arising from the Precinct. The barriers to local Indigenous employment were highlighted as well as the need to assist the regional business community to compete for contracts to supply goods and services to the Precinct.
- Concerns that not all of the Recommendations of the ASIA had been accepted in the SAR.
- The need for more community engagement during all stages in the life cycle of the Precinct (see **Section 3.2 'Future Stakeholder Engagement'**).

As a guide to the themes raised by submissions, a synthesis of key issues and concerns raised with respect to direct social surrounds and socio-economic factors is presented in **Table 4.6 'Key Concerns Raised by Submissions - Social Factors'**. **Appendix A, Part 5** contains responses to all questions/issues raised by all submissions. The subsections below provide responses to the key concerns raised in the submissions.

Table 4.6 Key Concerns Raised by Submissions - Social Factors

| Factor | Summary of Key Concerns Raised by Submissions | Cross Reference |
|---|---|--------------------------------|
| Human Health | <ul style="list-style-type: none"> Human health risks and impacts. Impacts on health of Indigenous people. Emergency response capabilities of the Precinct. Potential for exacerbated health issues from construction workers. | Summary Report (Section 4.7.2) |
| Precinct Worker Behaviour | <ul style="list-style-type: none"> Behaviour of Precinct workers both on and off site. Fears that workers would exacerbate social problems. | Summary Report (Section 4.7.3) |
| Broome Community Services | <ul style="list-style-type: none"> Additional pressure on Broome's social services. Potential for community services in Broome to cope with additional pressure generated by the Precinct. | Summary Report (Section 4.7.4) |
| Community Identity and Tourism | <ul style="list-style-type: none"> Impact of BLNG Precinct on tourism in the Kimberley. Impact of BLNG Precinct on Broome's identity. | Summary Report (Section 4.7.5) |
| Cost of Living and Accommodation | <ul style="list-style-type: none"> Increase in cost of living for residents of Broome and the Dampier Peninsula including: <ul style="list-style-type: none"> higher house prices; higher rent costs; and higher food costs. Inability for local businesses to compete with wages at the Precinct. Fears of greater class disparity. | Summary Report (Section 4.7.6) |
| Education, Training and Employment | <ul style="list-style-type: none"> Potential for Kimberley Aboriginal people to gain employment, directly or indirectly, as a result of the Precinct. | Summary Report (Section 4.7.7) |
| Local Procurement | <ul style="list-style-type: none"> Potential for local businesses in Broome and Kimberley region to compete for contracts to supply goods and services to the BLNG Precinct projects. Broome businesses may not be competitive and therefore will not gain anything from the Precinct Project. | Summary Report (Section 4.7.8) |

4.7.1 Social Impact Management Compliance

Submissions that discussed social impacts were supportive of the State Government's decision to conduct a Social Impact Assessment (SIA) for the BLNG Precinct proposal, as well as the ASIA. However, many asked how compliance with impact management commitments could be assured for those social impacts not covered by WA's EP Act.

Under WA's EP Act, only those social impacts that are directly attributable to biophysical changes in the natural environment due to the proposed action are required to be investigated as part of an environmental impact assessment (EIA). Social impact issues covered by the EP Act deal mainly with public health (e.g. air and water quality) and amenity (e.g. noise, dust, visual) impacts, heritage issues and environment-based recreational uses.

For those social impact issues not covered by the EP Act, the Minister for State Development will be responsible for ensuring that commitments made with respect to the management of social impacts are met by the responsible State Government agencies and commercial proponents.

Under the Precinct's governance structure (See **Section 2.3 'Governance Issues'**), social and economic impacts will be monitored over the life cycle of the Precinct. The Precinct social impact monitoring program will include:

- establishment of baseline conditions and periodic collection of data on social and economic impact variables to assess change over time;
- arrangements for independent auditing;
- mechanisms to review and adapt mitigation and management if existing measures prove inadequate; and
- reporting of monitoring results to the Precinct's Governance committees and to the public.

While Shire of Broome services and infrastructure were not specifically identified as being a focal area (as reflected in **Part 5, Table 5.1**), the State will now include these in its monitoring activities.

| | |
|-----------|--|
| 14 | <i>New/Strengthened Commitment: Strategic Social Impact Management Plan</i> |
| | <i>The Proponent will ensure that Shire of Broome services and infrastructure are included in monitoring activities.</i> |
| | (Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details). |

4.7.2 Human Health

A significant number of submissions raised issues pertaining to human health risks and impacts. Concerns were raised regarding the health impact of the BLNG Precinct on Indigenous people, many of whom are already struggling with significant health issues. Other issues pertained to:

- baseline and ongoing human health monitoring;
- the impact on local health services if the Precinct generated additional demand for services;
- the emergency response capabilities of the BLNG Precinct and the impact on local emergency service providers; and
- the potential for BLNG construction workers to exacerbate health issues (e.g. drugs, alcohol, Sexually Transmitted Infections (**STIs**) for vulnerable local populations).

Commercial proponents will be required to demonstrate they have applied appropriate health assessment and response tools to manage any risks to human health associated with their project. Proponents will be required to demonstrate to the satisfaction of the DoH that risks to human health have been satisfactorily mitigated and appropriately managed over the project's life cycle.

| | |
|----|--|
| 15 | <p><i>New/Strengthened Commitment: Human Health</i></p> <p><i>Commercial proponents will be required to demonstrate to the satisfaction of the DoH they have applied appropriate health assessment and response tools to manage any risks to human health associated with their project.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|----|--|

In the SAR, the issue of human health impacts was addressed in relation to a range of environmental and social factors (SAR **Parts 3, 4 and 5**) rather than as a single impact factor. **Table 4.7 'Summary of Proposed Human Health Impact Management Measures'** summarises the proposed impact management measures for human health.

Table 4.7 Summary of Proposed Human Health Impact Management Measures

| Summary of Proposed Human Health Impact Management Measures | |
|---|---|
| Health Risk Issue | Management Measures |
| Emergencies | <ul style="list-style-type: none"> The BLNG Precinct Control Group, with advice from FESA, will implement an overarching Emergency Response Strategy that addresses: <ul style="list-style-type: none"> risk assessment of potential emergencies (including bushfires, introduction of foreign pests, flooding and spills); emergency response equipment and training; emergency response procedures; responsibilities during emergency response; and reporting, review and improvement as required. Commercial proponents will implement a Hydrocarbon and Chemical Spill Response Plan for construction and operation activities to the satisfaction of the WA Minister for Environment. Projects within the Precinct will likely be assessed as a Major Hazard Facility by the DMP safety division. |
| Precinct Worker Health and Safety | <ul style="list-style-type: none"> Commercial proponents will: <ul style="list-style-type: none"> conduct alcohol and drug testing of workers; and comply with all state and federal occupation health and safety regulations covering the oil and gas industry. Commercial proponents will prepare and implement construction camp management plans that will address among other matters strategies for: <ul style="list-style-type: none"> managing the consumption of alcohol in the camp; preventing the consumption of illicit drugs in the camp; and managing worker health issues. |
| Impact of Precinct Workforce on Local Health Conditions and Social Conditions | <ul style="list-style-type: none"> Commercial proponents will implement the following measures: <ul style="list-style-type: none"> entry into, and exit out of the construction camp will be restricted and managed; and all workers will need to comply with a Workforce Code of Behaviour. Commercial proponents will prepare and implement construction camp management plans that will address among other matters: <ul style="list-style-type: none"> a worker orientation process that includes provision of information on health and safety issues external to the Precinct; and a primary health clinic in the campsite. |
| Increased Pressure on Local Health Services | <ul style="list-style-type: none"> Commercial proponents will implement a Precinct Health, Emergency and Security Management Plan to ensure appropriate primary health care, emergency, security |

| Summary of Proposed Human Health Impact Management Measures | |
|---|--|
| Health Risk Issue | Management Measures |
| | <p>and police services are provided to the Precinct and construction camp without detracting from service provision to Broome.</p> <ul style="list-style-type: none"> DSD, in consultation with service delivery agencies, will prepare and implement the Broome Community Services Strategy which will include a further analysis of existing health service capacity, deficits and future needs. |
| Exposure to Gaseous Emissions and Particulates (Dust) | <ul style="list-style-type: none"> DSD, through the BLNG Precinct Control Group, will ensure that the planning and layout of the BLNG Precinct and buffer zones complies with State Planning Policy (Industrial Buffer Policy) and EPA requirements (Guidance Statement No. 3). Precinct Control Group will prepare and implement an Air Quality Management Strategy. Commercial proponents will implement an Air Quality Management Plan including: <ul style="list-style-type: none"> compliance within the buffer zones determined by the State Government; compliance with ambient NEPM standards; an emissions monitoring programme; participation in an ambient air monitoring program with other proponents of derived proposals; and annual and public reporting obligations. DSD will ensure that the Precinct meets the national environment protection goals of approved NEPM and other established environmental quality criteria. Commercial proponents will comply with the DEC Guideline for the Development and Implementation of a Dust Management Program (Draft, 2008). The State Government will implement a Fire Management Strategy for the Dampier Peninsula. |
| Surface Water Contamination | <ul style="list-style-type: none"> Commercial proponents will be required to prepare a Construction Environmental Management Plan, to the satisfaction of the WA Minister for Environment, which will include water quality control measures. |
| Groundwater Contamination | <ul style="list-style-type: none"> Commercial proponents will implement a Groundwater Abstraction Management Plan in consultation with the WA Department of Water. The Plan will include a groundwater monitoring program. |
| Waste Disposal | <ul style="list-style-type: none"> Commercial proponents will implement a Waste Management Plan which will address the disposal or treatment measures for various waste streams associated with BLNG Precinct activities. |
| Vehicle Movements | <ul style="list-style-type: none"> Commercial proponents will prepare and implement a Transport Management Plan. |
| Post-closure Legacy Issues | <ul style="list-style-type: none"> PCG - Preliminary Closure and Decommissioning Strategy At least five years prior to the planned date of closure, commercial proponents will be required to submit a Final Closure Plan to the DEC. The Plan shall address: <ul style="list-style-type: none"> detailed measures to be implemented for final closure; the schedule and timing of final closure activities; completion criteria for closure; and closure monitoring requirements. |

| Summary of Proposed Human Health Impact Management Measures | |
|--|--|
| Health Risk Issue | Management Measures |
| Contamination of or Reduction in Marine Species Consumed by Local People (e.g. Wild Resources) or Recreational Fishers | <ul style="list-style-type: none"> Commercial proponents will implement a Marine Wastewater Discharge Management Plan to the satisfaction of the WA Minister for Environment. The objective of the plan is to ensure that the discharge of wastewater is managed to achieve the ANZECC/ARMCANZ guidelines outside agreed mixing zones. Prior to commencement of dredging, commercial proponents will implement a Dredging and Dredge Spoil Disposal Management Plan, to the satisfaction of the WA Minister for Environment. The Broome Port Authority, as the proposed statutory Port Authority for the BLNG Precinct, will prepare a BLNG Port Environmental Management Strategy for the port area in consultation with DEC and other relevant agencies, which will include: <ul style="list-style-type: none"> collation of adequate environmental baseline data for marine mammals, turtles, water quality and benthic habitat health within the port generally; an ecological and water quality monitoring program within the port boundaries and appropriate reference areas; identification of key environmental values and development of water quality objectives and criteria for waters within the Port; and auditing of operational marine facilities and construction activities to assess compliance of proponents against the performance requirements of the Broome Port Environmental Management Plan. Commercial proponents will implement an Invasive Marine Species Management Plan, to the satisfaction of the WA Minister for Environment, to minimise the risk of introducing invasive marine species. Commercial proponents will implement a Port Facilities Construction Environmental Management Plan, to the satisfaction of the WA Minister for Environment. Commercial proponents will implement a Vessel Management Plan. |

4.7.3 Precinct Worker Behaviour

Numerous submissions raised concerns about the behaviour of Precinct worker both on and off site. This included fears that the workers, especially the large FIFO construction workforce, would exacerbate social problems in Broome and the Dampier Peninsula including issues pertaining to drugs, alcohol, STIs, cultural insensitivities, and uncontrolled access to areas of significance to Indigenous people on the Dampier Peninsula.

The following management measures will be required of all LNG proponents to minimise the potential for any problems with the behaviour of Precinct workers:

- The FIFO construction workforce will be accommodated in a managed access camp to be established near the Precinct.
- Commercial proponents will be required to establish Worker Behavioural Management plans that include:
 - Worker orientation processes including provision of information on health and safety issues internal and external to the Precinct.
 - A **Worker Code of Behaviour** which addresses policies and procedures regarding:
 - alcohol and drug use and testing;
 - respectful living onsite including issues of diversity (race and gender);
 - behaviour while in transit to the Precinct (e.g. on flights);
 - worker access to community facilities (e.g. recreation and tourism activities) when on rostered days off;
 - measures to manage worker visibility when not at the Precinct;
 - measures to prevent damage to wild resources; and
 - monitoring of worker behaviour, reporting and penalties for not conforming to the Code of Behaviour.
- Implementation of a **Cultural Awareness Training Program**.

The provision of the Cultural Awareness Training Program will be required of all Site Managers (i.e. LNG proponents, the Broome Port Authority, LandCorp and Main Roads WA). As described in the BLNG Project Agreement, Site Managers will be required to engage one or more Indigenous businesses to work with the Site Manager to develop and procure the delivery of a cultural awareness training course. Among its objectives are the following:

- to familiarise Precinct-related staff (i.e. any personnel, contractor, sub-contractor, tenant, subtenant or other invitees on the area of the LNG Precinct by the State, Port Authority, LandCorp or a Proponent) with Aboriginal traditions and culture in relation to the region in general and the BLNG Precinct specifically;
- to promote a knowledge and understanding of and respect for Aboriginal tradition and culture; and
- to foster good relationships between Aboriginal and non-Aboriginal persons.

Each of the Foundation Proponent or commercial proponents will also provide cultural awareness training for Aboriginal personnel to familiarise them with the Precinct work culture and expectations.

4.7.4 Broome Community Services

Numerous submissions commented that many of the community services based in Broome are already struggling and questioned whether they could cope with additional pressure generated by the Precinct.

The SIA confirmed that many community services in Broome were then at or exceeding their delivery-capacity. The impact of even small increases in demand can be amplified if a services system is already under pressure, as is the case with Broome. The combination of the significant natural population growth projected for Broome and the BLNG Precinct proposal provides an opportunity and impetus for Government to focus on the significant community service needs of Broome and the areas it services. This includes correcting existing deficits and putting management plans in place to allow adequate capacity to be made available to properly service Broome and surrounding areas into the future.

The Broome Community Services Strategy will be an across government initiative to address the community services deficits in Broome. The objective will be to increase the current capacity of social and community services and ensure there is a plan to provide additional capacity to meet any demand arising from the effects of the projected natural population growth and the operations phase of the BLNG Precinct.

The Strategy will map existing services (State Local, Commonwealth and NGOs), identify gaps or serious deficits and will engage with service providers and the community to identify priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need. Closing the gap in terms of the existing level of community services is an essential element in ensuring that the Broome community will benefit from the proposed BLNG Precinct.

In addition, prior to construction, commercial proponents (e.g. Woodside) will be required to prepare management plans to demonstrate how they will meet the primary health care and emergency services needs of the construction workforce without placing any further pressure on the relevant regional services.

4.7.5 Community Identity and Tourism

The potential impact of the BLNG Precinct on tourism in the Kimberley and Broome's identity was a dominant theme in the submissions. Concerns were expressed that the BLNG Precinct, especially during the construction phase, will turn one of the State's iconic tourist towns into a 'mining town' with related behavioural issues, and result in the loss of Broome's distinctive community identity and lifestyle.

Tourism

It is the State Government's view that the Precinct can satisfactorily co-exist with the tourism industry in Broome and the Kimberley. The following management measures will be implemented:

- Tourism WA will have lead responsibility for developing a Tourism and Destination Marketing Strategy with the objectives to:
 - retain Broome's image as a tourist destination; and
 - retain Broome's character and sense of place which is valued by residents and visitors.
- The State Government will prepare the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan). This planning strategy will identify issues, gaps and challenges in delivering best practice planning outcomes for social and economic development on the Peninsula. This will include potential visitor impacts on environmental and cultural assets, including registered and unregistered rock art. The Strategy will be prepared in consultation with Traditional Owners, stakeholders with a direct interest on the Peninsula and government agencies delivering services to the people of and visitors to the Peninsula.

Management measures to avoid increasing the demand on Broome tourism accommodation and to provide temporary accommodation for BLNG Precinct staff (see **Section 4.7.6 'Cost of Living and Accommodation'**) are:

- establishment of a FIFO construction camp near the Precinct; and
- Woodside's approved plans to develop a Temporary Workers Accommodation Camp near Broome.

The Precinct is also expected to deliver a number of positive benefits to the tourism industry, which may include:

- more frequent and cheaper air services;
- new investment in facilities and services;
- diversity for the highly seasonal and trade exposed tourism sector; and
- future opportunities for small businesses to provide tourism services to workers and their families.

Woodside's project-level SIA will include further investigations of the potential impacts of their project on the tourism sector.

Community Identity

The character or identity of the Broome community reflects the lifestyle its residents enjoy and is a significant part of its appeal to tourists. Concerns were raised that the introduction of a large construction workforce could increase anti-social behaviour in Broome and on the Dampier Peninsula and change the character of the town.

Independent of the BLNG Precinct, Broome's population is projected to increase from 17,100 people in 2011 to 31,400 people by 2041. This means that, regardless of whether or not the BLNG Precinct proceeds, the Town of Broome will experience some change in character as it grows to accommodate the projected population growth. As with any town that undergoes significant population growth there will be some change in the community character although its essence (i.e. laidback Broome feel) may not necessarily change dramatically.

In addition to the Broome Tourism and Destination Marketing Strategy ('**Annexure 4 - Management Strategies**'), the following measures will minimise the potential for impacts on community identity:

- The largely FIFO construction workforce will be accommodated in a managed-access construction camp to be established near the Precinct.
- Commercial proponents will be required to implement measures to manage interaction between the construction workforce and Broome and Dampier Peninsula communities when they are not at work.
- As an input to the Dampier Peninsula Planning Strategy, the Traditional Owners, Shire of Broome and those with a direct interest in the development of the LNG Precinct, will identify construction workforce recreation and tourism access issues in the vicinity of the Precinct.
- Site managers will collaborate with GJJ Native Title Claim Group to provide cross-cultural training to all workers at the Precinct.
- Commercial proponents will be required to develop strategies to discourage opportunistic workers and their families from coming to Broome in hopes of obtaining work.

4.7.6 Cost of Living and Accommodation

A number of submissions expressed concern that the BLNG Precinct will increase the already high cost of living experienced by residents of Broome and the Dampier Peninsula. The most frequently identified concerns were higher house prices and rents, higher food costs, and an inability for local businesses (especially the tourism sector) to compete with the wages on offer at the Precinct. Many drew analogues with experience in the Pilbara towns of Karratha or Port Hedland and raised fears of greater class disparity and a community of "haves" and the "have nots".

As discussed in the SAR, the cost of living in the Kimberley region is high. Prices in the Kimberley are around 17% higher than in Perth, which is indicative of existing supply constraints. Marginal changes in demand can have significant price impacts in a supply constrained environment.

Because the Kimberley has a relatively small consumer market supply, constraints could occur making the Kimberley susceptible to inflationary pressure flowing from development of the Precinct. From a cumulative impact perspective, if additional resource projects proposed in the Kimberley were to proceed, this could exacerbate local inflation and supply constraints by further increasing demand for local goods.

The following management approaches will be employed to minimise the potential for rises in the cost of living in Broome and the West Kimberley.

Permanent Housing

Due to its remoteness and housing demand out pacing supply, Broome has experienced escalating rents and housing prices. This has made Broome increasingly unaffordable for those in the community earning modest wages. It has also contributed to the homelessness problem in Broome.

The recent release of residential land at Broome North by LandCorp is an example of the State's desire to alleviate any future land and rent costs associated with natural population growth in Broome. Broome North is expected to provide sufficient capacity to address current and future housing demand – including any Precinct related housing

requirements. LandCorp will develop an overall land and housing management strategy to ensure the timely delivery of appropriate land and housing requirements for Broome in order to meet projected population increases, including those associated with Precinct requirements.

Indigenous Housing

Indigenous Housing Fund

The State will pay \$20 million to the GJJ Native Title Party to create the Indigenous Housing Fund. The purpose of the Indigenous Housing Fund is to:

- assist members of the GJJ Native Title Claim Group to enter into home ownership and participate in Indigenous housing development projects in the Kimberley;
- increase the number of members of the GJJ Native Title Claim Group entering into home ownership and residing in secure, safe, suitable and sustainable accommodation in the Kimberley; and
- assist the members of the GJJ Native Title Claim Group to generate wealth and address disadvantage and poverty through investment and building asset ownership.

As described in the BLNG Precinct Project Agreement, the State will provide to the GJJ Native Title Party an allocation of GJJ Native Title Party Housing Land in the Broome North Development by LandCorp. This will occur in three stages with an indicative timetable of 2012 – 2015. This will include 25 serviced residential lots, six house and land packages, and 15ha of Englobo developable land.

Regional Indigenous Housing Fund

For the period of 25 years from the Secured Foundation Proponent Date, the State will pay \$30 million for the Regional Indigenous Housing Fund following the instalment schedule in the Regional Benefits Agreement (**RBA**). The purpose of the Fund is to:

- assist Regional Beneficiaries to enter into home ownership and participate in Indigenous housing development projects in the Kimberley;
- increase the number of Regional Beneficiaries residing in secure, safe, suitable and sustainable accommodation in the Kimberley; and
- assist Regional Beneficiaries to generate wealth and address disadvantage and poverty through investment and building asset ownership.

Temporary Accommodation

The following measures will prevent further availability and price pressures on temporary accommodation in Broome:

- The establishment of a managed access camp near the Precinct to house the mainly FIFO construction workforce. Woodside has Shire approval (April 2011) to construct Temporary Offsite Workers Accommodation near Broome.

Monitoring of Community Infrastructure Needs

The BLNG Precinct Control Group will maintain a watching brief regarding the need for new or upgraded community infrastructure to meet any additional demand generated by the Precinct. They will work with the Shire to ensure that needed community infrastructure is provided in a timely manner.

See also **Section 4.7.7 'Education, Training and Employment'** and **Section 4.7.8 'Local Procurement'**.

4.7.7 Education, Training and Employment

While the need for greater Indigenous participation in the labour force was identified in many submissions, there was also scepticism that the proposed management strategies will result in Kimberley Aboriginal people gaining employment, directly or indirectly, as a result of the Precinct.

The State Government acknowledges the existence of significant socio-economic barriers that need to be addressed for local Aboriginal people to be able to access the direct and indirect employment opportunities arising from development of the BLNG Precinct. The local education, training and employment strategies described below will need to start well in advance of Precinct establishment and be well co-ordinated to ensure a match between the skills required, the capacity of the training providers and the existing level of the potential trainees. If these barriers are addressed, the development of the Precinct represents considerable opportunities for local Indigenous employment.

Education and Training

This strategy will seek to maximise education, training and employment opportunities for the local community and ensure a co-ordinated approach to the range of education, training and employment strategies implemented to support the development of the BLNG Precinct.

The strategy will link to existing programs to assist Indigenous people to overcome employment barriers. Through the National Partnerships process education, employment and training projects are being developed in an integrated “whole of life cycle” framework. Trade training projects are being developed to ensure a dovetail approach between school-based trades or vocational training and industry training. These projects are funded, in development or under discussion between the KLC, Department of Education Employment and Workplace Relations (**DEEWR**), DSD, Department of Indigenous Affairs (**DIA**), other Australian and Western Australian Government and other partners.

The WA Department of Training and Workforce Development’s (**DTWD**) newly established Aboriginal Workforce Development Centre in Broome will aid in maximising the training and employment opportunities for the local community and ensuring a co-ordinated approach to service delivery.

Training Facility

A feasibility study for a trade training centre in the West Kimberley was completed in December 2010. The feasibility study working group consisted of representatives from DTWD, KLC, Woodside Energy Ltd, DEEWR, DIA and DSD.

The study highlighted the importance of ensuring that people are appropriately trained and that this training is linked to employment opportunities in the region. The study also identified that there are significant gaps in capacity and capability to deliver training and provide pathways to employment in the West Kimberley. In addition, the study found that a more co-ordinated approach to education, employment and training opportunities in the Kimberley and a more co-ordinated and streamlined approach to the delivery of training, employment and support services for Indigenous people is required.

The aim of a Trade Training Centre is primarily to ensure that local Indigenous people, and others living in the Kimberley, have the opportunity to develop the skills and competencies that will lead to long term employment resulting from the development of the region.

While the establishment of a regional Trades Training Centre will be considered to assist in removing the barriers to long-term employment for Indigenous people and provide employers with an appropriately skilled local labour force, there may be other mechanisms that could achieve similar outcomes.

Indigenous Workforce Development Strategy

Under the BLNG Project Agreement, the State will require that LandCorp, the Broome Port Authority and other State and Commonwealth Government entities with a significant role in the Precinct prepare an Indigenous Participation Plan in relation to their LNG Precinct-related operations. An Indigenous Participation Plan must

contain components or initiatives for achieving an effective Indigenous workforce strategy, including a high level outline of a workforce strategy for the West Kimberley region. It will also include procedures for engagement with Job Services Australia providers located in the Kimberley; and include implementation procedures. In preparing their Indigenous Participation Plan, each Government Entity will consult with the GJJ Native Title Claim Group.

Additionally, each commercial proponent will be required to prepare and implement an Indigenous Workforce Development Strategy. These strategies will include:

- strategies to maximise training and employment of West Kimberley people on their project;
- local employment and training (e.g. apprenticeships) targets for their project;
- specific strategies to maximise training and employment of Kimberley Indigenous people; and
- working with the State and Commonwealth to integrate education, training and employment initiatives (above).

The strategies will also provide opportunities for Indigenous people to work on cultural and environmental values relevant to Precinct operation; and develop workforce arrangements that include support for Indigenous workers.

Also see related **Section 4.7.8 'Local Procurement'**.

Training Commitments

In addition, the Foundation Proponent will provide training opportunities to the value of \$1,300,000 per year to members of the GJJ Native Title Claim Group and other Kimberley Indigenous People through the following initiatives:

| Commencement of Phase | Training Initiatives |
|---------------------------------------|--|
| Commencement Date | Work ready training for construction related activity |
| Project FID | Training for preparation for operations phase |
| Commencement of Commercial Production | Ongoing operations training and training of new starters |

In relation to each of the first three LNG Trains comprised in the Additional Proponent Project, the Additional Proponent will be required to agree to develop and implement training programs, or otherwise fund members of the GJJ Native Title Claim Group to attend existing training programs or other tertiary education, at a cost of \$450,000 annually.

Indigenous Employment Targets

Each Government Entity will aim to achieve the following targets for employment of Kimberley Indigenous People in connection with their LNG Precinct related operations:

- A target that 20% of the Government Entity's LNG Precinct related operations workforce will be Indigenous by the end of the first five years of operations.
- A long term target that the percentage of Kimberley Indigenous People employed by Government Agencies in connection with their LNG Precinct related operations reflects Indigenous representation in the West Kimberley community, and is otherwise not less than 40% of the Government Entity's LNG Precinct related operations workforce.

Each Government Entity (LandCorp, Broome Port Authority and others as notified by the State to the Native Title Party) will report progress against all targets: (a) quarterly to the Precinct Management Committee; and (b) publicly on an annual basis.

As described in the BLNG Precinct Project Agreement, the Foundation Proponent will aim to achieve the following targets for employment of Indigenous people on the Foundation Proponent Project:

- a target of 300 Indigenous persons employed or engaged during the construction phase; and
- a target that 15% of the LNG Precinct-based operations workforce will be Indigenous by the end of the first five years of operations.

The Foundation Proponent will report progress against all targets quarterly to the Precinct Management Committee; and publicly in the Foundation Proponent's annual sustainability report. The targets may be satisfied by the Foundation Proponent directly, or via the Foundation Proponent's contractors and subcontractors.

4.7.8 Local Procurement

Numerous submissions asked how businesses in Broome and other parts of the Kimberley would be able to compete for contracts to supply goods and services to projects located at the BLNG Precinct. There were concerns that local businesses would not be competitive and thus not benefit from the BLNG Precinct.

The following describes the key management measures to maximise the opportunities for Western Australian businesses to participate in providing goods and services to projects based at the BLNG Precinct.

The State Government recognises the opportunity that the Browse LNG project presents for local industry, and in particular the Kimberley region, in terms of jobs creation, enhanced business capability, training opportunities, new skills and industry development.

Industry Participation Plan

Through the State's Building Local Industry Policy (**BLIP**), the State Government will enter into dialogue with the Foundation Proponent and future commercial proponents to ensure that local industry is provided full, fair and reasonable opportunity to bid for project work and that the benefits flowing to the WA economy from the project are maximised.

The project will be required to prepare a comprehensive industry participation plan, which will be a clear statement of how the Foundation Proponent and future commercial proponents propose to engage with local industry, together with measurable outcomes. The Foundation Proponent and future commercial proponents will also be encouraged to utilise the services of Industry Capability Network Western Australia (**ICNWA**) and Project Connect to seek out appropriate and competitive local suppliers.

The State Government, as part of a strategic local content initiative for Browse, is establishing a Browse Local Content Steering Committee, which will comprise representatives from the Foundation Proponent and future commercial proponents, industry and government. The Committee will: seek to identify, at an early stage, opportunities for local suppliers in the Project; examine regional initiatives; identify and address gaps in local industry capability and competitiveness; and identify and seek to address potentially contentious issues.

Additionally, the State Government will encourage and support the local procurement of supplies and services for the Browse LNG Precinct through the *West Kimberley Industry Participation Initiative*. The primary focus of this initiative will be the Shires of Broome and Derby/West Kimberley and secondly, the Kimberley as a whole. This initiative will be led by the Local Content Unit of the Department of Commerce and will amongst other initiatives:

- develop and implement measures to increase the capability and competitiveness of Kimberley based suppliers;
- run local forums to connect suppliers with the project;
- identify synergies and potential opportunities for Kimberley based suppliers outside of the Region; and
- identify opportunities for Indigenous engagement.

Although the focus of the West Kimberley Industry Participation Initiative will be primarily related to the establishment and development of the Precinct, there is likely to be some synergy between this initiative and the work of the Browse Local Content Steering Committee.

16 New/Strengthened Commitment: Local Procurement

The Proponent will develop a Local Procurement Strategy to ensure the encouragement and support for local procurement of supplies and services.

(Refer to **Section 6 'Proposed Changes to Commitments in the SAR'** for further details).

Indigenous Business and Contracting

State Commitment (BLNG Precinct Project Agreement Schedule 14, pg 84)

Each Government Entity (i.e. Port Authority, LandCorp and other government agencies) will endeavour to provide contracting opportunities in relation to their BLNG Precinct-related activities for suitably qualified Indigenous Businesses or businesses or Joint Ventures with Indigenous participation.

Notices of contracts for tender, as agreed between the Government Entity and the GJJ Native Title Party under Indigenous Participation Plans, will be provided to Indigenous Businesses.

Each Government Entity will include provisions in relevant contracts requiring contractors and sub-contractors to promote the inclusion of Indigenous Businesses in the carrying out of those contracts.

Foundation Proponent Commitment (BLNG Precinct Project Agreement Schedule 13; Schedule 5)

During the Foundation Proponent Project construction phase, and prior to Commencement of Commercial Production, the Foundation Proponent will ensure that one of the conditions of the award of the construction contract for operations phase accommodation, will be to require the successful contractor to engage in a joint venture, or other similar arrangement, with a suitably qualified entity that has 100% ownership by members of the GJJ Native Title Claim Group.

The Foundation Proponent will provide guaranteed contracting opportunities to GJJ businesses.

As defined in Schedule 5, the Foundation Proponent has agreed to fund a Business Development Organisation to provide the required assistance to members of the GJJ Native Title Claim Group and other Indigenous people with respect to: capacity building; starting up and running businesses; applying for loans; increasing capability in tendering for contracts and other business development initiatives; and taking advantage of employment and contracting opportunities connected with the BLNG Precinct.

Additional Proponents

Each Additional Proponent will:

- develop and implement a business development and contracting management schedule to provide business development and contracting opportunities to members of the GJJ Native Title Claim Group;
- develop and implement an employment and training management schedule with the Administrative Body; and
- provide funding to a Business Development Organisation to provide business development capacity building for members of the GJJ Native Claim Group and other Indigenous people as follows:
 - in relation to each of the first three LNG Trains in the Additional Proponent Project, \$135,000 annually; and
 - in addition, in relation to each of the first three LNG Trains in the Additional Proponent Project, a further 10 annual payments of \$335,000 in the first 10 years of the Additional Proponent's Project.

Detail relating to Indigenous business and contracting opportunities will be more fully developed by relevant Government entities as part of their Indigenous Participation Plans [refer also to Proponent Commitment No.6 in **Section 2.5 'Land Access and Informed Consent'**].

In relation to each of the first three LNG Trains in the Additional Proponent Project, the Additional Proponent will provide guaranteed contracting opportunities with a value of \$1,700,000 annually with the Additional Proponent, its contractors and sub-contractors, for suitably qualified Indigenous Businesses.

4.7.9 ASIA Recommendations

A number of submissions contained criticisms that the SAR had failed to either adopt the recommendations of the Aboriginal Social Impact Assessment (**ASIA**) or had not made clear which recommendations had been adopted.

The ASIA was released in September 2010 and contained 75 recommendations. Subsequently, the State Government completed negotiations with the GJJ Native Title Claim Group regarding the BLNG Precinct Project Agreement (**PA**) and the Regional Benefits Agreement (**RBA**).

Many of the recommendations made in the ASIA are with respect to improving existing issues of social and economic disadvantage experienced by Indigenous people in the West Kimberley. The State Government recognises that the BLNG Precinct has the potential to generate a range of new opportunities for Indigenous people in the region, but also to increase pressures on Indigenous communities.

The State is committed to managing those social impacts generated by the Precinct in order to realise positive impacts and minimise negative impacts. This document clarifies the State's approach to managing these potential impacts (e.g. management plans, SIA Guidance to Precinct LNG proponents, social monitoring, and Precinct governance arrangements).

In the West Kimberley, there are a range of factors influencing the social and economic conditions of Indigenous communities. Among these are major Commonwealth funding programs to close the gap in Indigenous disadvantage, significant population growth in Broome, and a range of resource development projects including the BLNG Precinct. External to the BLNG Precinct proposal, there is a broad range of parties (Indigenous bodies, the Commonwealth, State Government agencies, local governments, NGOs and the resource development sector) associated with attempts to resolve issues of Indigenous disadvantage in the West Kimberley.

However, there is no mechanism that looks at the cumulative impact of these efforts. The establishment of such a holistic approach would allow the effectiveness of these efforts to be monitored, evaluated and where needed modified to produce more effective outcomes. The Department of State Development supports a holistic approach where practicable, and is holding discussions with the KLC and the Commonwealth about an appropriate impacts management mechanism, including resourcing requirements, to allow a cumulative impact approach to monitoring social and economic impacts on Indigenous people in the West Kimberley.

'**Annexure 7 - ASIA Recommendations**', describes how the ASIA recommendations are reflected in the BLNG Precinct management measures. Many of these are part of the BLNG Precinct Project Agreement and the Regional Benefits Agreement while some are drawn from the SAR.

4.8 Heritage Factors

As a guide to the themes raised by submissions, a synthesis of key issues and concerns raised with respect to heritage factors is presented in **Table 4.8 'Key Concerns Raised by Submissions - Heritage Factors'**.

Some additional information and explanation is provided to address several heritage issues raised in the public comment period for the SAR. The additional information relates to the SAR Terms of Reference with respect to heritage management, and includes:

- Additional information on the role of Commonwealth and State heritage legislation in Aboriginal heritage conservation and management, particularly in relation to definitions of heritage, and relevant heritage assessment, management, and protection provisions. This includes reference to potential national heritage values as described in the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (**Section 4.8.1 'Legislative Framework'**).
- Dinosaur footprints and trackways and their potential heritage significance (**Section 4.8.2 'Dinosaur Footprints'**).
- National Heritage Listing (**Section 4.8.3 'National Heritage Listing'**).
- Aboriginal heritage issues including: traditional hunting and resource use in the area, and continuing access for Traditional Owners; and additional information on the “intangible” aspects of cultural heritage, including reference to publicly available information on the Lurujarri Trail and song-lines relating to the west coast of the Dampier Peninsula (**Section 4.8.4 'Aboriginal Heritage'**).
- Cultural Heritage Management Plan Framework (**Section 4.8.5 'Cultural Heritage Management'**).

Table 4.8 Key Concerns Raised by Submissions - Heritage Factors

| Factor | Summary of Key Concerns Raised by Submissions | Cross Reference |
|----------------------------------|---|--------------------------------|
| Legislative Framework | <ul style="list-style-type: none">• Legislative framework to appropriately manage indigenous heritage. | Summary Report (Section 4.8.1) |
| Dinosaur Footprints | <ul style="list-style-type: none">• Presence of Dinosaur Footprints and impact of development.• Inadequate identification of dinosaur footprints and trackways.• Significant occurrences may be threatened by the development. | Summary Report (Section 4.8.2) |
| National Heritage Listing | <ul style="list-style-type: none">• National Heritage Listing status and concern that it is not being taken into account.• National Heritage values assessment has mistakenly not included James Price Point or the Dampier Peninsula.• Final determination of values might occur too late for consideration in BLNG Precinct development assessment. | Summary Report (Section 4.8.3) |
| Aboriginal Heritage | <ul style="list-style-type: none">• Aboriginal heritage at the Precinct site and potential impact to specific sites and broader cultural attachment.• Impact of development on Indigenous songlines and other spiritual connections with the country.• Impact on traditional hunting and gathering. | Summary Report (Section 4.8.4) |

4.8.1 Legislative Framework

Assessment of Aboriginal Heritage factors for the BLNG Precinct Strategic Assessment is defined by legislation at both Commonwealth and State level, which in turn informs the Terms of Reference for the Strategic Assessment.

There are two primary Commonwealth Acts to be considered, the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (ATSIHP Act)*; and the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. In addition, the *Native Title Act 1993* identifies Aboriginal native title holders and native title claim groups who may hold native title rights and interests in relation to the project areas.

At the State level, the Western Australian *Aboriginal Heritage Act 1972 (AH Act)* and the *Environmental Protection Act 1986 (EP Act)* provide the relevant heritage legislation framework for the assessment.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth) (ATSIHP Act)

Some categories of Aboriginal Heritage Sites can be provided protection through the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (ATSIHP Act)*, which is intended for assisting with the preservation and protection of places, areas and objects of particular significance to Indigenous Australians (SEWPAC 2010: 3). The stated purpose of the ATSIHP Act is the '*preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition*' (Section 4).

The ATSIHP Act was introduced to enable the Commonwealth to protect significant Aboriginal areas and sites when State or Territory legislation does not provide effective protection. From a policy perspective, the Australian Government's view is that Australia's state and territory governments have the primary responsibility for laws to protect these areas and objects. When the ATSIHP Act was introduced, it was intended that Commonwealth declarations would be made as a last resort in cases when state or territory laws do not provide effective protection (SEWPAC 2010: 3).

Aboriginal heritage sites in Western Australia are protected by State legislation (**Part 5, Section 3.3**), where those sites or places meet the criteria in Section 5 of the AH Act.

The Commonwealth Minister can only take action following receipt of an application by or on behalf of Aboriginal or Torres Strait Islander people to protect a specified area from injury or desecration. The application can be made orally or in writing and does not have to adhere to any particular prescribed formalities. Significant Aboriginal areas that are under threat of injury or desecration may be protected if the Minister makes a declaration to that effect. These declarations can be made on either an emergency, interim or permanent basis. A declaration will contain provisions for and in relation to the protection and preservation of the area from injury or desecration and it is an offence to contravene the terms of a declaration.

Before making a declaration under the ATSIHP Act, the Minister must be satisfied that the area or object is: (a) of particular significance to Indigenous Australians in accordance with their traditions; and (b) under a threat of injury or desecration. A declaration of the Minister can only be overturned by the Minister or Parliament in accordance with the ATSIHP Act.

In the ATSIHP Act, it is the cultural tradition about an area or object that explains to the Minister why it is of particular significance to Aboriginal people and why it needs to be protected from the activity that poses the threat of injury or desecration. The meanings of 'significant Aboriginal area' or 'significant Aboriginal object' and 'threat of injury or desecration' depend upon the meaning of 'Aboriginal tradition' (SEWPAC 2010: 7). These terms have specific meanings in the ATSIHP Act.

A *significant Aboriginal area* is 'an area of land in Australia or in or beneath Australian waters; an area of water in Australia; or an area of Australian waters, which is of particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 3). The term 'Area' includes a site (Section 3).

A *significant Aboriginal object* is 'an object (including Aboriginal remains) of particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 3). *Aboriginal remains* means 'the whole or part of the bodily remains of an Aboriginal, but does not include:

- a. *a body or the remains of a body that is:*
- i. *buried in accordance with the law of a State or Territory; or*
 - ii. *buried in land that is, in accordance with Aboriginal tradition, used or recognised as a burial ground;*
- b. *an object made from human hair or from any other bodily material that is not readily recognisable as being bodily material; or*
- c. *a body or the remains of a body dealt with or to be dealt with in accordance with a law of a State or Territory relating to medical treatment or postmortem examinations. (Section 3)'.*

Aboriginal tradition means 'the body of traditions, observances, customs and beliefs of Aborigines generally or of a particular community or group of Aborigines, and includes such traditions observances customs or beliefs relating to persons, areas, objects or relationships' (Section 3).

There are four different kinds of declaration which can be made for site protection under the ATSIHP Act. The Minister may make an emergency declaration to protect an area from a serious and immediate threat of injury or desecration for 30 days, which may be extended for a further 30 days (Section 9). The Minister may make a declaration to protect an area for any period, or indefinitely (Section 10). An emergency declaration under Section 9 may be used to provide interim protection while the Minister considers an application for long-term protection under Section 10. An object or a class of objects may be protected through a declaration under Section 12. An authorised officer may make an emergency declaration to protect an area, object or class of objects from injury or desecration for up to 48 hours under Section 18 of the ATSIHP Act.

A Commonwealth review of the ATSIHP Act commenced with the release of a discussion paper, and a call for submissions in August 2009, followed by regional information sessions and discussions at other forums. The review is still ongoing.

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (EPBC Act)

The *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* is the principal Commonwealth legislation for providing comprehensive protection for Indigenous heritage places. The EPBC Act establishes the National Heritage List, which includes natural, Indigenous and historic places that are of outstanding heritage value to the nation. The Act also establishes the Commonwealth Heritage List, which comprises natural, Indigenous and historic places on Commonwealth lands and waters or under Australian Government control, and identified by the Minister for Sustainability, Environment, Water, Population and Communities (**the Minister**) as having Commonwealth Heritage values.

The EPBC Act enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation. The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance. Since 2003, the EPBC Act has protected places that are in the National Heritage List and the Commonwealth Heritage List. These include places that have Indigenous heritage values, including some traditional areas.

Under the terms of the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Minister. The Minister decides whether assessment and approval is required under the EPBC Act.

In February 2008 the State government and the Commonwealth government agreed to undertake a formal assessment of the National Heritage values of the West Kimberley in accordance with the requirements of the EPBC Act. The assessment was undertaken by the Australian Heritage Council (**AHC**) in parallel to the strategic assessment of the Precinct Plan.

The AHC has been established as the Australian Government's expert advisory body on heritage matters. It includes Indigenous experts, who must be Indigenous people with appropriate heritage experience or expertise, at least one of whom represents the interests of Indigenous people on the Council.

The National Heritage assessment of the West Kimberley includes an assessment of the Indigenous heritage values of the area to determine whether they have National Heritage significance. The **indigenous heritage value** of a place means a heritage value of the place that is of significance to Indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history (EPBC Act Section 528).

The James Price Point area was within the boundaries of the West Kimberley area originally nominated for National Heritage assessment. In March 2010 the AHC completed its preliminary National Heritage assessment of the area which found that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the high threshold required for National Heritage listing. Subsequently, in its final report to the Minister for the Environment, the AHC included the coastal Broome Sandstone formation of the Dampier Peninsula for its values associated with dinosaur footprints and trackways. Although further information is not yet available, these fossil features may have Indigenous heritage values. Further discussion is provided in **Section 4.8.3 'National Heritage Listing'**. Cultural heritage surveys which include anthropological consultation with Traditional Owners are being undertaken by the KLC and Traditional Owners in conjunction with Woodside, as prescribed by the Heritage Protection Agreement (**HPA**), which will record heritage values in relation to the BLNG Precinct area.

This *Response to Submissions* document addresses the potential impacts of the BLNG Precinct on Indigenous heritage values, in accordance with the Terms of Reference. Analysis of whether the Indigenous heritage values have National Heritage significance is beyond the scope of this report.

The EPBC Act requires the AHC to undertake a rigorous statutory assessment process regarding whether places in the Finalised Priority Assessment List for inclusion in the National Heritage List meet any of the National Heritage criteria. The process must consider and analyse relevant information as to whether a place meets one or more of the National Heritage criteria. In making this assessment the Council may only consider material that is relevant to the question of whether a place satisfies the National Heritage criteria. As part of this process there is a public consultation phase, as well as a requirement to consult in writing with owners, occupiers and Indigenous people with a right or interest in the place, if the Council has found that the place might have National Heritage values. (AHC 2009: 7).

The National Heritage criteria against which the heritage values of a place are assessed are:

- a. *the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history;*
- b. *the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;*
- c. *the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history;*
- d. *the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:*
 - i. *a class of Australia's natural or cultural places; or*
 - ii. *a class of Australia's natural or cultural environments;*
- e. *the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;*
- f. *the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period;*
- g. *the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;*
- h. *the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history; and*
- i. *the place has outstanding heritage value to the nation because of the place's importance as part of Indigenous tradition.*

Note: The *cultural aspect* of a criterion means the Indigenous cultural aspect, the non-Indigenous cultural aspect, or both.

As well as assessing a place against criteria for its heritage value, the AHC is also required to apply a 'significance threshold'. This test helps the AHC to judge the level of significance of a place's heritage value by asking 'how important are these values?' To reach the threshold for the National Heritage List, a place must have 'outstanding' heritage value to the nation. This means that it must be important to the Australian community as a whole.

To determine whether a place has 'outstanding' heritage values, it is compared to other, similar types of places. This allows the AHC to determine if one place is 'more' or 'less' significant compared to other similar places, or if it is unique. The degree of significance can also relate to the geographic area, for instance, the extent of a place's significance locally, regionally, nationally or internationally.

When a place is nominated for inclusion in the National or Commonwealth Heritage lists, and the AHC considers that it may have Indigenous heritage values, the AHC must endeavour to identify the Indigenous people with rights and interests in the place. It must then invite their views on whether the place should be included in the list. The Minister takes those submissions into account when making a decision about listing the place.

The Commonwealth involves Indigenous Australians in developing management plans for places with Indigenous heritage significance on the National or Commonwealth Heritage lists. National heritage places on Indigenous land can be managed through conservation agreements, which operate in the same way as Indigenous Protected Areas. Entry on the National or Commonwealth Heritage lists does not affect native title rights. Section 8 of the EPBC Act specifically states that nothing within the Act will affect the operation of Section 211 of the *Native Title Act 1993*.

To ensure the on-going protection of a National Heritage place, a management plan should be prepared that sets out how the heritage values of the site will be protected or conserved. Plans need to be consistent with the National Heritage management principles. Where a National Heritage place is in a state or territory, the Australian Government must endeavour to ensure that a management plan is prepared and implemented in cooperation with the relevant state or territory government. The Minister is responsible for preparing management plans for National Heritage places in Commonwealth areas. Plans are required to be reviewed every five years.

The National Heritage management principles provide a guiding framework for excellence in managing heritage properties. They set the standard and the scope of the way places should be managed in order to protect heritage values for future generations. These principles should be used when preparing and implementing management plans and programs. In the absence of a management plan, they should guide the management of heritage values of a property. These National Heritage management principles are:

1. *The objective in managing National Heritage places is to identify, protect, conserve, present and transmit, to all generations, their National Heritage values.*
2. *The management of National Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their National Heritage values.*
3. *The management of National Heritage places should respect all heritage values and seek to integrate, where appropriate, any Commonwealth, state, territory and local government responsibilities for those places.*
4. *The management of National Heritage places should ensure that their use and presentation is consistent with the conservation of their National Heritage values.*
5. *The management of National Heritage places should make timely and appropriate provision for community involvement, especially by people who:*
 - a. *have a particular interest in, or associations with, the place; and*
 - b. *may be affected by the management of the place.*
6. *Indigenous people are the primary source of information on the value of their heritage and the active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.*
7. *The management of National Heritage places should provide for regular monitoring, review and reporting on the conservation of National Heritage values.*

Aboriginal Heritage Act 1972 (Western Australia) (AH Act)

The *Aboriginal Heritage Act 1972 (AH Act)* protects Aboriginal sites which are defined in Section 5 of the Act as:

- *any place of importance and significance where persons of Aboriginal descent have, or appear to have, left any object, natural or artificial, used for, or made or adapted for use for, any purpose connected with the traditional cultural life of the Aboriginal people, past or present;*
- *any sacred, ritual or ceremonial site, which is of importance and special significance to persons of Aboriginal descent;*
- *any place which, in the opinion of the Committee, is or was associated with the Aboriginal people and which is of historical, anthropological, archaeological or ethnographical interest and should be preserved because of its importance and significance to the cultural heritage of the State;*
- *any place where objects to which this Act applies are traditionally stored, or to which, under the provisions of this Act, such objects have been taken or removed.*

The AH Act provides that it is an offence to:

- *excavate, destroy, damage, conceal or in any way alter an Aboriginal site; or*
- *in any way alter, damage, remove, destroy, conceal, or deal with in a manner not sanctioned by relevant custom, or assume the possession, custody or control of, any object on or under an Aboriginal site, unless the person is acting with the authorisation of the Registrar or the consent of the Minister under Section 18 of the Act.*

Aboriginal sites can be registered on the Register maintained by the Registrar of Aboriginal Sites. However registration is not required for statutory protection. The accurate identification of Aboriginal sites in any development context is therefore crucial for effective heritage management purposes. For development proposals affecting land and waters, the identification of Aboriginal sites is usually undertaken through the conduct of site-identification heritage surveys. If any Aboriginal sites are potentially affected, a proponent would then consult with the relevant Aboriginal people as to the potential impacts and mitigation options. If any Aboriginal sites that are identified cannot be avoided, then a consent under Section 18 would be required, to provide Ministerial authorisation for the use of the land and any disturbance to Aboriginal heritage sites. This process involves:

- a notice being given by the land holder that contains information about the proposed purposes and Aboriginal sites within the land the subject of the notice;
- consideration of the notice by the Aboriginal Cultural Materials Committee (**ACMC**) to enable it to form an opinion as to whether there is any Aboriginal site on the land and to evaluate the importance and significance of any such site;
- submission by the ACMC of the notice to the State Minister together with its recommendation in writing as to whether or not the State Minister should consent to the use of the land for that purpose, and, where applicable, the extent to which and the conditions upon which his consent should be given; and
- a decision by the State Minister as to whether consent ought to be given.

The State Minister may attach conditions to an authorisation under Section 18 of the AH Act, to prescribe such matters as specific site protection or mitigation and salvage measures, the nature of involvement required to be offered to the relevant Aboriginal people, reporting requirements, etc. The details of a Section 18 authorisation under the AHA will also detail which Aboriginal heritage sites within an application area may be disturbed, and whether there are heritage sites in the application area which must be protected from disturbance by the proposed development.

Environmental Protection Act 1986 (Western Australia) and its interaction with the Aboriginal Heritage Act 1972 (Western Australia)

The *Environmental Protection Act 1986 (EP Act)* provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.

The importance of environmental protection is demonstrated in Section 5 of the EP Act, which states that the provisions of the EP Act and its approved policies prevail over inconsistent provisions in any other law.

The EP Act (Part I) definition of environment includes that 'the social surroundings of man are his aesthetic, cultural, economic and social surroundings to the extent that those surroundings directly affect or are affected by his physical or biological surroundings'.

Heritage factors are assessed under Part IV of the EP Act in accordance with Guidance Statement No. 41 Guidance for the Assessment of Environmental Factors: Assessment of Aboriginal Heritage (EPA, 2004) and the Guide to EIA Environmental Principles, Factors and Objectives (EPA, 2009), of which the heritage objective states 'To ensure that changes to the biophysical environment do not adversely affect historical and cultural associations and comply with relevant heritage legislation'.

Many development proposals in Western Australia may require approval under the *Environmental Protection Act 1986* as well as involving a use of land for which an owner may wish to gain Section 18 consent under the AH Act.

The DIA *Aboriginal Heritage Act 1972* (WA) guidelines state that if an owner gives notice under Section 18(2) of the *Aboriginal Heritage Act 1972* and the proposal appears to be a significant proposal under the *Environmental Protection Act 1986*, the Minister for Indigenous Affairs is required to refer the proposal to the Authority unless another person has already referred the proposal. The Minister for Indigenous Affairs is then prevented from making a decision under Section 18(3) of the *Aboriginal Heritage Act 1972* that could have the effect of causing or allowing the proposal to be implemented until:

- the Authority has notified the State Minister that it is not going to assess the proposal and the appeals process has been finalised; or
- the Minister for Environment has served a statement on the Minister permitting the decision to be made.

The *Environmental Protection Act 1986* only prevents the State Minister for Indigenous Affairs from making a final decision. Therefore the ACMC is not prevented from making recommendations to the Minister for Indigenous Affairs before the constraint is lifted. This allows parallel processing to occur, meaning that both the environmental impact assessment by the Authority and Aboriginal heritage recommendation by the ACMC can occur at the same time.

4.8.2 Dinosaur Footprints

A key theme within the submissions is that the studies undertaken to identify dinosaur footprints and trackways were inadequate and that new evidence suggests that there are significant occurrences that may be threatened by the development. In the light of this new information and some uncertainty regarding the surveys done, the EPA has requested that DSD undertake more field surveys which will be provided to the EPA to inform their assessment. The potential for National Heritage listing of these was also identified. This is discussed in **Section 4.8.3 'National Heritage Listing'**.

Studies and Surveys Undertaken to Inform the SAR

Two studies were undertaken by the Curator of Palaeontology at the WA Museum, Dr Mikael Siversson, who has co-authored a note on dinosaur footprints and also co-authored two papers on dinosaurs. While it is accepted that some footprints in the Broome Sandstone within the surveyed area were not located, it should be noted that surveys were targeted on areas to be directly impacted by the construction of infrastructure. It should also be noted that many features in the sandstone were identified as being likely evidence of the presence of dinosaurs.

These features were in the form of possible, poorly preserved dinosaur underprints or transmitted prints (the sediment layers underneath those that may have contained the more recognisable 'footprints' having been eroded). The quality of the footprints at the area to be impacted south of James Price Point is considered very poor compared to very well preserved examples recorded by scientists at undisclosed sites further south along the coastline between Broome and James Price Point.

Additional Information Provided in Submissions

One confidential submission provided detailed evidence of dinosaur footprints and trackways in the vicinity of the Precinct. Without giving specific locations these were described to be "at the point itself, one is at a short distance to the north, and one of the sites illustrated is closer to the 'southern pipeline crossing'".

This somewhat sporadic distribution of footprints and trackways is consistent with earlier descriptions provided by experts in the field:

"the footprint sites (plural) do extend over 80 to 100 km of coast. No, it is not a single exposure, not one continuous trackway surface. It is a series of sites, many of them rather small, with stretches of beach (and sometimes very long stretches of beach) intervening" (Thulborn, 1997).

The confidential submission also provided advice on the proposed management response should footprints or trackways be identified in future surveys at locations likely to be disturbed by the development of the Precinct. These suggestions are discussed further below.

Review of Predicted Impacts Against SAR Predicted Impacts

The receipt of new information regarding the likely presence of dinosaur footprints and trackways in the vicinity of the Precinct necessitates a review of impacts and potentially of mitigation and management measures.

As noted above the suggested locations for footprints and trackways in the submission do not appear to be within the likely area of impacts. However there may be the potential for indirect impacts that were previously not taken into account by the SAR, principally through the changes in coastal processes created by the establishment of infrastructure (e.g. breakwaters and jetties).

Part 7, Section 5 Supplementary Coastal Processes Modelling provides information on areas of likely shoreline erosion and accretion (see **Part 7, Figure 5.8**). This indicates a limited area of accretion of sands within approximately 500m north and south of the infrastructure. It also indicates reductions in sediment volumes for approximately 1km north of this which extends to James Price Point itself. Similarly to the south, reduction in sediment volumes extends some 2km.

From the general location information provided above it is therefore possible that at the Point itself there may be impacts that would result in the exposure of footprints caused by shoreline erosion. While there is little evidence of footprints or trackways to the south of the Precinct it is also possible that some may be exposed by shoreline erosion.

As such changes to exposure are a routine part of natural processes often driven by cyclonic events these indirect impacts are not considered to be significant. However the possible exposure of hitherto unsighted footprints or trackways may provide an opportunity for palaeontological study and that possibility should be included in future management requirements.

The additional survey requested by the EPA noted above will further inform these conclusions.

Draft SAR Management Response and Proposed Modifications

One submission highlighted the difficulty with the collection and removal to a museum of any footprints or trackways identified and suggested alternate means of collecting information. The need for a flexible approach to the management of any trace fossils that are identified as being potentially impacted is acknowledged. The three reports undertaken for the Strategic Assessment Report (**SAR**) recommended the collection and preservation in a museum of any good quality tracks or footprints, however in the proposed management response documented in the SAR, the collection and lodgment in a museum is not specified:

For any derived proposal that may disturb offshore Broome Sandstone at the BLNG Precinct, the proponent of derived proposals shall conduct additional focused surveys at the most appropriate time of the year (lowest tide) of any areas not already surveyed potentially containing dinosaur footprints prior to disturbance of the Sandstone. This survey should be conducted in consultation with Western Australian Museum and the Traditional Owners in the company of an anthropologist and in accordance with any agreement between the State of Western Australia and the Traditional Owners.

If footprints, or other fossils, are discovered in the planned disturbance area, their significance on either a scientific and/or ethnographic basis should be determined in consultation with the Traditional Owners. If they are of significant value any response should be determined in consultation with the Traditional Owners and the Western Australian Museum.

It should be noted that, following the recent request from the EPA for additional survey, it may be that adequate information is available such that further surveys to inform the derived proposal is not necessary. The information generated from this new survey will inform the newly proposed Paleontological Resources Management Plan described below. It will also provide a sound basis for planning avoidance strategies (such as using tunnelling for pipeline crossings), and local protection or salvage strategies.

The Paleontological Resources Management Plan to be prepared by the Proponent in consultation with the OEPA and SEWPAC for approval by the State Minister for Environment will specify:

- Paleontological Methodology (e.g. expertise required, Traditional Owner consultation and involvement, tides, safety).
- Paleontological Identification (e.g. measurements, photographic record, latex prints).
- Paleontological Evaluation (e.g. comparative analysis, peer assessment).
- Paleontological Mitigation Methodology and Plan (e.g. impacts assessment, Traditional Owner input, avoidance options or other management).
- Paleontological Mitigation Outcomes (e.g. quality of records, agreement of Traditional Owners to actions taken).

Given the potential for further exposure of footprints or trackways following construction of infrastructure due to changes in coastal processes it is also proposed that there be ongoing monitoring and survey of any significant new exposures of Broome Sandstone. Such areas will be identified through the coastal process monitoring programme to be undertaken as part of the BLNG Precinct Port Environmental Management Strategy. A significant new exposure would be characterised as one which required a management action such as replacement or relocation of trapped material under the Port Environmental Management Strategy. Refer to **Table A4.6 'Draft BLNG Precinct Port Environmental Management Strategy'**.

| New/Strengthened Commitments: Dinosaur Footprints | |
|--|---|
| 17 | <p><i>The Proponent will prepare a Paleontological Resources Management Plan in consultation with the OEPA and SEWPAC.</i></p> <p>Refer to Section Table 6.1 'Proposed Changes to the Commitments in the SAR' for further details.</p> |
| 18 | <p><i>The Broome Port Authority through the Precinct Control Group will extend the Coastal Process Monitoring Programme to include ongoing monitoring and survey of any significant new exposures of Broome Sandstone.</i></p> <p>Refer to Section Table 6.1 'Proposed Changes to the Commitments in the SAR' for further details.</p> |
| 19 | <p><i>The Broome Port Authority through the Precinct Control Group will develop and implement a Coastal Processes Management Plan, in consultation with OEPA, upon establishment of the port.</i></p> <p>Refer to Section Table 6.1 'Proposed Changes to the Commitments in the SAR' for further details.</p> |

4.8.3 National Heritage Listing

A number of submissions noted that the preliminary assessment of National Heritage values had mistakenly not included James Price Point or the Dampier Peninsula despite it having significant values in respect of Palaeontological values associated with the Broome Sandstone along the coast. Others were concerned that the final determination of values might occur too late for consideration in the assessment of the BLNG Precinct development.

In relation to the potential impact of the Precinct Plan on National Heritage Places, the Australian Heritage Council (AHC) found in its preliminary assessment of National Heritage values that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the threshold required for National Heritage listing. It did however note that:

- *The Broome Sandstone preserves the only extensive evidence of dinosaurs from the western half of the Australian continent. Tracks made by a number of different dinosaur species are preserved in mid-Cretaceous sandstone at Gantheaume Point.*

Subsequently, in its final report to the Minister for the Environment, the AHC included the coastal Broome Sandstone of the western Dampier Peninsula coastline (intertidal zone) for its values associated with dinosaur footprints and trackways. This nomination comes under Category B – “rare or endangered aspects of Australia's natural and cultural history”, with the following description:

- *The Dampier Coast dinosaur tracks have outstanding heritage value to the nation under criterion (b) as the best and most extensive evidence of dinosaurs from the western half of the continent, some of which are*

unknown from body fossils; for the diversity and exceptional sizes of the sauropod prints; and the unique census of the dinosaur community that they provide.

- *The dinosaur tracks of the Dampier Coast have outstanding heritage value to the nation under criterion (b) for providing a rare, if not unique, documented coincidence of scientific interpretation of ancient dinosaur tracks with Indigenous tradition.*

These fossil features may also have Indigenous heritage values.

In response to this inclusion and other information received in submissions, details of further mitigation and management measures have been included in **Section 4.8.2 'Dinosaur Footprints'** of this *Response to Submissions* document.

The Minister has yet to make his decision regarding the heritage status of the West Kimberley. For details of the legislative basis and process for National Heritage Assessment see **Section 4.8.1 'Legislative Framework'**.

Regardless of any forthcoming decision on National Heritage listing it should be noted that the status of the Minister's final decision is not considered to be a significant matter as the ToR for the Strategic Assessment requires the consideration of "potential matters of NES" in the impacts assessment. As the Broome sandstone at the Precinct location is now part of the recommendations of the NHC it is considered to be a potential matter of NES and so will be included in the Plan for endorsement by the Minister for the Environment together with appropriate management arrangements as detailed in **Section 4.8.2 'Dinosaur Footprints'**.

4.8.4 Aboriginal Heritage

Concerns were raised in a number of submissions and by Indigenous communities about the impact of the development on songlines and other spiritual connections with the country. There were also concerns raised about the impact on traditional hunting and gathering, particularly for turtles and dugong.

Intangible Heritage and Connection

Part 5, Section 3.5.3 of the SAR summarises the results of the Heritage Impact Assessment for the BLNG project area, and the potential impacts associated with Aboriginal cultural heritage. Important cultural heritage sites along the west coast of the Dampier Peninsula are associated with the creation journeys of Ancestral Beings. The paths of these Dreamtime journeys, and the associated places and cultural beliefs are often referred to as Dreaming tracks or song lines. The places and physical features associated with these cultural values are being identified and recorded according to the requirements of the Heritage Protection Agreement (HPA), for the purpose of minimising impacts on these Aboriginal sites.

Through the BLNG Precinct Project Agreement, the Traditional Owners of the James Price Point area have signified their belief that the BLNG Precinct can be established and operated according to the principles of the BLNG Project Agreement and the HPA, without compromising these heritage values. Under the Project Agreement, the State had committed funding for 10 years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

In addition to the significant Traditional Owner cultural heritage sites of the Goolarabooloo Jabirr Jabirr (**GJJ**) near James Price Point, this coastline is also used for cultural tourism and educational purposes. Goolarabooloo people conduct seasonal walking tours from Minyirr to Coloumb Point, which visit several of the cultural heritage sites (mythological and archaeological sites) along the coast. This itinerary is known as the Lurujarri Trail, or Lurujarri song line.

In the Heritage Impact Assessment (**HIA**) report by the KLC (SAR **Appendix E-4**) the Lurujarri Trail is described in Section 3.5 of the HIA "*Places of Historical Significance*" as "*a cross-cultural heritage interpretive trail*", which passes through the traditional country of the Jabirr Jabirr, Ngumbarl, and Yawuru (HIA paragraphs 123-125, page 87). With respect to cultural heritage values, the HIA notes that:

"The Lurujarri Trail extends from a portion of the Primary Research Area around James Price Point to the other Primary Research Area of Broome. It is of cultural and heritage value to several Aboriginal language groups whose countries fall within the HIA Area." (HIA paragraph 145; page 95).

The Aboriginal heritage sites along the coastline followed by the Lurujarri Trail are being recorded through heritage surveys, and impacts on those sites will be managed, in accordance with the BLNG Precinct Project Agreement. Access along the coast adjacent to the BLNG Precinct would be restricted for safety reasons, but arrangements to facilitate access will be developed in accordance with the Project Agreement.

Hunting and Gathering

Part 5 of the SAR noted that wild-caught fish and meats are a highly significant portion of the local economy for Indigenous people in the communities of the Kimberley, and also in Broome. Although no quantitative data on the use of wild resources in the Precinct locality exists, archaeological and anthropological surveys have confirmed traditional use of the area. Engagement conducted for the Aboriginal Social Impact Assessment (**ASIA**) confirmed the importance of traditional hunting and gathering for local people. A summary of information on the use and value of wild resources to Aboriginal people is available in the ASIA, which is included as **Appendix E-3** of the SAR. Information regarding particular plants and animals which are hunted and gathered for bush foods, medicines, and associated artifacts are listed for different environmental zones in the Ethnobiological Report (**Appendix E-6**).

The SAR proposes management and mitigation measures to address the potential impacts presented by development of the BLNG Precinct. For example, the Precinct Condition strategies included in the Strategic Social Impact Management Plan (**SSIMP**) require that commercial proponents operating at the Precinct demonstrate the application of best practice measures. These are to be implemented to minimise the impacts on coastal processes from onshore and near shore marine infrastructure.

Whilst studies conducted as part of the strategic assessment process concluded that the characteristics of the land required for the Precinct were not unique in terms of flora and fauna for fishing, hunting and gathering, the State Government has committed to maintain public access to James Price Point. As such, the State Government is currently working with the Shire of Broome, local government and Main Roads WA to determine the most appropriate road network around the Precinct. This road network will also maintain public access to the northern section of Manari Road.

Other studies of relevance to the potential for impacts on marine hunting and gathering by key communities on the Dampier Peninsula (such as Coastal Processes and Oil Spill modelling) are presented in **Part 7**. The Coastal Processes studies concluded that any impacts to the coastline that may affect fishing and hunting of animals such as turtles would be limited to approximately 2km north and 3km south of the Precinct infrastructure and that the coastline at James Price Point itself would be unlikely to be affected. Important coastal resource areas such as Coulomb Point, Carnot Bay and Beagle Bay would not be affected (**Part 7, Figure 5-8**).

In relation to the loss of potential nesting beaches for turtles it is acknowledged that, in comparison to significant nesting at the Lacepede Islands, mainland beaches on the Dampier Peninsula are infrequently utilised. However in terms of traditional use they are significant because of their accessibility. In this regard the impact of the Precinct is predicted to affect a potential nesting beach at the shore crossing for the Precinct. To put this impact in context, studies of the coastal area some 12km north and south of James Price Point suggest that a further five beaches predicted to be unaffected by changes to coastal processes (**Part 7, Figure 5-8**) are suitable for nesting (RPS, 2010b; **Appendix C-2**).

In relation to Oil Spill Modelling it was concluded that these were very low probability events and furthermore that the likelihood such a spill reaching key fishing and hunting areas such as Carnot Bay and Beagle Bay would be less than one occasion in 10,000 years (**Part 7, Table 4.2**).

Thus it is unlikely that there will be significant impacts on the ability of Indigenous communities to continue traditional hunting and gathering practices as part of their objective to maintain their connection to country and traditional knowledge.

4.8.5 Cultural Heritage Management

As part of the BLNG Precinct Project Agreement and the HPA between the State of Western Australia, the Traditional Owners represented by the KLC, and Woodside, the parties made a commitment to develop a Cultural Heritage Management Plan (**CHMP**), or more than one plan if required, for the BLNG Precinct and immediately surrounding areas.

The BLNG Precinct Project Agreement (in particular, Schedule 7, Cultural Heritage Management, Schedule 9, Cultural Awareness Training and Schedule 10, Land Access Management) (<http://www.dsd.wa.gov.au/8416.Aspix>) establishes agreed standards for cultural heritage management in relation to the Precinct. The Agreement requires that any Site Manager (the Foundation Proponent, Additional Proponent, Port Authority, Native Title Party, LandCorp or the State, as the case may be) proposing activities that might affect cultural heritage will be required to develop a Cultural Heritage Management Plan (**CHMP**) in consultation with the Native Title Party. All such CHMPs must also comply with the relevant legislation and agreements as described in **Section 4.8.1 'Legislative Framework'**.

Building upon the BLNG Precinct Project Agreement, the State has been discussing the development of a Precinct CHMP framework with the parties. This would promote precinct level consistency across project level CHMPs. The actual form of the CHMP will be the subject of ongoing discussions between parties to the BLNG Project Agreement. Such a framework would have regard to the principles of Schedule 7 of the BLNG Project Agreement to support the effective management of cultural heritage impacts associated with the BLNG Precinct. These principles include the following:

- a. The Site Manager and the Native Title Party must develop a plan or plans (a CHMP) for the management of the Aboriginal Sites relevant to the Site Manager's Activities.
- b. The principles that must be incorporated into a CHMP are to:
 - i. seek to identify Aboriginal Sites from time to time;
 - ii. avoid where practicable or otherwise minimise impacts on Aboriginal Sites;
 - iii. protect and manage Aboriginal Sites and their values;
 - iv. direct the management and protection of Aboriginal Sites identified during the operation of this Management Schedule;
 - v. define the management and protection requirements of the Aboriginal Sites and specify the Parties' roles and responsibilities in implementing those requirements; and
 - vi. ensure personal safety.
- c. A CHMP must include a communications protocol and a mechanism for resolving disputes that may arise under the CHMP.
- d. Nothing in the CHMP may prevent a Party from doing all the things necessary to comply with, or require a Party to do anything inconsistent with, the terms and condition of the Project Rights or Law.

Schedule 7 also commits the parties to review of these cultural heritage management principles no less than once every three years. Each commercial proponent will consider cultural heritage management practices which, in the opinion of the Proponent, are successfully implemented at other onshore LNG facilities in the world.

Schedule 9, Cultural Awareness Training, similarly commits the parties to review the effectiveness of the cultural heritage training at least every three years. This training involving the GJJ Native Title Claim Group will be designed to promote knowledge, understanding and respect regarding Aboriginal tradition and culture. Its purpose is also to foster good relationships between Aboriginal and non-Aboriginal persons. Each Site Manager will be responsible for ensuring that all staff and contractors associated with the Precinct undergo cultural awareness training as part of their inductions. Additional to this, Site Managers will provide training tailored to meet the specific needs of Aboriginal Personnel.

Cultural Awareness Training is also intended to explain the related Environmental Management Schedule 8 and the Land Access Management Schedule 10. Under Schedule 10 the State and Site Managers commit to allowing members of the Native Title Claim Group and members of the public free access to the beach and intertidal area of the Port land twice per year. Primarily, this is to allow for the continued walker tours of the Lurujarri Trail.

| | |
|----|---|
| 20 | <p><i>New/Strengthened Commitment: Cultural Heritage Management</i></p> <p><i>A Cultural Heritage Management Plan Framework based on commitments in the BLNG Precinct Project Agreement will be developed in consultation with the parties to the Agreement and Traditional Owners.</i></p> <p>(Refer to Section 6 'Proposed Changes to Commitments in the SAR' for further details).</p> |
|----|---|

5 Cumulative Environmental Impacts

5.1 Overview of Purpose and Scope

A qualitative summary of cumulative impacts was conducted in order to synthesise the successive, incremental and combined potential impacts of Category A activities (see **Part 2, Section 5** of the SAR) on key environmental factors. This synthesis has been conducted taking into consideration theme comments raised in relation to cumulative impacts from regulators and other stakeholders as part of the *Response to Submissions* process. In particular, SEWPAC sought additional cumulative impact analysis as relevant to the scope of assessment of the Plan under the *EPBC Act*.

The cumulative impact assessment was based on Category A impacts reflecting the remit identified in the scope of Strategic Assessment. Given the unknown nature and timing of Additional Proponents becoming established within the Precinct, the assessment was focussed on a typical industrial LNG facility and corresponding development schedule. This was considered to be representative of the dominant environmental impacts on key marine and terrestrial environmental factors relevant to the project context.

A summary cumulative assessment is considered appropriate in the context of the strategic assessment, and recognising that specific quantitative details of specific activities and their consequent impacts cannot realistically be defined at all levels.

5.2 Methodology

The cumulative impact assessment process has drawn upon the residual impact assessment conclusions from the SAR in combination with the following considerations:

- the concurrency of activities;
- periods of peak activity and temporal variability;
- the spatial concentrations of activities; and
- potential additive impacts (generated from a causal link diagram for each factor).

Figure 5.1 'Example Cumulative Impact Summary Table Generation Process' provides an outline of the considerations used to inform the cumulative impact summary.

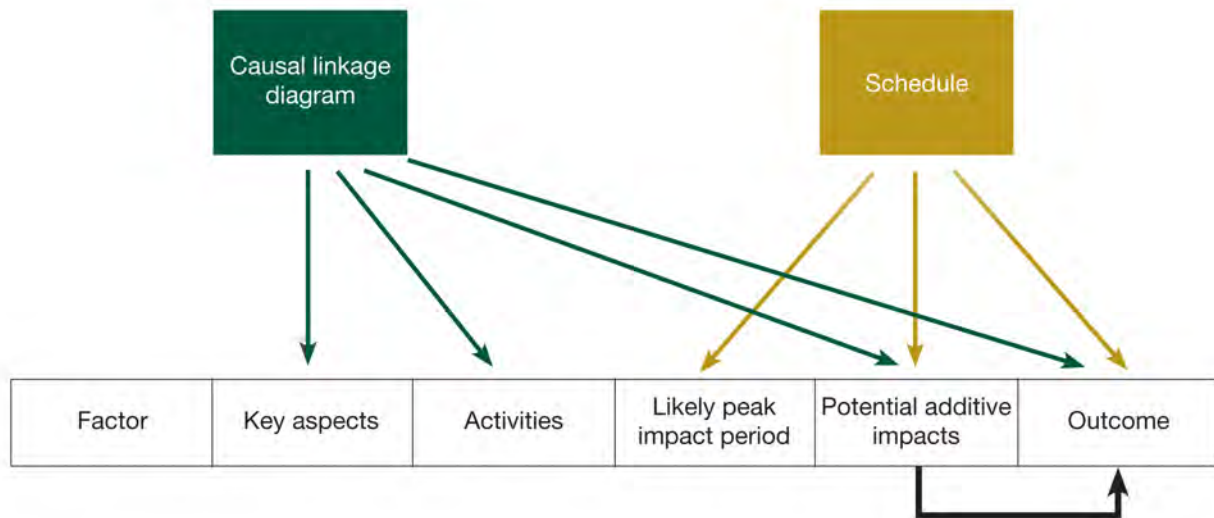
The total effect of concurrent Category A activities on key environmental factors was considered to be a summation as appropriate of the overlapping impacts associated with various environmental aspects. The consideration of other, non-project related impacts is already provided in the Strategic Assessment (Category B and C activities respectively, defined in **Part 2, Section 1.4.2**) as a concluding section in each assessment chapter of **Part 3** and **Part 4**. It is not the intent of this exercise to repeat that summary of Category B and C activities.

A causal linkage diagram was derived to clearly map out the relevant aspects that could result in impacts on key factors, together with a three point scale (from "highly likely" to "unlikely" to occur and contribute to cumulative impacts) to address the likelihood of these impacts overlapping. The highest total impact of the activities, and the aspects inherent in those activities, were defined by determining the indicative time periods when a high number of concurrent activities occur.

A causal linkage diagram and the general sequencing (or timing) of construction activities were then used to assess the overall impact of, and peak impact periods for, each aspect, as illustrated in **Figure 5.1 'Example Cumulative Impact Summary Table Generation Process'**. This informed a synthesis of cumulative effects relevant to each key environmental factor.

The detailed assessment results are presented in '**Annexure 8 - Cumulative Environmental Impacts**'.

Figure 5.1 Example Cumulative Impact Summary Table Generation Process



5.3 Summary of Cumulative Environmental Impacts

Taking into account the results of this assessment, as detailed in **'Annexure 8 - Cumulative Environmental Impacts'**, the cumulative environmental impacts for Category A activities are concluded to be consistent with those identified in the Strategic Assessment. Furthermore, the cumulative assessment has identified that the majority of cumulative environmental impacts are predicted to occur during the construction phase when multiple activities will be undertaken concurrently both within the marine and terrestrial environments. Key cumulative environmental impacts include:

- Concurrent marine construction activities concentrated primarily in the vicinity of the port area and pipeline corridors and associated impacts to marine mammals, marine reptiles, water quality and benthos. These impacts include:
 - behavioural disturbance (e.g avoidance of the Precinct Port area by marine mammals and reptiles during construction periods);
 - physical injury or physiological impacts to marine reptiles and loss of foraging grounds; and
 - direct loss of benthos from marine construction activities and increased risk of Invasive Marine Species (IMS) introduction.
- Site preparation activities, vegetation clearing and infrastructure/ services establishment associated with the terrestrial infrastructure and associated impacts to terrestrial flora / vegetation and fauna. These impacts include:
 - loss or disturbance of general flora species or vegetation communities;
 - disturbance of conservation significant species or communities and a reduction in vegetation health and condition;
 - the introduction or further spread of weeds; and
 - fauna behavioural disturbance and loss or reduction in habitat.

The summary tables presented in **'Annexure 8 - Cumulative Environmental Impacts'** detail the potential cumulative impacts and the proposed management response. It is expected that these key cumulative environmental impacts can be appropriately managed through the application of best practicable mitigation measures detailed within the SAR, and reinforced through the updated commitments presented in **Section 6 'Proposed Changes to Commitments in the SAR'** of this *Response to Submissions* report.

6 Proposed Changes to Commitments in the SAR

This section provides a consolidation of any new or enhanced Proponent commitments or management strategies which are proposed in response to the issues raised during the public review of the draft SAR.

Table 6.1 'Proposed Changes to the Commitments in the SAR' summarises the existing commitments (what is already in place) and the new, changed and/or strengthened commitment, along with a cross reference back to the main sections of this *Response to Submissions Summary Report* where the detailed discussion behind each commitment can be found.

Table 6.1 Proposed Changes to the Commitments in the SAR

| 1. Derived Proposal Process | | Section 2.2 |
|---|---|---------------|
| <i>The Proponent will require the proponents of derived proposals to consult with stakeholders, including what the EPA considers as Decision-making Authorities (DMAs) and Interested Parties (IPs), during the development of derived proposals and associated management plans.</i> | | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment | |
| There are guidelines in place that establish consultation requirements for the development of derived proposals. | The Proponent will require the proponents of derived proposals to consult with stakeholders, including what the EPA considers as Decision-making Authorities (DMAs) and Interested Parties (IPs), during the development of a derived proposal and associated management plans. This requirement will be included in the State Agreement Act to be developed between the State and all commercial proponents. | |
| 2. Governance | | Section 2.3.1 |
| <i>The Proponent will ensure that Traditional Owners have representation in all Browse Precinct Oversight Groups.</i> | | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment | |
| A Precinct Control Group would be established to recommend actions, plans and strategies to the Minster for State Development and monitor delivery of those activities. | The Proponent is committed to representation by Traditional Owners in all Browse Precinct Oversight Groups. This requirement is included as a clause in the Native Title Agreements. | |
| 3. Governance | | Section 2.3.3 |
| <i>The Proponent will establish a BLNG Precinct Governance Structure, in consultation with EPA and SEWPAC and in accordance with the Native Title Agreements, to take on board issues raised during the public review process.</i> | | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment | |
| The SAR proposed a different Governance Structure. | To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a BLNG Precinct Management Structure be established. This proposed Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. A number of modifications have subsequently been made | |

| | |
|---|--|
| | to this and these are presented in detail in Section 2.3 'Governance Issues' of this <i>Response to Submissions Summary Report</i> . |
| 4. Community Reference Group | Section 2.3.3 |
| <i>The Proponent will establish a Community Reference Group to assist in building a bridge of understanding between the BLNG Precinct Management, Precinct-based companies and the local community.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| The SAR does not provide firm details of stakeholder engagement mechanisms. | <p>As described in Section 2.3 'Governance Issues', the proposed Precinct Governance Model will include extensive involvement of a broad range of targeted stakeholders through the Precinct Management Committee and the Social Management Committee. In addition, it is proposed that a Community Reference Group (CRG) be established to assist in building a bridge of understanding between the BLNG Precinct management, Precinct-based LNG companies, and the local community. It is proposed that the majority of the CRG membership consist of local community members rather than organisations already represented through other parts of the Precinct Governance Model. The CRG would be an advisory body reporting to the Precinct Management Committee and Social Management Committee. Figure 2.3 'Proposed Governance Structure' displays the proposed relationship between the CRG and the Precinct Governance model. The following issues will be addressed in developing the CRG Terms of Reference:</p> <ul style="list-style-type: none"> • the role and responsibilities of the CRG; • the composition of its membership; • the issue of community representativeness; • selection criteria for community members; • representation of Precinct management; • selection of a chair person; • meeting location and frequency of meetings; • length and staggering of community member terms; and • resourcing of the CRG (e.g. executive officer, funding). |

| | |
|---|---|
| 5. Environmental and Social Impact Management Section 2.4.1 <i>Draft proposed State Management Strategies ('Annexure 4 - Management Strategies') have been developed by the Proponent and will be finalised through consultation with the Regulators and relevant Agencies.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| The strategies and management plans proposed in the SAR were not clearly established within a hierarchy. Proposed strategies were identified but not detailed. | A clearer management plan framework is presented with draft strategies provided in ' Annexure 4 - Management Strategies ' which give guidance and detail the requirements for the management plans proposed. |
| 6. Indigenous Participation Plans Section 2.6 <i>Each of the State Government Entities with a significant role in the Precinct (i.e. LandCorp, BrPA, and Main Roads) will prepare and implement an Indigenous Participation Plan, containing effective components or initiatives for achieving an Indigenous workforce strategy.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| When the SAR was prepared there was a Heads of Agreement, however no Native Title Agreement was in place and no Indigenous participation commitments were identified. | As described in the BLNG Precinct Project Agreement, the State will require that each of the State Government entities with a significant role in the Precinct (i.e. LandCorp, the Port Authority and Main Roads) prepare and implement an Indigenous Participation Plan in relation to their Precinct-related activities. The Indigenous Participation Plan must contain components or initiatives for achieving an effective Indigenous workforce strategy. It will also include procedures for engagement with Job Services Australia providers located in the Kimberley; and include implementation procedures. In preparing their Indigenous Participation Plan, each of the State Government entities will consult with the GJJ Native Title Claim Group. |
| 7. Precinct Engagement Plan Section 3.2.3 <i>The Proponent will define and develop a BLNG Precinct Engagement Plan to ensure all stakeholders are involved in the Precinct development.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| The SAR does not provide firm details of stakeholder engaged mechanisms. As the BLNG Precinct transitions from strategic proposal to approved project, the Proponent will prepare and implement a BLNG Precinct Engagement Plan. | There is now a commitment for the Proponent to develop a Precinct Engagement Plan. The Precinct Engagement Plan will be designed based on consultation with a wider range of stakeholders (e.g. local government, state agencies, NGOs, GJJ and Yawuru representatives, and LNG project proponents). Refer to Table A4.7 'Summary of Social and Economic Impact Management Plans by Impact Category' for definitions of objectives, responsibility and management plan contents. |

| | |
|--|--|
| 8. Ecological Marine Environment (Marine Fauna) Section 4.5.1 <i>The Proponent will require all commercial proponents to publish all survey data for marine megafauna, within a reasonable time frame of results becoming available.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| Although studies already undertaken to inform the SAR have been published there is no commitment to continue publishing the results of more recent and ongoing monitoring studies. | The Proponent will require all commercial proponents to publish all survey data for marine megafauna, within a reasonable time frame of results becoming available. This will be monitored via the three yearly review of the Management Plan process which is stipulated in the Native Title Agreement. The Proponent will actively encourage knowledge sharing to further inform conservation initiatives. |
| 9. Marine Water Quality Section 4.5.3 <i>The Proponent is committed to apply more stringent water quality criteria to marine wastewater discharges than was proposed as a condition in the SAR. This is expected to form the basis of the EPAs recommended conditions for wastewater discharges.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| As outlined in the SAR Part 3, Section 2.3, Table 2.3-3 , beyond the boundary of the mixing zone (i.e. outside the port area) the Proponent will ensure that the 95 th percentile of toxicants meets ANZECC/ARMCANZ (2000) NWQMS 95% species protection levels. Additionally, as detailed in Part 3, Section 2.3, Table 2.3-4 , proponents of derived proposals shall prepare and implement a Marine Wastewater Discharge Management Plan (MWDMP), to the satisfaction of the Western Australian Minister for Environment, to ensure that disposal of treated wastewater from operation of the BLNG Precinct facilities is undertaken and managed in a way that minimises the environmental impacts and is consistent with the local water quality environmental values. | In response to comments received from OEPA, more stringent water quality criteria have been committed to for marine wastewater discharges. Specifically: commercial operators within the Precinct shall ensure that, beyond the boundary of the Low Ecological Protection Area (i.e. outside the discharge mixing zone), toxicants meet the ANZECC/ARMCANZ (2000) 95% species protection values for at least 95% of time. In addition, relevant changes to the Marine Wastewater Discharge Management Plan objectives would be made to reflect the more stringent water quality criteria. Finally, biennial ecotoxicity testing within the BLNG Port area would be undertaken to identify discharge parameters to be improved in order to achieve a target of 99% level of species protection beyond the BLNG Port Area. |
| 10. Marine Water Quality Section 4.5.3 <i>Broome Port Authority will consult with the Department of Fisheries and commercial fishers in the development of Emergency Response Plans.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| While the SAR specifies a requirement to develop Emergency Response Plans to ensure that hydrocarbon spills are managed, to limit impacts on marine users as well as the environment more generally, there is no requirement to consult with the Department of Fisheries or the commercial fishing industry. | In acknowledgement of the impact that hydrocarbon spills could have on fisheries, consultation with these groups in the development of Emergency Response Plans is proposed. |

| | |
|---|--|
| 11. Terrestrial Ecology (Monsoon Vine Thicket) Section 4.6.2 <i>The Foundation Proponent has initiated a Vegetation Monitoring Program (VMP) which will continue throughout the planning, construction and operational period of this project.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| As outlined in the SAR Part 4, Section 2.4.4, Table 2.4-6 , a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance with particular reference to remnant monsoon vine thicket vegetation, will be developed in consultation with DEC and will provide a management framework for proponents of derived proposals. The effectiveness of the strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process. | To inform the management and monitoring, a Vegetation Monitoring Program (VMP) has been initiated in addition to commitments documented in the SAR, to collect baseline data at selected sites considered to be at risk of indirect impacts from the proposed BLNG development. This program will continue throughout the planning, construction and operational period of this project. Further development of the VMP will be undertaken in consultation with DEC. |
| 12. Terrestrial Ecology (Groundwater) Section 4.6.2 <ul style="list-style-type: none"> <i>The Proponent will ensure that groundwater licence applications follow DoW's "Pilbara water in Mining guideline", 2009.</i> <i>The Proponent will consult with the DEC in assessing the potential impacts from groundwater abstraction on conservation values.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| As described in the SAR Part 4, Section 2.3.4, Table 2.3-3 , as part of the groundwater licence applications to DOW and prior to groundwater abstraction for the construction and operation of facilities within the BLNG Precinct, commercial proponents will be required to develop and implement a Groundwater Abstraction Management Plan in consultation with DoW. The management plan will involve a groundwater monitoring program designed to monitor for potential impacts on groundwater and include a framework for an adaptive management response. | Based on comments from DoW, a commitment has been made to follow the DoW's "Pilbara water in Mining guideline", 2009 in the groundwater licence applications. This will strengthen the licence application through the acknowledgement that water supply options analysis is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations. The Proponent also agrees to consult with DEC in assessing the potential impacts from groundwater abstraction on conservation values, as relevant to DEC's agency functions. It is expected that DoW would likewise consult with DEC as necessary. |

| | |
|--|---|
| 13. Air Quality Section 4.6.3 | |
| <ul style="list-style-type: none"> Commercial proponents will install emission control equipment to reduce VOC emissions from ship loading activities. Such equipment shall be designed to ensure benzene emissions achieve the EU annual average criteria of 5ug/m³ beyond the sensitive landuse buffer zone. Commercial proponents will install VOC thermal destruction equipment on major sources of VOC emissions, being the acid gas removal unit and mono-ethylene glycol regeneration unit. Such equipment shall be capable of achieving the EU annual average criteria of 5ug/m³ beyond the sensitive landuse buffer zone. | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| <p>As outlined in the SAR Part 4, Section 2.8, Table 2.8-12, proponents of derived proposals would be required to prepare an Air Quality Management Plan, prior to commissioning, that addresses the following:</p> <ul style="list-style-type: none"> compliance with the buffer zones determined by State Government; results of cumulative air quality monitoring; compliance with ambient NEPM standards; meteorological monitoring results; an emissions monitoring program, which is likely to include nitrogen compounds, BTEX and hydrogen sulphide emissions from the LNG plant; participation in an ambient air monitoring program with other proponents of derived proposals; and annual reporting obligations | <p>In recognition of the need for proponents of derived proposals to address the emissions of VOCs to the satisfaction of the EPA, an additional commitment has been developed to provide assurance that all commercial operators will reduce VOC emissions resulting from ship-loading activities through the installation of emission control equipment for ship-loading.</p> |
| 14. Strategic Social Impact Management Plan Section 4.7.1 | |
| <i>The Proponent will ensure that Shire of Broome services and infrastructure are included in monitoring activities.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| <p>The Precinct itself is intended to be primarily self sufficient, and so is not expected to have a significant direct impact upon Shire services or infrastructure. However, it is recognised in the Social Impact Assessment (refer to SAR Part 5) that the Precinct may have indirect impacts on services in the town of Broome and that any impacts should be managed. A Strategic Social Impact Management Plan (SSIMP) (Part 5, Section 5) provides the framework for the development of strategies to enhance opportunities and avoid, mitigate or manage social impacts arising from the establishment of the BLNG Precinct. Adaptive management principles would allow the strategies to be adjusted in response to changed or new conditions, should they eventuate.</p> | <p>While Shire services and infrastructure were not specifically identified as being a focal area (as reflected in Part 5, Table 5.1), the State will now include these in its monitoring activities.</p> |
| 15. Human Health Section 4.7.2 | |

Commercial proponents will be required to demonstrate to the satisfaction of the DoH they have applied appropriate health assessment and response tools to manage any risks to human health associated with their project.

Existing Commitment: What is Already in Place?

In the SAR, the issue of human health impacts was addressed in relation to a range of environmental and social factors (**Parts 3, 4 and 5**) rather than as a single impact factor. **Table 4.7 'Summary of Proposed Human Health Impact Management Measures'** in **Section 4.7.2 'Human Health'** of this report summarises the proposed impact management measures for the full range of health risk issues identified in the SAR.

New, Changed and/or Strengthened Commitment

Commercial proponents will be required to demonstrate that they have applied appropriate health assessment and response tools to manage any risks to human health associated with their project. Proponents will be required to demonstrate to the satisfaction of the DoH that risks to human health have been satisfactorily mitigated and appropriately managed over the project's life cycle.

16. Local Procurement

Section 4.7.8

The Proponent will develop a Local Procurement Strategy to ensure the encouragement and support for local procurement of supplies and services.

Existing Commitment: What is Already in Place?

The SAR identifies the development of a West Kimberley Socio-economic Strategy.

New, Changed and/or Strengthened Commitment

The State Government, as part of a strategic local content initiative for Browse, is establishing a Browse Local Content Steering Committee. The Committee, which will comprise representatives from the BJV, industry and government, will: seek to identify, at an early stage, opportunities for local suppliers in the Project; examine regional initiatives; identify and address gaps in local industry capability and competitiveness; and identify and seek to address potentially contentious issues.

17. Dinosaur Footprints

Section 4.8.2

The Proponent will prepare a Paleontological Resources Management Plan in consultation with the OEPA and SEWPAC.

Existing Commitment: What is Already in Place?

Part 5, Table 4.2.1 of the SAR outlines the proposed measures to manage potential impacts on local paleontology. This includes focussed surveys and, where footprints or fossils are identified, an assessment of significance in consultation with the Traditional Owner, and determination of the appropriate response, both in consultation with the Traditional Owners and the Western Australian Museum.

New, Changed and/or Strengthened Commitment

In addition to the proposed measures in the draft SAR a further measure is committed to, that will require the development of a Paleontological Resources Management Plan to be prepared by the Proponent in consultation with the OEPA and SEWPAC for approval by the State Minister for Environment. The Plan will specify:

- Paleontological Methodology (e.g. expertise required, Traditional Owner consultation and involvement, tides, safety).
- Paleontological Identification (e.g. measurements, photographic record, latex prints).
- Paleontological Evaluation (e.g. comparative analysis, peer assessment).

| | |
|---|--|
| | <ul style="list-style-type: none"> Paleontological Mitigation Methodology and Plan (e.g. impacts assessment, Traditional Owner input, avoidance options or other management). Paleontological Mitigation Outcomes (e.g. quality of records, agreement of Traditional Owners to actions taken). |
| 18. Dinosaur Footprints Section 4.8.2 <i>The Broome Port Authority through the Precinct Control Group will extend the Coastal Processes Monitoring Programme to include ongoing monitoring and survey of any significant new exposures of Broome Sandstone.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| <p>Part 5, Table 4.2.1 of the SAR outlines the proposed measures to manage potential impacts on local paleontology. This includes focussed surveys and, where footprints or fossils are identified, an assessment of significance in consultation with the Traditional Owner, and determination of the appropriate response, both in consultation with the Traditional Owners and the Western Australian Museum.</p> | <p>Given the potential for further exposure of footprints or trackways following construction of infrastructure due to changes in coastal processes it is also proposed that there be ongoing monitoring and survey of any significant new exposures of Broome Sandstone. Such areas will be identified through the coastal processes monitoring programme to be undertaken as part of the BLNG Precinct Port Environmental Management Strategy: Refer to Table A4.6 'Draft BLNG Precinct Port Environmental Management Strategy'. A significant new exposure would be characterised as one which required a management action such as replacement or relocation of trapped material under the Port Environmental Management Strategy.</p> |
| 19. Sand Management Section 4.8.2 <i>The Broome Port Authority through the Precinct Control Group will develop and implement a Coastal Processes Management Plan, in consultation with OEPA, upon establishment of the port.</i> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| <p>Proponents of derived proposals were previously responsible for developing and implementing a Coastal Processes Management Plan as per SAR Part 7 Table 5-2.</p> | <p>To ensure a consistent and coordinated approach to active sand management, taking into account the above commitments 17 and 18 regarding the management of newly exposed paleontological resources, the Broome Port Authority, through the Precinct Control Group, will be responsible for developing a Coastal Processes Management Plan in consultation with OEPA and other regulatory agencies, which addresses the following:</p> <ul style="list-style-type: none"> <i>implementation of measures such that trapped material is returned to the coastal system or replaced by other material at a suitable location, so that the dynamic balance of sediment may be managed on a regional scale;</i> <i>demonstration of best practise measures to be implemented to minimise impacts on coastal</i> |

| | |
|--|--|
| | <p><i>processes. Design measures to be demonstrated by detailed hydrodynamic modelling;</i></p> <ul style="list-style-type: none"> <i>definition of scope of a regular coastal processes survey program to be implemented to monitor local influences from the BLNG marine infrastructure, and to inform appropriate management responses;</i> <i>stakeholder consultation; and</i> <i>consistency with requirements of Broome Port Authority and BLNG Precinct Environmental Management Framework.</i> <p>This replaces the commitment for future proponents of derived proposals to develop and implement this management measure as described in the SAR Part 7 Table 5-2.</p> |
| <p>20. Cultural Heritage Management Section 4.8.5</p> <p><i>A Cultural Heritage Management Plan Framework based on commitments in the BLNG Precinct Project Agreement will be developed in consultation with the parties to the Agreement and Traditional Owners.</i></p> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| As part of the Heritage Protection Agreement between the State of Western Australia, the Traditional Owners represented by the KLC, and Woodside, the parties made a commitment to develop a Cultural Heritage Management Plan (CHMP), or more than one plan if required, for the BLNG Precinct and immediately surrounding areas. | The BLNG Precinct Project Agreement (in particular, Schedule 7, Cultural Heritage Management, Schedule 9, Cultural Awareness Training and Schedule 10, Land Access Management: http://www.dsd.wa.gov.au/8416.Aspix) establishes agreed standards for cultural heritage management in relation to the Precinct. The Agreement requires that any Site Manager (the Foundation Proponent, Additional Proponent, Port Authority, Native Title Party, LandCorp or the State, as the case may be) proposing activities that might affect cultural heritage will be required to develop a Cultural Heritage Management Plan (CHMP) in consultation with the Native Title Party. All such CHMPs must also comply with the relevant legislation and agreements as described in Section 4.8.1 'Legislative Framework' . |
| <p>21. Fire Management Table A4.4</p> <p><i>In order to reduce fire related loss or damage to vegetation communities and ecological habitats, the Precinct Control Group will be responsible for the management and coordination of fire management in areas surrounding the BLNG Precinct, aligning with existing fire management strategies on the Dampier Peninsula.</i></p> | |
| Existing Commitment: What is Already in Place? | New, Changed and/or Strengthened Commitment |
| Part 4, Table 2.7-3 of the SAR outlines the proposed requirements for derived proposals to prepare and implement a Fire Management Plan for construction and operation activities. The plan would address, amongst other things, fire risk reduction and management measures, which may | Table A4.4 'Draft BLNG Precinct Surrounds Fire Management Strategy' describes the Draft BLNG Precinct Surrounds Fire Management Strategy to be implemented by the Precinct Control Group. The strategy replaces the Fire Management Plan described in Part 4 Section 2.7-3 of the SAR and provides for a more coordinated approach to fire management, in line with existing fire management |

| | |
|--|---|
| include vegetation thinning to reduce fuel load and installation of firebreaks around the perimeter fence, within the areas surrounding the BLNG Precinct. | strategies on the Dampier Peninsula. The objective of this strategy is to reduce the frequency of fires and occurrences of late season burns in the region, reducing the impacts of the existing fire regime on ecological communities and maintaining or improving regional air quality conditions, recognising the contribution of fires to seasonal air quality. |
|--|---|

7 References

- Akerman, K. (1975). Aboriginal camp sites on the western coast of Dampier Land, Western Australia. *Occasional Papers in Anthropology*, 4, 93-104.
- Akerman, K. (1981). *Horde areas and mythological sites between James Price Point and Coconut Well on the west coast of Dampierland*. Report to Department of Aboriginal Sites, WA Museum, Perth, and the Kimberley Land Council, Broome.
- Allen, S. J., & Lonergan, N. *Reducing dolphin bycatch in the Pilbara finfish trawl fishery*. Report to the fisheries Research and Development Corporation, Canberra.
- AMPLA. (1992). Australian Mining and Petroleum Law Association. *AMPLA Bulletin*, 11 (4), 147.
- Astron Environmental Services. (2011). *James Price Point: 2010 Vegetation monitoring program: Data analysis report*. Perth: Browse LNG Development.
- Australia Heritage Council. (2009). *Guidelines for the assessment of places for the National Heritage List*. Retrieved from Australian Heritage Council: <http://www.environment.gov.au/heritage/ahc/publications/nhl-guidelines.html>
- Bayliss, P. (1986). Factors affecting aerial surveys of marine fauna, and their relationship to a census of dugongs in the coastal waters of the Northern Territory. *Australian Wildlife Research*, 13, 27-37.
- Beale, C. M., & Monaghan, P. (2004a). Behavioural responses to human disturbance: a matter of choice? *Animal Behaviour*, 68 (5), 1065-1069.
- Beale, C. M., & Monaghan, P. (2004b). Human disturbance: people as predation-free predators? *Journal of Applied Ecology*, 41, 335-343.
- Begg, G. W., van Dam, R. A., Lowry, J. B., Finlayson, C. M., & Walden, D. J. (2001). *Inventory and risk assessment of water dependent ecosystems in the Daly basin, Northern Territory, Australia*. Supervising Scientist Report 162, Supervising Scientist, Darwin, NT.
- Bejder, L., Samuels, A., Whitehead, H., & Gales, N. (2009). Impact assessment research: use and misuse of habituation, sensation and tolerance in describing wildlife responses to anthropogenic stimuli. *Marine Ecology Progress Series*, 395, 177-185.
- Bejder, L., Samuels, A., Whitehead, H., Gales, N., Mann, J., Connor, R., et al. (2006a). Decline in relative abundance of bottlenose dolphins exposed to long-term disturbance. *Society for Conservation Biology*, 20 (6), 1791-1798.
- Bejder, L., Samuels, A., Whitehead, H., & Gales, N. (2006b). Interpreting short-term behavioural responses to disturbance. *Animal Behaviour*, 72, 1149-1158.
- Biota. (2009). A Vegetation and Flora Survey of James Price Point: Wet Season 2009. Prepared for the Department of State Development, Perth, Western Australia (SAR Appendix C - 18).
- Biota. (2011a). *James Price Point Browse LNG Precinct Targeted Terrestrial Fauna Survey - March 2010*. Unpublished report for Environmental Resources Management, Perth, Western Australia.
- Biota. (2011b). *James Price Point LNG Precinct Vegetation and Flora Survey - March 2011*. Unpublished report for Environmental Resources Management, Perth, Western Australia.
- Boggs, D., Boggs, G., Hutley, L., Liddle, D., Yin Foo, D., Gray, P., et al. (2008). Biophysical Modelling of Water Use and Change in Monsoon Vine Thickets. *Proceedings of the 2008 AGU Western Pacific Geophysics Meeting, American Geophysical Union*. Washington, DC.
- Bradshaw, E., & Fry, R. (1989). *A management report for the Lurujarri Heritage Trail, Broome, Western Australia*. Report to the WA Department of Aboriginal Sites, Perth.

- Campbell, R., & Holley, D. (2010). *Progress Report: Movement Behaviours and Habitat Usage of West Kimberley Dugongs: A Community Based Approach*. Unpublished progress report for Woodside Energy Ltd.
- Canadell, J., Jackson, R. B., Ehleringer, J. R., Mooney, H. A., Sala, O. E., & Schulze, E. D. (1996). Maximum rooting depth of vegetation types at the global scale. *Oecologia*, 108 (4), 1432-1939.
- Cappo, M., Syms, C., Stowar, M., Johansson, C., & Cooper, T. (2010). *Survey of fish habitat interactions in the region offshore from James Price Point using Baited Remote Underwater Video Systems (BRUVS)*. Prepared for Woodside Energy Ltd, Australian Institute of Marine Science.
- Christiansen, F., Lusseau, D., Stensland, E., & Beggren, P. (2010). Effects of tourist boats on the behaviour of Indo-Pacific bottlenose dolphins off the south coast of Zanzibar. *Endangered Species*, 11, 91-99.
- Coles, R., McKenzie, L., Rasheed, M., Mellors, J., Taylor, H., Dew, K., et al. (2007). *Status and Trends of Seagrass Habitats in the Great Barrier Reef World Heritage Area*. Report to the Marine and Tropical Sciences Research Facility, Reef and Rainforest Research Centre Limited, Cairns.
- Craig, A. S., & Herman, L. M. (2000). Habitat preferences of female humpback whales *Megaptera novaeangliae*. *Marine Ecology Progress Series*, 193, 209-216.
- de la torra, S., Snowdon, C. T., & Bejarano, M. (2000). Effects of human activities on wild pygmy marmosets in Ecuadorian Amazonia. *Biological Conservation*, 94, 153-163.
- Department of Climate Change and Energy Efficiency. (2009). *National Carbon Offset Standard*. Retrieved 2011, from A-Z of Government initiatives: <http://www.climatechange.gov.au/government/initiatives/~media/publications/carbon-accounting/revised-NCOS-standard-2010-pdf.ashx>
- Department of Environment, Food and Rural Affairs. (2001). *The UK's third national communication under the United Nations Framework Convention on Climate Change*. UK: DEFRA Publications.
- Department of Fisheries. (2010). *Application of the Department of the Environment, Water, Heritage and the Arts on the Pilbara Fish Trawl Interim Managed Fishery against 'Guidelines for the Ecologically Sustainable Management of Fisheries - 2007'*. Department of Fisheries, Western Australia.
- Department of Safety Services. (2007). *Recreational boat speed sampling. July 7, 2007 - September 16, 2006*. Retrieved 2011, from New Hampshire Department of Safety: <http://www.nh.gov/safety/divisions/ss/marinepatrol/documents/speedsurveyreport.pdf>
- Department of State Development (DSD). (2010a). *Preface to the Scope of the Strategic Assessment*. Department of State Development, Perth.
- Department of State Development (DSD). (2010b). *Scope of the Strategic Assessment*. Department of State Development, Perth.
- Department of State Development (DSD). (2010c). *Appendices to the Scope of the Strategic Assessment, Including the Terms of Reference. State-Commonwealth Terms of Reference for the Strategic Assessment*. Department of State Development, Perth.
- Department of State Development (DSD). (2010d). *Browse Liquefied Natural Gas Project - Strategic Assessment Report*. Draft for public comment, Department of State Development, Government of Western Australia.
- Department of Sustainability, Environment, Water, Population and Communities. (2011). *Department of Sustainability, Environment, Water, Population and Communities*. Retrieved from <http://www.environment.gov.au/>
- Dethmers, K. M., Broderick, D., Moritz, C., Fitzsimmons, N. N., Limpus, C. J., Lavery, S., et al. (2006). The genetic structure of Australasian green turtles (*Chelonia mydas*): Exploring the geographical scale of genetic exchange. *Molecular Ecology*, 15, 3931-3946.

Driscoll, C., & Bell, S. A. (2006). *Vegetation of the Tomago and Anna Bay Sandbeds, Port Stephens, New South Wales: Management of Groundwater Dependent Ecosystems. Part 2 - Groundwater Dependency*. Unpublished report to Hunter Water, Eastcoast Flora Survey.

Duchesne, M., Côté, S. D., & Barrette, C. (2000). Responses of woodland caribou to winter ecotourism in the Charlevoix Biosphere Reserve, Canada. *Biological Conservation*, 96 (3), 311-317.

Eamus, D., & Froend, R. (2006). Groundwater-dependent ecosystems: the where, what and why of GDEs. *Australian Journal of Botany*, 54, 91-96.

Eamus, D., Froend, R., Loomes, R., Hose, G., & Murray, J. (2006). A functional methodology for determining the groundwater regime needed to maintain the health of groundwater-dependent vegetation. *Australian Journal of Botany*, 54 (2), 97-114.

Environmental Protection Authority (EPA). (2003). Guidance Statement No. 55 - Implementing Best Practice in Proposals submitted to the Environmental Impact Assessment Process, Western Australian Environmental Protection Authority, Perth, Western Australia.

Environmental Protection Authority (EPA). (2009a). *Environmental Assessment Guideline No. 1 - Defining a Proposal*. Perth, WA.

Environmental Protection Authority (EPA). (2009b). *Environmental Assessment Guideline No. 3 - Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment*. Perth, WA.

Environmental Protection Authority (EPA). (2010, November 26). Environmental Impact Assessment Administrative Procedures. *Government Gazette*, 223, pp. 5979-6000.

Erskine, W. D., Begg, G. W., Jolly, P., Georges, A., O'Grady, A., Eamus, D., et al. (2003). *Recommended environmental water requirements for the Daly River, Northern Territory, based on ecological, hydrological and biological principles*. Supervising Scientist Report 175, Environment Australia.

Eureka. (2010a). *Kimberley LNG Precinct Strategic Assessment: Aboriginal Archaeological Site Avoidance Survey, James Price Point*. Draft Report by Eureka Archaeological Research and Consulting for the Kimberley Land Council, Broome, University of Western Australia, Perth, WA.

Eureka. (2010b). *Archaeological Work Program Clearance of the Biota Track Extension, James Price Point, Kimberley Region, WA*. Draft Report by Eureka Archaeological Research and Consulting for the Kimberley Land Council, Broome, University of Western Australia, Perth, WA.

European Commission. (2006). Integrated Pollution Prevention and Control Reference Document on Best Available Techniques on Emissions from Storage. July 2006. Web reference: http://www.ineris.fr/ippc/sites/default/files/files/esb_bref_0706.pdf

Gales, N., McCauley, R. D., Lanyon, J., & Holley, D. (2004). Change in the abundance of dugongs in Shark Bay, Ningaloo and Exmouth Gulf, Western Australia: Evidence of large-scale migration. *Wildlife Research*, 31 (3), 283-290.

Gladstone LNG. (2011). *GLNG*. Retrieved from <http://www.glng.com.au/>

Grasso, J. R. (1992). Mechanics of seismic instabilities induced by the recovery of hydrocarbons. *Pure and Applied Geophysics*, 139 (3-4), 507-534.

Green, N. (1991). *A Report on the Ethnographic Survey of Exploration Licence Applications E04/645, E04/646 & E04/647 in the West Kimberley*. Unpublished Report, Department of Indigenous Affairs, Perth, WA.

Groom, P. K., Froend, R. H., & Mattiske, E. M. (2000). Impact of groundwater abstraction on a Banksia woodland, Swan Coastal Plain, Western Australia. *Ecological Management & Restoration*, 1 (2), 117-124.

Healy, C. (2008). *Forgetting Aborigines*. Sydney, NSW: University of New South Wales Press.

Hedley, S. L., Bannister, J. L., & Dunlop, R. (2008). *Group IV Humpback Whales: Abundance Estimates from Aerial and Land-based Surveys off Shark Bay, Western Australia*. Paper SC/61/SH23 presented to the Scientific Committee of the International Whaling Commission, June 2009. (Unpublished).

Heritage Council of WA. (1999). *Heritage Trail - Lurujarri - Retracting the Song Cycle from Minarriny to Yinara*. Perth, WA.

Howard, J. *Mining Wardens Court Decision in the matters of application for exploration licences EO4/645, 646 and 647. And objections Nos. 1-5/980, 18/890 and 3-4/901 between Terrex Resources N/L. (Applicant) and Bidyaganga Aboriginal Community, Kimberley Conservation Group, Broome Botanical Society, Kimberley Land Council on behalf of Goolarabooloo Aboriginal Community and Boonaroo Pastoral Pty Ltd (Objectors)*. Vol 8, Folio 8AA.

Huisman, J. M., Phillips, J. C., & Freshwater, D. W. (2009). Rediscovery of *Gelidiella ramellosa* from near the type locality in Western Australia. *Cryptogamie Algologie*, 30, 1-14.

Jenner, K. C., Jenner, M.-N. M., & McCabe, K. A. (2001). Geographical and temporal movements of Humpback whales in Western Australian waters. *AAPEA Journal*, 38, 749-765.

Kalotas, A. (1989). *Report of Investigations into the Disturbance of Aboriginal Site K2520, Inballal Karnbor, South of James Price Point*. WA Department of Aboriginal Sites, Perth, WA.

Kelley, A. (2002). Role of savanna vegetation in soil and groundwater dynamics in a wet-dry tropical climate. In T. Haig, A. Knapton, & S. Ticknel (Ed.), *Proceedings of the International Groundwater Conference 'Balancing The Groundwater Budget', International Association of Hydrologists, Northern Territory Branch, 12-17 May 2002*, (pp. 1-8). Darwin, Northern Territory, Australia.

Kimberley Land Council (KLC). *Kimberley LNG Precinct Strategic Assessment*. Indigenous Impacts Report Volume 4: Draft Report on Heritage Impact Assessment, Kimberley Land Council, Broome, WA.

Kosheleva, V. (1992). The impact of air guns used in marine seismic explorations on organisms living in the Barents Sea. *Fisheries and Offshore Petroleum Exploitation 2nd International Conference, 6-8 April 1992*. Bergen, Norway.

Lacy, K. E., & Martins, E. P. (2003). The effect of anthropogenic habitat usage on the social behaviour of a vulnerable species, *Cycluranubila*. *Animal Conservation*, 6, 3-9.

Leo, D. (2010a). *Ethnographic Survey for Work Program Clearance, Browse LNG Development, Final Onshore Geotechnical Survey, Phase 1*. Report by Converge Consulting, Brisbane, for the Kimberley Land Council, Broome.

Liddle, D. T., Boggs, D., Hutley, L., Foo, Y., D, Boggs, G., et al. (2008). *Biophysical modelling of water quality in a Darwin rural area groundwater dependent ecosystem*. Report to Natural Resource Management Board, NHT Project 2005/133, Northern Territory Government Department of Natural Resources, Environment, The Arts and Sport, Palmerston, Northern Territory.

Limpus, C. J. (2006). *Marine Turtle Conservation and Gorgon Gas Development, Barrow Island, Western Australia*. Report to the Environmental Protection Authority, WA and Department of Conservation and Land Management, WA.

Loheide, S. P., & Booth, E. G. (2001). Effects of changing channel morphology on vegetation, groundwater, and soil moisture regimes in groundwater-dependent ecosystems. *Geomorphology*, 126 (3-4), 364-376.

Marsh, H., & Sonclair, D. F. (1989). Correcting for visibility bias in strip transect aerial surveys of marine fauna. *Journal of Wildlife Management*, 53 (4), 1017-1024.

McCauley, R. D. (1994). Seismic surveys. In J. M. Swan, J. M. Neff, & P. C. Young (Eds.), *Environmental Implications of Offshore Oil and Gas Development in Australia: Further Research. A compilation of three scientific marine studies - November 2003* (p. 521). Canberra, ACT: Energy Research and Development Corporation.

- McWhae, J. R., Playford, P. E., Lindner, A. W., Glenister, B. F., & Balme, B. E. (1958). The stratigraphy of Western Australia. *Journal of Geological Society of Australia*, 4, 1-161.
- Misra, R. K. (1997). Maximum axial growth pressures of the lateral roots of pea and eucalypt. *Plant and Soil*, 188, 161-170.
- Morgan, D. L., Whitty, J. M., & Phillips, N. M. *Endangered Swafishes and River Sharks in the West Kimberley*. Report to Woodside Energy Ltd, Centre for Fish and Fisheries Research, Murdoch University.
- Moritz, C., Broderick, D., Dethmers, K., Fitzsimmons, N., & Limpus, C. (2002). *Population genetics of Southeast Asian and Western Pacific green turtles, Chelonia mydas*. Final Report to Convention on the Conservation of Migratory Species of Wild Animals.
- Nevill, J. C., Hancock, P. J., Murray, B. R., Ponder, W. F., Humphreys, W. F., Philips, M. L., et al. (2010). Groundwater-dependent Ecosystems and the dangers of groundwater overdraft: A review and an Australian perspective. *Pacific Conservation Biology*, 16 (3), 187-208.
- Noad, M. J., Dunlop, R. A., Paton, D. A., & Cato, D. H. (2008). *An update of the east Australian humpback whale (E1) rate of increase*. Paper SC/60/5H31 submitted for consideration by the IWC Scientific Committee.
- Northern Territory Development Taskforce (NDT). (2008). *Final Site Evaluation Report December 2008*. Department of Industry and Resources, Perth, WA.
- O'Connor, R. G., Quatermaine, N., & Nyanya. (1989). *Report on a Survey for Aboriginal Sites on the Proposed Roadworks, Broome-Manari Road*. Report to the Broome Shire Council and the Lurujarri Heritage Council.
- O'Grady, A., Eamus, D., Cook, P., Lamontagne, S., Kelley, G., & Hutley, L. (2002). *Tree Water Use and Sources of Transpired Water in Riparian Vegetation Along the Daly River, Northern Territory*. Retrieved from Rivers and Basins publications: <http://www.environment.gov.au/water/publications/environmental/rivers/nrhp/pubs/daly-river-2.pdf>
- O'Grady, A. P., Cook, P. G., Howe, P., & Werren, G. (2006). Groundwater use by dominant tree species in tropical remnant vegetation communities. *Australian Journal of Botany*, 54 (2), 155-171.
- Parra, G. J., Azuma, C., Preen, A. R., Corkeron, P. J., & Marsh, H. (2002). Distribution of Irrawaddy dolphins, *Orcaella brevirostris* in Australian waters. *Raffles Bulletin of Zoology Supplement*, 10, 141-154.
- Parra, G. J., Corkeron, P. J., & Marsh, H. (2004). The Indo-Pacific humpback dolphin, *Sousa chinensis* (Osbeck, 1765), in Australian waters: A summary of current knowledge. *Aquatic Mammals*, 30, 197-206.
- Parra, G. J. (2006). Resource partitioning in sympatric delphinids: Space use and habitat preferences of Australian snubfin and Indo-Pacific humpback dolphins. *Journal of Animal*, 75, 862-874.
- Parra, G. J., Corkeron, P. J., & Marsh, H. (2006a). Population sizes, site fidelity and residence patterns of Australian snubfin and Indo-Pacific humpback dolphins: Implications for conservation. *Biological Conservation*, 129, 167-180.
- Parra, G. J., Schick, R., Corkeron, P. J., & Marsh, H. (2006b). Spatial distribution and environmental correlated of Australian snubfin and Indo-Pacific humpback dolphins. *Ecography*, 29, 396-406.
- Pattiaratchi, C. (2007). *Understanding Areas of High Productivity With the South-West Marine Region*. Report prepared for the Department of the Environment, Water, Heritage and Arts.
- Pipe Jacking Association. (n.d). *An introduction to pipe jacking and microtunnelling design*.
- Poff, N. L., Allan, J. D., Bain, M. B., Karr, J. R., Prestegard, K. L., Richter, B. D., et al. (1997). The natural flow regime. *Bioscience*, 47 (11), 769-784.
- Preen, A., & Marsh, H. (1995). Response of dugongs to large-scale loss of seagrass from Hervey Bay. *Wildlife Research*, 22, 507-519.

Prince, R. I. (1994). Status of the Western Australian marine turtle Populations: The Western Australian marine turtle project 1986-1990. *Proceedings of the Australian Marine Turtle Conservation Workshop, 14-17 November 1990*, pp. 1-14.

RasGas. (2010). Vapour Recovery Systems Development. Web reference: http://www.rasgas.com/l_5.cfm?L3_id=5&L2_id=2&L4_ID=17&L5_id=22

Rockwater Pty Ltd. (2010). *H1 Level Assessment of the Broome Aquifer at the Broome LNG Precinct*. Report for Woodside Energy Limited.

RPS. (2010a). *Humpback Whale Survey Report*. Prepared for Woodside Energy Ltd, Browse MMF 2009.

RPS. (2010b). *Marine Megafauna Report*. Prepared for Woodside Energy Ltd, Browse MMF 2009.

RPS. (2010c). *Marine Megafauna Report*. Prepared for Woodside Energy Ltd, Browse MMFS 2009.

RPS. (2010d). *Marine Megafauna Report*. Prepared for Woodside Energy Ltd, Browse MMFS 2009.

RPS. (2010e). *Woodside Browse Turtle Technical Report, Ecology of Marine Turtles of the Dampier Peninsula and the Lacepede Island Group 2009-2010*. Prepared for Woodside Energy Ltd.

Rudd, H.J., & Hill, N.A (2001). Measures to Reduce Emissions of VOCs during Loading and Unloading of Ships in the EU. A report produced for the European Commission, Directorate General – Environment. Web reference: <http://ec.europa.eu/environment/air/pdf/vocloading.pdf>

SEWPaC. (2010). *Introduction to The Aboriginal and Torres Strait Islander Heritage Protection Act*. Retrieved from Heritage Division Department of Sustainability, Environment, Water, Population and Communities, Canberra: <http://environment.gov.au/heritage>

Siversson, M. (2010a). *Preliminary Report upon the Palaeontology (including Dinosaur Footprints) of the Broome Sandstone in the James Price Point Area, WA*. Prepared for the WA Department of State Development, Perth, AECOM Australian Pty Ltd.

Siversson, M. (2010b). *Report on the Macro-Fossils in Intertidal Outcrops of the Broome Sandstone, 1.2-2.7 km South of James Price Point (Proposed Marine Infrastructure Shore Crossing) and 6.2-7.5 km South of James Price Point (Proposed Southern Pipeline Shore Crossing)*. Report for the WA Department of State Development, Western Australian Museum.

SKM. (2009). *Draft Aerial Survey of Inshore Marine Megafauna along the Dampier Peninsula: Late Wet Season*. Unpublished report for Woodside Energy Limited.

Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Greene Jr, C. R., et al. (2007). Marine mammal noise exposure criteria: Initial scientific recommendations. *Aquatic Mammals*, 33, 411-509.

State of Western Australia, Goolarboooloo Jabirr Jabirr Peoples, Woodside Energy Limited, Broome Port Authority & LandCorp. (2011). *Browse LNG Precinct Project Agreement*.

State of Western Australia, Minister for Lands, Conservation Commission of Western Australia, Kimberley Land Council & Woodside Energy Limited. (2011). *Browse LNG Precinct Regional Benefits Agreement*.

Stensland, E., & Berggren, P. (2007). Behavioural changes in female Indo-Pacific bottlenose dolphins in response to boat-based tourism. *Marine Ecology Progress Series*, 32, 225-234.

Stevens, J. D., McCauley, R. B., Simfendorfer, C. A., & Pillans, R. D. (2008). *Spacial Distribution and Habitat Utilisation of Sawfish (Pistis spp.) in Relation to Fishing in Northern Australia*. Prepared for the Department of the Environment, Water, Heritage and the Arts, CSIRO.

Stillman, R. A., & Goss-Custard, J. D. (2002). Seasonal changes in the response of oystercatchers *Haematopus ostralegus* to human disturbance. *Journal of Avian Biology*, 33 (4), 358-365 .

Strong, W. L., Redburn, M. J., & Gates, C. C. (2009). Climate and vegetation change during the twentieth century in the lower Peace River district, northern Alberta, Canada. *Holocene*, 19 (20), 199-207.

The State of Western Australia & Goolarboooloo Jabirr Jabirr Peoples. (2011). *Browse (Land) Agreement*.

Thulborn, R., Hamley, T., & Foulkes, P. (1994). Preliminary Report on Sauropod Dinosaur Tracks in the Broome Sandstone (Lower Cretaceous) of Western Australia. *Gaia*, 10, 85-94.

Thulborn, T. (1997). *Report on 1997 Fieldwork*. Retrieved from Dinosaur Mailing List: <http://dml.cmnh.org/1997Aug/msg00779.html>

Thulborn, T. (1998, July-August). Dinosaur Tracks at Broome, Western Australia. *Geology Today*, p. 139.

Unsworth, R. K., McKenna, S. A., & Rasheed, M. A. (2009). *Port of Karumba Long Term Seagrass Monitoring, October 2008*. DPI & F Publication PR09-4227.

US EPA. (1997). Emissions Factors & AP 42, Compilation of Air Pollutant Emission Factors, Fifth Edition. Section 5.2 Transportation And Marketing Of Petroleum Liquids. Web reference: <http://www.epa.gov/ttn/chief/ap42/>

V & C Semeniuk Research Group. (2000). *Wetlands of the northwestern Great Sandy Desert in LaGrange hydrological sub-basin*. Report to Water & Rivers Commission.

Van Eijsa, R. M., Mulders, F. M., Nepveua, M., Kenterb, C. J., & Scheffers, B. C. (2006). Correlation between hydrocarbon reservoir properties and induced seismicity in the Netherlands. *Engineering Geology*, 84, 99-111.

Vella, G., Rushforth, I., Mason, E., Hough, A., England, R., Styles, P., et al. (2001). *Assessment of the effects of noise and vibrations from offshore wind farms on marine wildlife*. ETSU W/13.00566/REP, DTI/Pub URN 01/1341, University of Liverpool, Centre for Marine and Coastal Studies, England.

Vermaat, J. E., Agawin, N. S., Fortes, M. D., Uri, J. S., Duarte, C. M., Marba, N., et al. (1997). The capacity of seagrass to survive increased turbidity and siltation: The significance of growth form and light use. *Ambio*, 26, 499-507.

Viddi, F. A., Ribiero, S., & Freitas, T. R. (2005). Behavioural responses of Chilean dolphins (*Cephalorhynchus eutropia*) to boats in Yaldad Bay, Southern Chile. *Aquatic Mammals*, 31 (2), 234-242.

WA Greenhouse Gas Emissions Strategy. (2004). *Western Australia Greenhouse Gas Task Force*. Retrieved May 22, 2011, from Department of Environment and Conservation: <http://www.dec.wa.gov.au/>

Wallace, J. (2010). *Classification of the Vine Thicket on Dampier Peninsula using TM Imagery*. Report to Woodside Energy Limited. Appendix C-21 of 'Browse Liquefied Natural Gas Precinct Strategic Assessment Report - Draft for Public Review'.

Waller, M. (2010). *Planning for resources growth in the Pilbara: Revised employment and population projections to 2020*. Retrieved from <http://www.cmewa.com/UserDir/CMEResources/100517-MPR-Pilbara%20demographic%20projections-April2010-v121.pdf>

Waycott, M., McMahon, K., Mellors, J., Calladine, A., & Kleine, D. (2004). *A Guide to Tropical Seagrasses of the Indo-West Pacific*. James Cook University, Townsville, Queensland.

Waycott, M., Longstadd, B. J., & Mellors, J. (2005). Seagrass population dynamics and water quality in the Great Barrier Reef region: A review and future research directions. 51, 343-350.

Wells, F. E., McDonald, J. I., & Huisman, J. M. (2009). *Introduced Marine Species in Western Australia*. Department of Fisheries, Perth, WA.

Werner, A. D., Alcoe, D. W., Ordens, C. M., Hutson, J. L., Ward, J. D., & Simmons, C. T. (2011). Current practice and future challenges in coastal aquifer management: Flux-based and trigger-level approaches with application to an Australian case study. *Water Resources Management*, 25 (7), 1831-1853.

Whitehead, H., & Moore, M. J. (1982). Distribution and movements of West Indian humpback whales in winter. *Canadian Journal of Zoology*, 60 (9), 2203-2211.

Whitty, J. M., Phillips, N. M., Morgan, D. L., Chaplin, J. A., Thorburn, D. C., & Peverell, S. C. (2008). *Habitat Association of Freshwater Sawfish (Pristis microdon) and Northern River Sharks (Glyphis sp. C): Including Genetic Analysis of P. microdon Across Northern Australia*. Prepared for the Department of the Environment, Water, Heritage and the Arts, Australian Government, Centre of for Fish and Fisheries Research, Murdoch University.

WWF. (2010). *Collision Course: Snubfin dolphin injuries in Roebuck Bay*. Retrieved from WWF-Australia: <http://www.wwf.org.au/publications/snubfinreportcollisioncoursejuly2010/>

Yukihira, H., Klumpp, D. W., & Lucas, J. S. (1999). Feeding adaptations of the pearl oysters *Pinctada margaritifera* and *P. maxima* to variations in natural particulates. *Marine Ecology*, 182, 161-173.

Yukihira, H., Klumpp, D. W., & Lucas, J. S. (2006). The pearl oysters, *Pinctada maxima* and *P. margaritifera*, respond in different ways to culture in dissimilar environments. *Aquaculture*, 252, 208-224.

Annexure 1 - Index of Questions and Answers in Appendix A

This page has been intentionally left blank.

Contents

| | |
|--|-----|
| Part 1: Executive Summary..... | 15 |
| Part 2: General..... | 17 |
| 1 Introduction | 17 |
| 1.1 Objective and Benefits - A Balanced Approach..... | 19 |
| 1.2 Background | 23 |
| 1.3 Why a Strategic Assessment?..... | 24 |
| 1.4 Precinct Plan Overview | 24 |
| 2 Strategic Assessment and Approvals Process | 26 |
| 2.1 Commonwealth Government EPBC Approvals Process | 39 |
| 2.2 Western Australian EP Act Approvals Process | 40 |
| 2.3 Compliance with the Strategic Assessment Terms of Reference..... | 45 |
| 3 Rationale for the Precinct Plan | 47 |
| 3.1 Browse Basin Gas Reserves | 50 |
| 3.2 Demand for LNG Processing Facilities in the West Kimberley..... | 52 |
| 3.3 Carbon Footprint of Natural Gas | 54 |
| 3.4 Environmental Advantages..... | 55 |
| 3.5 Economic and Social Benefits | 56 |
| 4 Site Selection Process Development Options | 60 |
| 4.1 Overview of Western Australian Government Process for Site Selection | 61 |
| 4.2 Site Options outside the Kimberley Region | 66 |
| 4.3 Initial Filtering of Kimberley Sites | 71 |
| 4.5 Determination of a Preferred Site | 72 |
| 5 Description of Activities and Facilities under the Precinct Plan (Category A)..... | 73 |
| 5.1 Generic Layout of BLNG Precinct | 77 |
| 5.3 Operational Activities (LNG Facilities)..... | 79 |
| 5.4 Offshore Feed and Onshore Pipelines | 79 |
| 5.5 Port Facility | 80 |
| 5.6 Shipping Movements | 81 |
| 5.7 Plant Utilities and Associated Infrastructure | 81 |
| 5.8 Construction Activities Associated with Precinct Development..... | 85 |
| 5.9 Commissioning..... | 87 |
| 5.10 Maintenance..... | 87 |
| 5.11 Fire Management | 88 |
| 5.12 Decommissioning..... | 88 |
| 5.13 Workforce | 89 |
| 5.14 Transport..... | 89 |
| 5.15 Emissions, Discharges and Wastes..... | 90 |
| 6 Indirect Activities and Related Projects..... | 94 |
| 6.1 Category B Activities | 94 |
| 6.2 Category C Activities | 96 |
| 7 Land and Asset Tenure..... | 96 |
| 8 Impact Assessment Methodology | 97 |
| 8.1 Assessment Approach..... | 105 |
| 8.2 Managing Uncertainties of Precinct Development..... | 109 |
| 8.4 Presentation of Findings..... | 118 |
| 9 Consultation Undertaken | 118 |
| 9.1 Consultation Undertaken Towards the Social Impact Assessment | 132 |
| 9.2 Consultation Undertaken Towards the Environmental Impact Assessment..... | 135 |
| Part 3: Marine..... | 137 |

| | | |
|---------|---|-----|
| 1 | Environmental Overview..... | 137 |
| 1.3 | Physical Marine Environment..... | 143 |
| 1.4 | Ecological Marine Environment..... | 145 |
| 1.5 | Marine Management Framework | 148 |
| 2 | Marine Factors..... | 149 |
| 2.1 | Relevant Factor: Tidal regimes, Wave Climate, Currents and Hydrodynamics | 158 |
| 2.2 | Relevant Factor: Marine Sediments..... | 161 |
| 2.3 | Key Factor: Marine Water Quality | 165 |
| 2.4 | Key Factor: Benthos Including Benthic Primary Producers | 171 |
| 2.5 | Relevant Factor: Fish..... | 175 |
| 2.6 | Key Factor: Marine Mammals | 180 |
| 2.7 | Key Factor: Marine Reptiles..... | 210 |
| 2.8 | Relevant Factor: Marine Ecosystem Integrity | 225 |
| Part 4: | Terrestrial | 229 |
| 1 | Environmental Overview..... | 229 |
| 1.1 | Existing Terrestrial Environment | 231 |
| 1.3 | Physical Terrestrial Environment | 231 |
| 1.4 | Ecological Terrestrial Environment | 235 |
| 1.5 | Atmospheric Environment | 253 |
| 2 | Terrestrial Factors..... | 255 |
| 2.1 | Relevant Factor: Soils and Geomorphology | 259 |
| 2.2 | Relevant Factor: Surface Water..... | 259 |
| 2.3 | Relevant Factor: Groundwater | 262 |
| 2.4 | Key Factor: Terrestrial Flora and Vegetation | 268 |
| 2.5 | Relevant Factor: Species of Ethno-biological Significance | 275 |
| 2.6 | Key Factor: Terrestrial Fauna | 276 |
| 2.7 | Relevant Factor: Terrestrial Ecosystem Integrity | 285 |
| 2.8 | Relevant Factor: Air Quality | 286 |
| 2.9 | Key Factor: Greenhouse Gas Emissions | 308 |
| Part 5: | Social..... | 333 |
| 1 | Introduction..... | 333 |
| 1.1 | Structure of the Social Components of the Browse Strategic Assessment Report..... | 336 |
| 1.2 | Relevant Socio-Economic Factors | 338 |
| 2 | Strategic Social Impact Assessment | 338 |
| 2.1 | Baseline Profile: Broome and the Region | 346 |
| 2.2 | SIA Methodology | 347 |
| 2.3 | Economic Factors..... | 355 |
| 2.4 | Demand for Land and Housing | 367 |
| 2.5 | Social Infrastructure, Public Utilities and Transport | 375 |
| 2.6 | Health Services and Facilities | 379 |
| 2.7 | Education, Training and Employment | 382 |
| 2.8 | Sport and Recreation including Recreational Fishing | 395 |
| 2.9 | Tourism | 395 |
| 2.10 | Police, Justice, Social Needs and Services..... | 402 |
| 2.11 | Community Identity and Sense of Place..... | 406 |
| 2.12 | Impacts to Social Mix and Values..... | 407 |
| 3 | Strategic Indigenous Impacts Assessment..... | 410 |
| 3.1 | Introduction..... | 421 |
| 3.2 | Indigenous Agreements and Funding Commitments | 427 |
| 3.3 | Relevant Legislation..... | 430 |

| | | |
|---------|--|-----|
| 3.4 | Potential Socio-Economic Impacts on Indigenous People | 431 |
| 3.5 | Indigenous Cultural Heritage Values | 447 |
| 3.6 | Potential Impacts on Aboriginal Heritage Sites - Archeological..... | 462 |
| 3.7 | Potential Impacts on Indigenous Environmental Values | 465 |
| 3.8 | Customary Fishing..... | 466 |
| 3.9 | Traditional Owner Informed Consent and Consultation..... | 467 |
| 3.10 | Mitigation and Management of Indigenous Impacts..... | 473 |
| 4 | Direct Social Surrounds and Socio-economic Factors..... | 478 |
| 4.1 | Relevant Factor: Environmental Heritage and Conservation Areas | 479 |
| 4.2 | Relevant Factor: Palaeontology | 486 |
| 4.3 | Relevant Factor: Colonial Heritage..... | 494 |
| 4.4 | Relevant Factor: Visual Amenity, Light and Landscape Character | 494 |
| 4.5 | Relevant Factor: Commercial Fishing | 497 |
| 4.6 | Relevant Factor: Aquaculture and Pearling..... | 504 |
| 4.7 | Relevant Factor: Tourism | 510 |
| 4.8 | Relevant Factor: Sports, Recreation and Land Use (including Recreational Fishing)..... | 523 |
| 4.9 | Relevant Factor: Human Health | 527 |
| 5 | Strategic Social Impact Management Plan (SSIMP) | 533 |
| 5.1 | Overarching Strategic Framework | 547 |
| 5.2 | Precinct-level Management Strategies | 547 |
| 5.3 | Precinct Governance and Social Monitoring | 549 |
| 5.4 | Precinct Condition Strategies | 551 |
| 5.5 | General Social Management Strategies..... | 566 |
| 5.6 | Social Aspects and Matters of National Environmental Significance | 571 |
| 5.7 | Environmental Management Measures Relating to Social Factors..... | 571 |
| 5.8 | Conclusion | 571 |
| Part 6: | Commonwealth..... | 575 |
| 1 | Introduction | 575 |
| 1.1 | Activities Addressed Under the Precinct Plan | 575 |
| 2 | Matters of National Environmental Significance | 575 |
| 2.1 | Introduction..... | 579 |
| 2.2 | Matters of NES Relevant to the Precinct Plan..... | 579 |
| 2.4 | Assessment of Potential Impacts, Safeguards and Mitigation Measures..... | 583 |
| 3 | The Plan to Establish an LNG Precinct..... | 584 |
| 3.1 | Definition of the Plan and the Proponent..... | 584 |
| 3.2 | Purpose of this Plan | 584 |
| 3.3 | Precinct Purpose | 584 |
| 3.4 | Precinct Location Selection Process | 584 |
| 3.5 | Intentions for Changing Status of the Land | 584 |
| 3.6 | Description of the Plan | 584 |
| 3.7 | Matters of National Environmental Significance and Heritage | 584 |
| 3.8 | Plan Implementation..... | 584 |
| 3.9 | Monitoring and Adaptive Management..... | 585 |
| Part 7: | Supplementary Information | 587 |
| 1 | Introduction | 587 |
| 1.1 | Background to the BLNG Strategic Assessment..... | 587 |
| 1.2 | SAR Part 7: Supplementary Information | 587 |
| 2 | Marine Wastewater Discharge Modelling | 587 |
| 2.1 | Introduction..... | 587 |
| 2.2 | Relevant Factors | 587 |

| | | |
|-----|---|-----|
| 2.3 | Study Overview | 587 |
| 2.4 | Assessment against SAR Impact Conclusions and Outcomes | 588 |
| 2.5 | Conclusion..... | 588 |
| 3 | Benthic Primary Producer Habitat Calculations..... | 588 |
| 3.1 | Introduction..... | 590 |
| 3.2 | Relevant Factors | 590 |
| 3.3 | Study Overview | 590 |
| 3.4 | Calculation of Cumulative Losses of Benthic Primary Producer Habitat..... | 590 |
| 3.5 | Assessment against SAR Impact Conclusions and Outcomes | 590 |
| 3.6 | Conclusion..... | 591 |
| 4 | Hydrocarbon Spill Modelling..... | 591 |
| 4.1 | Introduction..... | 593 |
| 4.2 | Relevant Factors | 593 |
| 4.3 | Study Overview | 593 |
| 4.4 | Assessment against SAR Impact Conclusions and Outcomes | 595 |
| 4.5 | Conclusion..... | 596 |
| 5 | Supplementary Coastal Processes Modelling | 596 |
| 5.1 | Introduction..... | 598 |
| 5.2 | Relevant Factors | 598 |
| 5.3 | Study Overview | 598 |
| 5.4 | Assessment against SAR Impact Conclusions and Outcomes | 599 |
| 5.5 | Conclusion..... | 599 |
| 6 | Summary and Conclusions..... | 599 |
| 6.1 | Purpose..... | 599 |
| 6.2 | Marine Wastewater Discharge Modelling..... | 599 |
| 6.3 | Marine Benthic Primary Producer Habitat Calculations | 599 |
| 6.4 | Hydrocarbon Spill Modelling | 599 |
| 6.5 | Coastal Processes Modelling..... | 600 |
| 6.6 | Impacts..... | 600 |
| | References | 601 |

Annexure 2 - Native Title Documentation

This Annexure contains a series of Fact Sheets presenting:

- An Overview of the Native Title Agreements
- The Project Agreements and associated Summary of Benefits
- The Regional Benefits Agreement
- The Browse (Land) Agreements and Provisions
- The Environmental Protection Assurances

Native Title Agreement Overview



Native Title Agreement

The Western Australian Government is developing a Liquefied Natural Gas (LNG) processing and export precinct in the Kimberley to ensure that Western Australia, and in particular the Kimberley, benefit from the development of the natural gas resources in the offshore Browse Basin.

Since June 2007, the Government has been working in partnership with the Kimberley Land Council, Traditional Owners, industry and West Kimberley communities to select the most suitable location and to coordinate establishment of the precinct.

The State Government, the Goolarabooloo Jabirr Jabirr peoples, and Woodside Energy Ltd (Woodside) have now finalised the native title agreement, bringing the Browse LNG Precinct closer to reality.

Site Selection Process

Forty-three possible sites were assessed on technical, engineering, environmental, cultural heritage and socio-economic grounds. The assessment included extensive consultation with Kimberley Indigenous communities and advice from the Environmental Protection Authority (EPA).

James Price Point, approximately 60 kilometres north of Broome in the Goolarabooloo Jabirr Jabirr native title claim area, was found to be the most suitable site for the precinct. The precinct will include an industrial processing site, workers' accommodation site, third party contractors' site, and port and marine facilities.

The Negotiations

In 2008, the State Government, the Kimberley Land Council, on behalf of the Goolarabooloo Jabirr Jabirr, and Woodside, commenced negotiations to obtain native title and heritage consents for the establishment of the precinct at James Price Point.

The parties reached in-principle agreement in April 2009 in a Heads of Agreement (HoA), establishing a clear framework for negotiations and key principles for a final agreement between the State, Goolarabooloo Jabirr Jabirr and Woodside.

The Agreement Documents

There are three agreement documents that combine to form this unique native title agreement:

Browse LNG Precinct Project Agreement

This is the primary native title agreement. It provides all the native title consents necessary for the establishment and operation of the precinct. It also sets out the benefits to be provided to the Goolarabooloo Jabirr Jabirr by the State, Woodside as the foundation proponent and any additional proponent/s.

Browse LNG Precinct Regional Benefits Agreement

This agreement fulfils the commitment to provide benefits to Indigenous people of the Dampier Peninsula and broader Kimberley region and is one of the things that makes the native title agreement unique. It means that the benefits are shared across the region rather than one group getting all the benefits.

Browse (Land) Agreement

This agreement delivers on the commitments made to limit the use of the precinct to LNG processing only, and rehabilitate and remediate the land after the precinct is closed, and return the land to Traditional Owners at the end of the precinct life. It also establishes the Browse LNG Precinct as the one site for all LNG developments on the Kimberley coastline. This agreement will be presented for ratification by Parliament and is unique – no other agreement of its type has been entered into between the State and Indigenous people.

Strategic Assessment Review

The Browse LNG Precinct can not proceed until State and Commonwealth environmental approvals are obtained.

Environmental and social impacts of the proposed precinct are being addressed through a State and Commonwealth Government Strategic Assessment.

A draft Strategic Assessment Report was released for public review in December 2010 and the Department of State Development is preparing responses to the issues raised in the public submissions. The State and Commonwealth environment Ministers are expected to make a decision in early 2012.

Decision Timelines

A final investment decision by foundation proponent Woodside Energy Ltd is expected in 2012. Based on these timeframes, LNG processing could commence in 2016-2017.

For further information
please visit:
www.dsd.wa.gov.au/BrowseLNG

Project Agreement



What is the Project Agreement?

The Project Agreement is the primary native title agreement between the State Government, the Goolarabooloo Jabirr Jabirr peoples and Woodside Energy Ltd (Woodside) for the establishment of the Browse LNG Precinct. It operates as a section 31 agreement under the *Native Title Act 1993* (Cth).

The Agreement:

- Provides the native title consents and approvals for the establishment and operation of the LNG Precinct.
- Sets out the benefits the State Government and Woodside will provide to the native title party, the Goolarabooloo Jabirr Jabirr people.
- Sets out a framework, process and timeframe for any additional proponent to negotiate compensation and consents with the Goolarabooloo Jabirr Jabirr.
- Releases the State and proponents from all native title compensation liabilities associated with the establishment of the Precinct.
- Provides for the establishment of a Precinct Management Committee (PMC) involving the Goolarabooloo Jabirr Jabirr, the State and all precinct operators. The PMC will have a role in the establishment and operation of the precinct and oversight of cultural heritage management, environmental management, business development and contracting opportunities, cultural awareness training, land access and decommissioning of the precinct.
- Establishes rigorous governance requirements for the management of benefits.
- Provides for a review of the Agreement after 50 years.

Parties

Parties to the Agreement include:

- the State Government
- the Goolarabooloo Jabirr Jabirr
- Woodside Energy Ltd
- Broome Port Authority

Summary of Benefits

STATE GOVERNMENT BENEFITS

Upon execution

- \$5 million for the Goolarabooloo Jabirr Jabirr Body Corporate establishment and operation.
- A block of land in the Blue Haze estate to build the Goolarabooloo Jabirr Jabirr Body Corporate office.
- \$12.1 million Broome House and Land package.

Upon securing land for the Precinct

- \$10 million for the Goolarabooloo Jabirr Jabirr Economic Development Fund.
- \$20 million for the Goolarabooloo Jabirr Jabirr Housing Fund.

Upon securing a Foundation Proponent

- 2900 hectares of land (freehold or other tenure that Goolarabooloo Jabirr Jabirr chooses) in the Goolarabooloo Jabirr Jabirr claim area.

FOUNDATION PROPONENT BENEFITS

The Foundation Proponent Benefits are structured for delivery over the life of the precinct, with payments due upon execution of the native title agreement, upon securing the land for the precinct, when milestones are achieved and upon expansion.

Foundation Proponent benefits include:

- annual payments for business development, remedial reading and a ranger program.
- commitments for business and contracting opportunities.
- employment targets.
- joint ventures.
- commitment to make good any serious environmental harm.
- Goolarabooloo Jabirr Jabirr input to environmental management and water supply.
- a break fee if the project does not proceed.

ADDITIONAL PROPONENT BENEFITS

Benefits benchmarked against Foundation Proponent benefits regime. There is capacity for negotiation within defined parameters.

For further information
please visit:
www.dsd.wa.gov.au/BrowseLNG

Regional Benefits



What is the Regional Benefits Agreement?

The Browse LNG Precinct Regional Benefits Agreement between the State Government, Woodside Energy Ltd (Woodside) and the Kimberley Land Council (KLC) fulfils the commitment to provide benefits to Indigenous people of the Dampier Peninsula and broader Kimberley region. This will mean that the social and economic benefits from the development will be shared across the region and not just with one group.

The Agreement:

- Sets out the benefits the State Government, Woodside and additional proponents will provide to the Traditional Owners of the Dampier Peninsula and the wider Kimberley region.
- Determines the priority for accessing regional benefits (Goolarabooloo Jabirr Jabirr native title claimant group, Dampier Peninsula Traditional Owners, other Kimberley Traditional Owners).
- Establishes a Regional Body Corporate to hold and distribute the benefits.
- Establishes rigorous governance requirements for the management of benefits, including regular reporting, transparency, and rules for distribution.
- Commits the State Government to working with the KLC to resolve outstanding native title claims in the Kimberley.
- Commits the State Government to working with the KLC to obtain additional funding from the Commonwealth Government for programs aimed at addressing impacts of the precinct and regional Indigenous issues in the Kimberley.

Summary of Benefits

STATE GOVERNMENT BENEFITS

Upon securing a Foundation Proponent

- 20 million for the regional Traditional Owner body (\$2 million annually for 10 years).
- \$20 million for regional Economic Development Fund.
- \$30 million for regional Indigenous Housing Fund (payment schedule).
- \$20 million for regional Education Fund (\$1 million annually for 20 years).
- \$8 million for Cultural Preservation Fund (\$500,000 annually for 16 years).
- \$108 million for the Kimberley Enhancement Scheme (payment schedule).
- \$15 million to create and jointly manage conservation reserves on the Dampier Peninsula with the Department of Environment and Conservation (\$1.5 million annually for 10 years).
- 600 hectares of land for Kimberley Traditional Owners.
- Reform of Indigenous land on the Dampier Peninsula so that it can be better used by Traditional Owners (includes a minimum of 600 hectares).
- Payments to be indexed to CPI.

FOUNDATION PROPONENT BENEFITS

The Foundation Proponent Benefits are structured for delivery over the life of the precinct, with payments due upon execution of the native title agreement, upon securing the land for the precinct, when milestones are achieved and upon expansion.

Foundation Proponent benefits include:

- a milestone payment to the regional Education Fund.
- annual payments to the Kimberley Enhancement Scheme.
- annual payment for each additional LNG train of equivalent capacity.
- Payments to be indexed to CPI.

ADDITIONAL PROPONENT BENEFITS

- Benefits benchmarked against Foundation Proponent. There is capacity for negotiation within defined parameters.

For further information
please visit:
www.dsd.wa.gov.au/BrowseLNG

Land Agreement



Browse (Land) Agreement

The Browse (Land) Agreement implements the commitments made by the State Government to the Traditional Owners. The agreement will be the first agreement between the State Government and Indigenous people to be presented to Parliament for ratification under the *Government Agreements Act*.

The Agreement:

- Limits the use of the precinct to petroleum processing, storage, loading, transporting and associated activities.
- Limits the life of the precinct to 100 years.
- Provides a mechanism to close the precinct earlier if it is not being used.
- Allows the port to operate as a general port after the precinct is closed.
- Commits the State to remediate and rehabilitate the land and facilities after the precinct is closed.
- Commits to the transfer of the land to the Goolarabooloo Jabirr Jabirr and the Goolarabooloo Jabirr Jabirr to choose the tenure.
- Prevents further LNG development on the Kimberley coastline.



Parties

The parties to the Agreement are the State Government and the Kimberley Land Council on behalf of the Goolarabooloo Jabirr Jabirr.

For further information
please visit:
www.dsd.wa.gov.au/BrowseLNG

Assurances



The State Government is committed to minimising the environmental impact of the Browse LNG Precinct. The native title agreement recognises the region's unique characteristics and incorporates environmental management principles and obligations on the State and proponents.

Background

The Browse LNG Precinct and Woodside Energy Ltd's project cannot proceed until State and Commonwealth environmental approvals are obtained.

Environmental and social impacts of the proposed precinct are being addressed through a State and Commonwealth Government Strategic Assessment.

A draft Strategic Assessment Report was released for public review in December 2010 and the Department of State Development is preparing responses to the issues raised in the public submissions. The final Browse LNG Precinct proposal will comply with the commitments and obligations in the native title agreement.

The State and Commonwealth Environment Ministers are expected to make their decisions in early 2012.

Precinct Governance

The Agreement establishes a governance framework for the precinct, including a Precinct Management Committee that will oversee environmental management and reporting. Traditional Owners will be represented on all precinct committees.

Environmental Management

The parties have agreed on environmental management principles for the precinct which will be overseen by the Precinct Management Committee and implemented by site managers.

Site managers will submit environmental performance reports to the Precinct Management Committee and respond to recommendations of the committee. Traditional Owners will also be able to commission independent audits as necessary and will have direct access to site managers.

Other Commitments

- The State Government will appoint a dedicated compliance officer with the Office of Environmental Protection for the life of the precinct. The compliance officer will have a key role in ensuring the flow of information between site managers, the Traditional Owners, the Precinct Management Committee and the Office of Environmental Protection.
- Proponents will be required to review and adopt world class environmental management practices.
- The State will remediate and rehabilitate the land used for the precinct once the precinct is closed.

For further information

please visit:
www.dsd.wa.gov.au/BrowseLNG

Annexure 3 - Governance and Environmental Management Commitments (as per Indigenous Agreements)

This Annexure details the Governance and Environmental Management issues as described in the following three Indigenous Agreements:

- Browse (Land) Agreement (**Annexure 3A**)
- Browse LNG Precinct Project Agreement (**PPA**) (**Annexure 3B**)
- Browse LNG Precinct Regional Benefits Agreement (**Annexure 3C**)

The full set of agreements are available on DSD's website at the following link: <http://www.dsd.wa.gov.au/8416.aspx>.

This page has been intentionally left blank.

Annexure 3 (A3) - Governance and Environmental Management Commitments (as per Indigenous Agreements)

Note: the term 'commercial proponent' is used to refer collectively to the Foundation Proponent and any Additional Proponent.

Annexure 3A - Browse (Land) Agreement

The Parties to this Agreement are the State of Western Australia and the Goolarabooloo Jabirr Jabirr Peoples.

The State has committed to entering into this Agreement in relation to:

- limiting the use of the LNG Precinct;
- limiting further LNG development on the Kimberley Coastline;
- the remediation and rehabilitation of the land at the End of Precinct Life; and
- the Grant of title within the LNG Precinct to the Native Title Party at the End of Precinct Life.

Bill to Ratify Agreement

The State shall introduce and sponsor a Bill in the State Parliament of Western Australia as soon as reasonably practicable and prior to 30 June 2012 or such later date as may be agreed between the parties to ratify this Agreement. The State shall endeavour to secure the timely passage of such Bill as an Act.

Limitation of Further LNG Development on the Kimberley Coastline

The State will not operate, authorise or permit the operation of a Gas Processing Facility located on the Kimberley Coastline but outside the LNG Precinct. A Gas Processing Facility means a facility for the liquefaction of Petroleum produced from any area seaward of the low water mark of the mainland coast of Western Australia, but does not include any other facility which uses or refines Petroleum; or storage or transportation facilities.

Permitted Use of LNG Precinct

The LNG Precinct will be used only for the receipt of Petroleum, pre-treatment and processing of Petroleum into LNG and other products (excluding downstream processing), the storage, loading and transporting of LNG and all things necessary and incidental thereto, including the Precinct Supply Base and purposes associated with the administration and management of the Port by the Port Authority.

LNG Precinct Baseline Contamination Report

Within six months of the Commencement Date (i.e. the date the bill is passed), the State will prepare a report which identifies the current uses, any existing Facilities, the environmental condition and the presence of any known or suspected Contamination on the LNG Precinct (including the Industrial Precinct, Third Party Contractors' Site, Workers' Accommodation Site and Port Land).

The aspects of the LNG Precinct Baseline Report relating to known or suspected Contamination will be reviewed by a contaminated sites auditor accredited under the *Contaminated Sites Act 2003* (WA). The LNG Precinct Baseline Report will be used to inform the extent of Remediation and Rehabilitation Works required at the End of Precinct Life.

Precinct Closure

If the State makes a Closure Decision, the State must promptly notify the Native Title Party. If the State makes a Closure Decision regarding the Precinct it may determine that the Port will continue to operate after the End of Precinct Life.

Remediation and Rehabilitation Works Management Plan

As soon as practicable following the making of a Closure Decision, a Remediation and Rehabilitation Works management plan will be prepared. Remediation and rehabilitation of the LNG Precinct includes: (a) decommissioning and dismantling the Facilities; and (b) remediation of any Post Contamination. If the State decides that the Port will operate beyond the End of Precinct Life, the State will not be obliged to carry out Remediation and Rehabilitation Works for the Port Land until the Port ceases operation.

The management plan will be designed to remediate and rehabilitate the LNG Precinct to a condition:

- consistent with applicable legislation, policy and relevant standards (including those relating to Contamination and environmental rehabilitation);
- having regard to the condition of the LNG Precinct as determined in the LNG Precinct Baseline Report; and
- having regard to the use made of the LNG Precinct prior to the commencement of the Remediation and Rehabilitation Works.

Once the Remediation and Rehabilitation Works are complete, the State will procure the preparation of an Environmental Status Report by a suitably qualified expert to determine if the conditions above have been met. The Native Title Party will be given a copy of the Environmental Status Report and may provide comments within 6 months of receiving the Report. The State must consider the Native Title Party's comments and take such action as it considers appropriate (acting reasonably) to address the matters raised in the comments.

Annexure 3B - Browse LNG Precinct Project Agreement (PPA)

Agreement Parties: State of Western Australia, GJJ Peoples, Woodside Energy Limited, Broome Port Authority, LandCorp.

The Precinct Project Agreement (PPA) sets out the terms on which the Native Title Party has agreed to the development of the LNG Precinct.

Precinct Governance (Note: The following is from PPA Schedule 6.)

Control of Precinct

The State is the owner of the LNG Precinct.

LandCorp will have responsibility for the implementation of Project Rights necessary for the establishment and day to day management and operation of the LNG Precinct (other than the Port).

The Port will be vested in the Port Authority under section 25 of the Port Authorities Act.

Precinct Control Group

The State will invite the Native Title Party to nominate a person, from time to time, to be a member of the Precinct Control Group. (PPA Schedule 6)

Precinct Management Committee

The Committee comprises representatives for each of the State (including the Port Authority and LandCorp), the Native Title Party, the Foundation Proponent and when applicable, any Additional Proponent. Each Committee party will have equal representation on the Committee. Each Party represented on the Committee will ensure that its representatives are representatives of that Party's senior management or otherwise have the authority to make decisions on behalf of that Party.

Table A3.1 Composition of PCM

| Composition of PCM | |
|--------------------------------|--|
| Committee Party | Representatives |
| State | One Representative from the Department of State Development. One Representative from the State Implementing Agency. |
| Port Authority | One Representative. |
| LandCorp | One Representative. |
| Native Title Party | Five Representatives. |
| Foundation Proponent | Four Representatives being: <ul style="list-style-type: none">• Browse Business Unit Vice President;• Browse LNG Project Manager;• Browse LNG Operations Manager; and• Browse Implementation Manager. |
| Additional Proponent(s) | Same number of Representatives with equivalent level of seniority as the Foundation Proponent. |

The PPA sets forth the following Committee Documents (i.e. Management Schedules) that are binding on the Parties to the PPA:

- the Cultural Heritage Management Schedule;
- the Environmental Management Schedule;
- each Employment and Training Management Schedule for the commercial proponents;
- each Business Development and Contracting Management Schedule for the commercial proponents;
- the State Employment and Business Development Management Schedule;
- the Cultural Awareness Training Management Schedule;
- the Decommissioning Management Schedule;
- the Land Access Management Schedule; and
- any other document as agreed by the Precinct Management Committee.

The PMC will perform the following functions in relation to these Committee Documents:

- monitor the Parties' compliance with the Committee Documents and identify areas where compliance can be improved;
- review performance and make recommendations concerning implementation of the Committee Documents;
- make recommendations about whether amendments should be made to the Committee Documents;
- undertake responsibilities which the Committee Documents specify are to be undertaken by the Committee;
- provide the dispute resolution role as required by the Committee Documents; and
- provide advice or information to the State Implementing Agency as requested by the State Implementing Agency.

The PMC can make formal recommendations to Site Managers in relation to matters that fall within the above functions. The relevant Site Managers must consider any Formal Recommendations received from the PMC and within 3 months provide a report to the PMC as to the progress of implementation of that Formal Recommendation or other response. Relevant Site Managers will provide the Committee with written reasons if they do not implement the Formal Recommendation.

The PPA includes the procedures to be applied should the Parties be dissatisfied with how a formal recommendation has been addressed. This may include the PMC using its limited directive power to make formal direction to the Precinct Control Group. The Precinct Control Group must consider the direction and, provided it is reasonable and commercial, must use its best endeavours to procure its implementation.

The powers and functions of the Committee will not provide any right for a Party to prevent or stop the development or operation of the LNG Precinct, a Commercial Proponent Project or the Project Rights.

The Precinct Management Committee (**PMC**) is established with effect from the Commencement Date⁽⁸⁾. The PMC will meet quarterly with the first meeting to occur within 3 months of the Commencement Date. Committee meetings will be held at the LNG Precinct or such other location as is agreed. Any members of the Native Title Claim Group may attend Committee meetings as observers.

The State will appoint an Executive Officer to support the PMC. One of the functions of the Executive Officer will be to provide training as necessary to ensure that all Representatives on the PMC have the knowledge and capabilities required to fulfil their obligations on the Committee.

The Native Title Party Representatives will also annually meet with the following: the Minister responsible for the State Implementing Agency, CEO of the Port Authority, CEO of LandCorp, CEO of the Foundation Proponent, and the senior executive officer with responsibility for the Additional Proponent Project.

Annually, each Committee Party, other than the Native Title Party, will publish a scorecard, containing a score by the Native Title Party Representatives regarding the Committee Party's implementation of the Committee Documents.

8 Commencement Date means the date that the Precinct Project Agreement is signed by all of the State, LandCorp, the Port Authority, the Native Title Party and the Foundation Proponent

The PPA includes specific processes for dealing with disputes among the parties on the PMC.

Environment Management (Schedule 8)

Schedule 8 provides a mechanism through which a Site Manager and the Native Title Party will ensure there is an ongoing discussion and regular flow of information regarding the implementation of the Site Manager Commitments.

This Schedule will not be used as a management plan or arrangement for the purposes of the EPBC Act or EP Act.

Quarterly meetings will be held between a Site Manager and the Native Title Party and any other party that the Site Manager or the Native Title Party reasonably considers will be required at the meeting. The purposes of the meetings are to provide a mechanism to inform the Native Title Party regarding the implementation of the Site Manager Commitments; and provide the Native Title Party with a regular flow of information relating to the Site Manager Commitments.

Monitoring

The Site Manager will:

- consult with the Native Title Party regarding the proposed monitoring plans;
- provide a summary of monitoring results to the PMC as appropriate; and
- consult with the Native Title Party, through the PMC, on measures to minimise environmental and social impacts to the extent reasonably practicable.

The Native Title Party may provide a copy of the summary of monitoring results to an independent expert, on a strictly confidential basis, for the purposes of taking advice in relation to those results. If, on the basis of the independent advice, the Native Title Party believes that there is a risk arising from a Site Manager's Activities, and that the Site Manager should take additional or different steps to mitigate the environmental impacts of that activity, the Native Title Party may request a meeting to the Site Manager to present the Native Title Party's recommendations. If a suitable agreement cannot be reached between the parties, the PPA (Schedule 8) sets forth the procedures to be applied.

Schedule 8 also sets forth the procedures to be followed if the Native Title Party reasonably believes that an ongoing activity associated with the conduct of a Site Manager's Activities is likely to cause Serious Environmental Harm.

Reporting

Site Managers will provide quarterly updates to the Precinct Management Committee, whether in writing or at a PMC meeting, in relation to:

- environmental performance of their Activities in the LNG Precinct;
- compliance with any Principal Acts and Project Approvals; and
- implementation of any improvement plan in relation to environmental management within and in relation to the LNG Precinct.

A Site Manager must provide the Precinct Management Committee with details of any breach or default notice, clean-up notice or other form of notice issued under any Law in relation to the Environment within the LNG Precinct or relating to their Activities.

Compliance Officer

The State will provide a compliance officer specifically for the LNG Precinct during the life of the LNG Precinct. The Compliance Officer will be an employee of the Office of the Environmental Protection Authority. An objective of the role of the Compliance Officer is to facilitate the effective ongoing working relationship between the Native

Title Party and the State in relation to environmental management of the LNG Precinct. The Compliance Officer will engage with the Native Title Party to ensure there is appropriate communication and information flow between the Native Title Party, the Precinct Management Committee and the Office of the Environmental Protection Authority.

Groundwater

In assessing the feasibility of water options for the Foundation Proponent Project, and prior to Project FID, the Foundation Proponent will consult with the Native Title Party in relation to the use of groundwater from the Broome aquifer. The Native Title Party may take independent advice on the impact on the Broome aquifer.

If the Native Title Party receives independent advice that reasonably raises environmental concerns about the impact on the Broome aquifer as the result of such operations, then the Native Title Party may request consultation with the Foundation Proponent. Within 10 days following such consultation, the Native Title Party may, in certain circumstances:

- direct the Foundation Proponent to modify the Foundation Proponent's proposal for taking water from the Broome aquifer; or
- direct the Foundation Proponent not to proceed to draw from the Broome aquifer; and either direct the Foundation Proponent to:
 - elect to obtain water for operations from desalination of either seawater or water from deep bores or aquifers other than the Broome aquifer; or
 - obtain water for operations from desalination of seawater.

In response to such a direction, the Foundation Proponent will either:

- modify the proposal as requested ; and/or
- obtain water for operations from desalination of either seawater or water from deep bores or aquifers other than the Broome aquifer.

Review of International Practice

No less than every three years from the Commencement Date, each commercial proponent will consider environmental management practices which, in the opinion of the Proponent, are successfully implemented at other onshore LNG facilities in the world. This information will be presented to and discussed with the PMC.

Buffer Zone and Beach Access (Schedule 10)

This management schedule addresses the issue of Native Title Party access to Buffer Zone and beach area located within the boundaries of the LNG Precinct.

With respect to access to the Buffer zone:

- Subject to restrictions imposed under Law, the Native Title Party's access to the Buffer Zone will be unrestricted.
- The State retains the right to impose restrictions under Law in relation to the Buffer Zone for health, safety or security reasons.

With respect to beach access, the State and the Site Managers will ensure that members of the Native Title Claim Group and members of the public retain free and unfettered access to the beach and intertidal zone of the Port Land twice per year. The PMC Executive Officer will each year consult with Site Managers and the Native Title Party as to suitable Beach Access Dates; and advise the Native Title Party and the PMC of the Beach Access Dates.

Each Site Manager will provide an annual report to the Precinct Management Committee detailing the number of Precinct Visits requested by the Native Title Party; the number of Precinct Visits undertaken, the numbers of members of the Native Title Party Access Group who participated in the Precinct Visit; and the reasons behind any delays or inability to conduct the Precinct Visits.

Decommissioning Management (Schedule 11)

Each Site Manager will remediate the land on which their Activities are carried out (or procure the remediation of the land) at the end of the life of those Activities in accordance with a Site Manager Decommissioning Plan.

No later than five years prior to the date a commercial proponent reasonably expects to issue a commercial proponent Closure Notice, the commercial proponent shall issue a Decommissioning Plan Notice. Upon receipt of a Decommissioning Plan Notice, a Site Manager must prepare a Site Manager Decommissioning Plan. Each Site Manager must develop their Site Manager Decommissioning Plan in consultation with the Native Title Party.

Annexure 3C - Browse LNG Precinct Regional Benefits Agreement

The parties to this agreement are the State of Western Australia, Minister for Lands, Conservation Commission of Western Australia, Kimberley Land Council and Woodside Energy Limited.

The establishment of the LNG Precinct represents an opportunity to address Indigenous disadvantage for Aboriginal people across the Kimberley. With the consent of the Native Title Party, the Regional Benefits Agreement parties have committed to delivering a regional benefits package which seeks to improve the educational, health, social and economic well being of Aboriginal people across the Kimberley.

Creation of Conservation and Heritage Areas

The State will pay \$15 million to the Regional Body for the creation of Conservation and Heritage Areas for the period of 10 years from the Secured Foundation Proponent Date, in annual instalments of \$1.5 million.

The Conservation and Heritage Areas will be managed for the purpose of conservation and enhancement of the Aboriginal culture and heritage values and natural and environmental values of the Dampier Peninsula. The State will work with the Traditional Owners, through the KLC and the Regional Body to develop a joint recommendation to the Minister as to the preferred location of the Conservation and Heritage.

Following the decision as to the location of the Conservation and Heritage Areas, the State will consult with the Regional Body and relevant Traditional Owners so that those Traditional Owners can choose the form of tenure for the Conservation and Heritage Areas and nominate the body corporate to hold the title for, and participate in the management of, the Conservation and Heritage Areas.

If the Traditional Owners provide their consent to a jointly vested reserve, the State will execute a Reserves Creation ILUA. The management of the Conservation and Heritage Reserves will be undertaken jointly by the Conservation Commission and the Indigenous Holding Entity through a Joint Management Body. The DEC is responsible for the implementation of any decision of the Joint Management Body and will provide executive and administrative support to the Joint Management Body. The DEC must provide annual reports to the Reserves Joint Management Body on the implementation and operation of the Management Plans.

Joint Management Body responsibilities in relation to the Conservation and Heritage Areas include:

- preparing Management Plans and related policies that are in accordance with the CALM Act and CALM Regulations;
- ensuring the Management Plans are consistent with the Cultural Management Plan and relevant legislative frameworks;
- consulting with stakeholders and the broader community on the aspirations, purpose, use, management and operation of the Conservation and Heritage Areas. Relevant stakeholders include, but are not limited to: the Traditional Owners; the Regional Beneficiaries; and the Shire of Broome.
- providing leadership and management direction and establishing the priorities for the development and operation of the Conservation and Heritage Areas;
- providing advice to the Conservation Commission on the use, management and development of the Conservation and Heritage Areas;
- approving the annual budget for the implementation and on-going operation of the Conservation and Heritage Areas, which may include funds for development of the Cultural Management Plan;
- monitoring the management of the Conservation and Heritage Areas; and
- monitoring the levels of Indigenous training and employment, contracting, and businesses and other economic opportunities taken up by Indigenous people in the operation and servicing of the Conservation and Heritage Areas.

The Indigenous Holding Entity will develop a Cultural Management Plan relevant to the Conservation and Heritage Areas. The Cultural Management Plan must:

- document the aspirations of the Traditional Owners;

- consider natural and cultural resource management, including collaborative 'on-country' management while working together;
- consider tourism, visitation and access management; and
- establish the vision and cultural values under which the Conservation and Heritage Areas should be managed.

Annexure 4 - Management Strategies

This Annexure contains a number of tables detailing the Environmental and Social Strategies and Plans for the project.

- Draft BLNG Precinct Air Quality Management Strategy
- Draft BLNG Precinct Emergency Response Strategy
- Draft BLNG Precinct Terrestrial Ecological Management Strategy
- Draft BLNG Precinct Surrounds Fire Management Strategy
- Draft BLNG Precinct Preliminary Closure and Decommissioning Strategy
- Draft BLNG Precinct Port Environmental Strategy
- Summary of Social and Economic Impact Management Plans by Impact Category

This page has been intentionally left blank

Annexure 4 (A4) - Management Strategies

Table A4.1 Draft BLNG Precinct Air Quality Management Strategy

| Draft BLNG Precinct Air Quality Management Strategy | |
|---|--|
| Strategy Objective | <ul style="list-style-type: none"> The objective of this strategy is to provide a framework for multiple proponents operating within the BLNG Precinct to ensure the sustainable protection of air quality at a local and regional basis. |
| Responsibility | <ul style="list-style-type: none"> Precinct Control Group |
| Environmental Outcomes | <ul style="list-style-type: none"> Manage BLNG Precinct-related impacts on regional air quality outside agreed buffer zones consistent with the national environment protection goals of approved National Environment Protection Measures (NEPM) and other established environmental quality criteria, while recognising contributions from other existing sources. Reduce the impacts that atmospheric emissions may have on the environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards. |
| Scope / Phasing | <ul style="list-style-type: none"> Atmospheric emissions (Operations phase) <p><i>Note: Construction/Commissioning phase emissions and Greenhouse Gas Emissions addressed separately.</i></p> |
| Relevant Commercial Proponent Management Plan(s) | <ul style="list-style-type: none"> Commercial Proponent Air Quality Management Plans |
| Requirements | <ul style="list-style-type: none"> Establish and maintain appropriate buffer zones to maintain suitable separation distances from sensitive off-site land uses and receptors. Establish a cumulative airshed model to enable individual operators within the Precinct to quantify their contribution and management targets in order to meet air quality standards and guidelines outside buffer zones. Establish an ambient air quality and meteorological monitoring programme to verify that an acceptable level of air quality is maintained at representative local and regional locations, and to further inform the validation of the cumulative airshed model. Ensure emissions data from operating commercial proponents are consistently reported in accordance with regulatory requirements and operating licences. Ensure all commercial proponent Air Quality Management Plans align with the objectives and requirements of this strategy, including demonstration of best practicable measures to reduce emissions through design. |
| Mechanisms | <ul style="list-style-type: none"> Proposed buffer areas for the BLNG Precinct will align with the principles and objectives of the State Industrial Buffer Statement of Planning Policy 4.1, as agreed on by the Western Australian Planning Commission, in consultation with local government and other appropriate regulatory authorities. Identification of the nature of off-site impacts which may affect more sensitive land uses or create potential risks, in line with WA EPA Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses. Identification of appropriate land uses that may be compatible within and surrounding the buffer area to ensure that social amenity and heritage values in the vicinity of the Precinct are maintained. |

| Draft BLNG Precinct Air Quality Management Strategy | |
|---|---|
| | <ul style="list-style-type: none"> • Management of the BLNG Precinct will require periodic review of the cumulative air quality model to ensure latest representative emissions and meteorological data are used to inform decision-making on airshed allocation of emissions from individual operators. • Existing requirements under the WA <i>Environmental Protection Act 1986</i> will ensure the design, construction and operation of facilities reduce atmospheric emissions as far as practicable, through: <ul style="list-style-type: none"> • Ministerial Conditions. • Works Approvals. • Operating Licences. • Monitoring and reporting requirements, as established under works approvals and licence conditions, and in accordance with annual reporting commitments through the Precinct Control Group. |
| Relevant Strategies | <ul style="list-style-type: none"> • State Industrial Buffer Statement of Planning Policy 4.1 • EPA Guidance Statement No. 3 |
| Timing for Implementation | <ul style="list-style-type: none"> • Upon establishment and operation of Foundation Proponent. |
| Review Process | <ul style="list-style-type: none"> • This strategy will be reviewed every three years by the Precinct Control Group, in consultation with the Precinct Management Committee. |

Table A4.2 Draft BLNG Precinct Emergency Response Strategy

| Draft BLNG Precinct Emergency Response Strategy | |
|---|---|
| Strategy Objective | <ul style="list-style-type: none"> The objective of this strategy is to provide an overarching approach to response planning across commercial proponents, agencies and operators in the event of an emergency situation potentially affecting the BLNG Precinct. |
| Responsibility | <ul style="list-style-type: none"> Precinct Control Group |
| Environmental Outcomes | <ul style="list-style-type: none"> Ensure on-site and off-site risks to human safety, welfare, environmental and heritage values are minimised to as low as reasonably practicable (ALARP). |
| Scope / Phasing | <ul style="list-style-type: none"> Management and coordination of emergency scenarios in the event of multiple operators (Construction, Operations and Decommissioning phase). |
| Relevant Commercial Proponent Management Plan(s) | <ul style="list-style-type: none"> Commercial Proponent Emergency Response Plans Commercial Proponent Hydrocarbon and Chemical Spill Response Plans Commercial Proponent Decommissioning and Closure Plans |
| Requirements | <ul style="list-style-type: none"> Coordinate the development, implementation and review of emergency response arrangements, including resources, communication and contingency planning, as relevant to multiple operators. Establish and maintain appropriate buffer zones to maintain suitable separation distances between industrial and other land uses within and adjacent to the BLNG Precinct and minimise escalating risk factors. Establish and maintain safe havens and emergency egress routes in the event of an incident. Ensure emergency response training, resources and communications are in place to ensure rapid response to contain spills. Review all commercial proponent Emergency Response Plans for alignment with the objectives and requirements of this strategy. |
| Mechanisms | <ul style="list-style-type: none"> Major hazard facility regulation and assessment of Safety Cases in accordance with the requirements of the National Standard for the Control of Major Hazard Facilities 2002, <i>Dangerous Goods Safety Act 2004</i> (WA) and the <i>Dangerous Good Safety (Major Hazard Facilities) Regulations 2007</i> (WA). Proposed buffer areas for the BLNG Precinct will align with the principles and objectives of the State Industrial Buffer Statement of Planning Policy 4.1, as agreed by the Western Australian Planning Commission, in consultation with local government and other appropriate regulatory authorities. Broome Port Authority, as the statutory port authority for the BLNG will be responsible for preparing an Emergency Response Plan, including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures in the Port. Implementation of the State Emergency Management Plan for Marine Oil Pollution (WestPlan Marine Oil Pollution (WestPlan-MOP)) under the <i>Emergency Management Act 2005</i> with regard to management arrangements and response to a marine oil pollution incident in order to minimise the effects of oil pollution incidents occurring in State waters. The WestPlan-MOP also integrates with a number of related emergency plans such as the National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances and the |

| Draft BLNG Precinct Emergency Response Strategy | |
|---|--|
| | <p>State Emergency Management Plan for Hazardous Materials Emergencies (WestPlan-HAZMAT).</p> <ul style="list-style-type: none">• Alignment with Fire and Emergency Services Authority (FESA) emergency response requirements and existing regional arrangements, in accordance with the <i>Bush Fires Act 1954</i>, and other relevant regulations and guidance. |
| Relevant Strategies | <ul style="list-style-type: none">• Fire Management Strategy for the Dampier Peninsula• Dampier Peninsula Planning Strategy• State Industrial Buffer Statement of Planning Policy 4.1 |
| Timing for Implementation | <ul style="list-style-type: none">• Upon establishment and operation of Foundation Proponent. |
| Review Process | <ul style="list-style-type: none">• This strategy will be reviewed every three years by the Precinct Control Group, in consultation with the Precinct Management Committee. |

Table A4.3 Draft BLNG Precinct Terrestrial Ecological Management Strategy

| Draft BLNG Precinct Terrestrial Ecological Management Strategy (Corresponding with the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance) | |
|--|---|
| Strategy Objective | <ul style="list-style-type: none"> The objective of this strategy is to maintain key terrestrial ecological values, including vegetation of medium to high conservation significance, associated with direct and indirect impacts within defined limits of acceptable change throughout the life of the Precinct. |
| Responsibility | <ul style="list-style-type: none"> Precinct Control Group |
| Environmental Outcomes | <ul style="list-style-type: none"> Maintain areas of vegetation of medium to high conservation significance outside of defined limits of acceptable change attributable to the Browse LNG Precinct development. |
| Scope / Phasing | <ul style="list-style-type: none"> Provides an overarching strategy for the management of ecosystem integrity, with a focus on health and condition and particular reference to vegetation of medium to high conservation significance, specifically monsoon vine thicket, drainage basin, coastal heath and coastal communities (during design, construction, operations and decommissioning phases). |
| Relevant Commercial Proponent Management Plan(s) | <ul style="list-style-type: none"> Commercial Proponents Ecological Surface Water Requirements Management Plans Commercial Proponents Construction Environmental Management Plans Commercial Proponents Groundwater Abstraction Management Plans Commercial Proponents Terrestrial Fauna Management Plans Commercial Proponents Terrestrial Weed Management Plans Commercial Proponents Terrestrial Quarantine Management Plans Commercial Proponents Hydrocarbon and Chemical Spill Management Plans Commercial Proponents Rehabilitation Plans |
| Requirements | <ul style="list-style-type: none"> Provide a mechanism to manage and monitor impacts to ecosystem integrity, in particular vegetation of medium to high conservation significance. Establish a framework in which actions relevant to the management of conservation significant vegetation in regard to the relevant commercial proponent management plans detailed above. Monitor for direct and indirect impacts to the condition and health of vegetation of medium to high conservation significance in defined areas associated with the Precinct during the life of the development. Maintain vegetation of medium to high conservation significance within defined limits of acceptable change throughout the life of the Precinct. Restoration of monsoon vine thicket vegetation following realignment of Manari Road to agreed completion criteria Ensure restoration of monsoon vine thicket vegetation following realignment of Manari Road to agreed completion criteria. |
| Mechanisms | <ul style="list-style-type: none"> Establishment of a Vegetation Monitoring Programme to monitor the condition and health of vegetation, in particular that of medium to high conservation significance, for a defined area within and surrounding the Precinct area and defined buffer zones. Annual reporting of the programme will be undertaken, with the results to be made publicly available. |

| Draft BLNG Precinct Terrestrial Ecological Management Strategy (Corresponding with the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance) | |
|--|--|
| | <ul style="list-style-type: none"> Establish and maintain personnel awareness of the importance of vegetation of medium to high conservation significance and appropriate management practices during all phases of the Downstream Project. Alignment with the Precinct Surrounds Fire Management Strategy with the objective of reducing the frequency of fires and the occurrence of late dry season burns on the Peninsula, which are known to be particularly damaging to vegetation communities. The specific mechanisms detailed within the relevant commercial proponent management plans will be used to achieve the overarching requirements of this Strategy and include: <ul style="list-style-type: none"> Management and monitoring of potential impacts of surface water regime change on dependent conservation significant vegetation and habitat types. Management and monitoring of potential impacts of groundwater regime change on dependent conservation significant ecosystems (if determined to be applicable). Management measures related to existing fauna pest species affecting conservation significant vegetation. Management of weeds species, fragmentation and edge effects. Management of the potential introduction of new weed and pest species. Management of direct impacts and impacts to the quality of water utilised by conservation significant vegetation, as a result of spills. Management measures related to vegetation clearing, soil and water erosion, surface water quality, Acid Sulphate Soils, and dust generation. Management measures in relation to the rehabilitation of areas of vegetation of conservation significance. The protection and management of impacts to the terrestrial ecological values during construction and operations will be mitigated as far as practicable, through the framework provided by the following acts and regulations: <ul style="list-style-type: none"> <i>Agriculture and Related Resources Protection Act 1976</i> <i>Biosecurity and Agriculture Management Act 2007</i> <i>Environmental Protection Act 1986</i> <i>Environment Protection and Biodiversity Conservation Act 1999</i> <i>Plant Diseases Act 1914</i> <i>Plant Diseases Regulations 1989</i> <i>Bushfires Act 1954</i> <i>Conservation and Land Management Act 1984</i> <i>Licensing requirements of the WA Rights in Water Irrigation Act 1914</i> <i>Soil and Land Conservation Act 1945</i> Monitoring and reporting requirements, as established under works approvals and licence conditions, and in accordance with annual reporting commitments through the Precinct Control Group. |
| Relevant Strategies | <ul style="list-style-type: none"> Kimberley Science and Conservation Strategy |

Draft BLNG Precinct Terrestrial Ecological Management Strategy

(Corresponding with the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance)

| | |
|----------------------------------|---|
| | <ul style="list-style-type: none">• Dampier Peninsula Planning Strategy• Precinct Surrounds Fire Management Strategy |
| Timing for Implementation | <ul style="list-style-type: none">• Upon establishment of the Precinct Control Group. |
| Review Process | <ul style="list-style-type: none">• This strategy will be reviewed every three years by the Precinct Control Group, in consultation with the Precinct Management Committee. |

Table A4.4 Draft BLNG Precinct Surrounds Fire Management Strategy

| Draft BLNG Precinct Surrounds Fire Management Strategy | |
|---|---|
| Strategy Objective | <ul style="list-style-type: none"> The objective of this strategy is to provide a framework for fire management in alignment with existing fire management strategies, on the Dampier Peninsula to reduce the frequency of fires and the occurrence of late dry season burns in the region. |
| Responsibility | <ul style="list-style-type: none"> Precinct Control Group |
| Environmental Outcomes | <ul style="list-style-type: none"> Reduce the impact of fire related to the loss or damage to vegetation communities and ecological habitats in the BLNG Precinct and the surrounds to acceptable levels. Maintain or improve regional air quality conditions, recognising the contribution of fires to seasonal air quality. |
| Scope / Phasing | <ul style="list-style-type: none"> Management and coordination of fire management to be implemented prior to the establishment of substantive site works (Construction phase and ongoing). |
| Relevant Commercial Proponent Management Plan(s) | <ul style="list-style-type: none"> Commercial Proponents Emergency Response Plans. |
| Requirements | <ul style="list-style-type: none"> Review the existing fire management strategies of the Dampier Peninsula. Integrate and support the implementation of the existing fire management strategy for the Dampier Peninsula. Establish a BLNG Precinct surrounds prescribed burning and bush fire control program, in consultation with the Department of Environment and Conservation, FESA and the local Shire authority. Ensure fire management measures of the operating commercial proponents have appropriate resources and communications in place to ensure rapid response to minimise fire risk. Ensure all commercial proponent Emergency Response Plans align with the objectives and requirements of this strategy. |
| Mechanisms | <ul style="list-style-type: none"> Implement appropriate regional fire management measures, in line with the <i>Bush Fires Act 1954</i> and relevant Shire laws. Implement a prescribed burning program, in consultation with the Department of Environment and Conservation and FESA. Fire management will be undertaken through the framework provided by the following Acts and regulations: <ul style="list-style-type: none"> <i>Bush Fires Act 1954</i> <i>Environmental Protection Act 1986</i> <i>Occupational Health and Safety Act 1984</i> <i>Conservation and Land Management Act 1984</i> <i>Fire and Emergency Services Authority of Western Australia Act 1998</i> <i>Fire Brigades Act 1942</i> <i>Conservation and Land Management Act 1984</i> <i>Wildlife Conservation Act 1950</i> <i>Environment Protection (Clearing of Native Vegetation) Regulations 2004.</i> |

| Draft BLNG Precinct Surrounds Fire Management Strategy | |
|--|---|
| Relevant Strategies | <ul style="list-style-type: none">• State Industrial Buffer Statement of Planning Policy 4.1• Terrestrial Ecological Management Strategy |
| Timing for Implementation | <ul style="list-style-type: none">• Upon commencement of the Precinct Control Group. |
| Review Process | <ul style="list-style-type: none">• This strategy will be reviewed every three years by the Precinct Control Group, in consultation with the Precinct Management Committee. |

Table A4.5 Draft BLNG Precinct Preliminary Closure and Decommissioning Strategy

| Draft BLNG Precinct Preliminary Closure and Decommissioning Strategy | |
|---|---|
| Strategy Objective | <ul style="list-style-type: none"> The objective of this strategy is to facilitate a coordinated approach to the safe closure and decommissioning of the BLNG Precinct, focused on reducing environmental impacts to acceptable levels (in consultation with Traditional Owners). |
| Responsibility | <ul style="list-style-type: none"> Precinct Control Group |
| Environmental Outcomes | <ul style="list-style-type: none"> Realise acceptable environmental outcomes and legacies for Traditional Owners and the local community at the James Price Point coastal area following closure and decommissioning of the BLNG Precinct. Reduce the impacts that decommissioning and closure operations may have on the environment values or the health, welfare and amenity of people and land uses to acceptable levels by meeting statutory requirements and acceptable standards. |
| Scope / Phasing | <ul style="list-style-type: none"> Design, Operations and Decommissioning |
| Relevant Commercial Proponent Management Plan(s) | <ul style="list-style-type: none"> Commercial Proponent Waste Management Plans Commercial Proponent Final Closure Plans Commercial Proponent Rehabilitation Plans Commercial Proponents Visual Amenity Management Plans |
| Requirements | <ul style="list-style-type: none"> Establish an overarching vision, objectives, targets, indicators and post closure land use options for the James Price Point coastal area. Manage appropriate buffer zones to provide suitable separation distances from sensitive off-site land uses and receptors during closure and decommissioning, if required. Establish an overarching monitoring programme to verify that all commitments associated with decommissioning and closure are achieved. Ensure all commercial proponent Final Closure Plans and Waste Management Plans (including Decommissioning-phase Waste Management Plans) align with the objectives and requirements of this strategy. Ensure all Commercial Proponent Final Closure Plans appropriately make use of synergies related to the use of plant/hard stand and infrastructure by other operators may be possible. Maintain records and drawings of all significant land use changes and post closure land uses in terms of underground and aboveground structures so that an accurate plant inventory is available across the Precinct over time. |
| Mechanisms | <ul style="list-style-type: none"> Identification of appropriate land uses that may be compatible within and surrounding the Precinct, following closure and decommissioning to ensure that the environmental, social amenity and heritage values in the vicinity of the James Price Point coastal area are maintained. Implementation of existing mechanisms under the <i>Environmental Protection Act 1986</i> to achieve agreed completion criteria for closure, in consultation with key stakeholders. Coordinate aftercare monitoring and maintenance which will be undertaken in line with prevailing best practicable measures and the agreed post closure land use of the facility. |
| Relevant Strategies | <ul style="list-style-type: none"> State Industrial Buffer Statement of Planning Policy 4.1 |

| Draft BLNG Precinct Preliminary Closure and Decommissioning Strategy | |
|--|---|
| | <ul style="list-style-type: none">• Terrestrial Ecological Management Strategy• BLNG Precinct Port Environmental Management Strategy |
| Timing for Implementation | <ul style="list-style-type: none">• Upon commencement of the Precinct Control Group. |
| Review Process | <ul style="list-style-type: none">• This strategy will be reviewed every three years by the Precinct Control Group, in consultation with the Precinct Management Committee. |

Table A4.6 Draft BLNG Precinct Port Environmental Management Strategy

| Draft BLNG Precinct Port Environmental Management Strategy | |
|---|---|
| Strategy Objective | <ul style="list-style-type: none"> To provide a coordinated approach to the management of environmental matters within the port boundary, in line with the <i>Port Authority Act 1999</i>. |
| Responsibility | <ul style="list-style-type: none"> Broome Port Authority, through the Precinct Control Group |
| Environmental Outcomes | <ul style="list-style-type: none"> Manage BLNG Precinct Port-related impacts consistent with relevant conditions and other established environmental quality criteria, while recognising contributions from other existing sources. |
| Scope / Phasing | <ul style="list-style-type: none"> On establishment of the Port under the <i>Port Authority Act 1999</i>. |
| Relevant Commercial Proponent Management Plan(s) | <ul style="list-style-type: none"> Commercial Proponent Port Facilities Construction Environmental Management Plans Commercial Proponent Emergency Response Plans Commercial Proponent Hydrocarbon and Chemical Spill Response Plans Commercial Proponent Dredging and Spoil Disposal Management Plans Commercial Proponent Vessel Management Plans Commercial Proponent Invasive Marine Species Management Plans Commercial Proponent Quarantine Management Plans |
| Requirements | <ul style="list-style-type: none"> Establish port boundaries as agreed on by the Department for Transport, in consultation with appropriate regulatory authorities and Commercial Proponents in line with the <i>Port Authority Act 1999</i>. Collate from the SAR and other relevant guidance information key environmental values and water quality objectives and criteria for waters within the Port. Establish a Port-wide hydrodynamic model to enable individual operators within the Precinct to undertake their modelling to quantify their contribution and management targets in order to meet relevant standards and guidelines outside zones of impact. Establish a marine Port monitoring programme to verify that an acceptable water quality is maintained at representative local and regional locations, and to further inform the validation of the Port-wide hydrodynamic model. Establish a coastal processes monitoring programme to inform active sand management of the shoreline directly affected by Precinct infrastructure. Ensure marine compliance monitoring data from operating Commercial Proponents are consistently reported in accordance with regulatory requirements and operating licences. Ensure Precinct-related construction and operations activities are consistent with the Paleontological Resources Management Plan and Cultural Heritage Management Plan. Ensure all Commercial Proponent Marine Environmental Management Plans (outlined above) align with the objectives and requirements of this strategy, including demonstration of best practicable measures to marine impacts through design. |
| Mechanisms | <ul style="list-style-type: none"> Implement a marine Port monitoring program within the Port boundary and at appropriate reference areas linked to monitoring and reporting requirements under works approvals and licence conditions with annual reporting commitments through the Precinct Control Group. Control marine user access to areas within the Port boundary taking into account safety, environmental, operational and social considerations. |

| Draft BLNG Precinct Port Environmental Management Strategy | |
|--|---|
| | <ul style="list-style-type: none"> Periodically review the Port-wide hydrodynamic model to ensure latest representative metocean data is used to inform decision-making on marine impacts in the Port from individual operators. Existing requirements under the WA <i>Environmental Protection Act 1986</i> will ensure the design, construction and operation of facilities to minimise marine discharges and emissions as far as practicable, through: <ul style="list-style-type: none"> Ministerial Conditions. Works Approvals. Operating Licences. Collate environmental baseline data for marine mammals, turtles, water quality and benthic habitat health within the Port area to meet the requirements of the Marine Port Monitoring Programme. Undertake an audit of operational marine facilities and construction activities to assess compliance of proponents against the performance requirements of this strategy. Prepare and enforce guidelines on vessel operating, invasive marine species and quarantine management, consistent with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry and AQIS Australian Ballast Water Management Requirements under the <i>Quarantine Act 1908</i>. Prepare and implement a coordinated stakeholder engagement plan and programme with potentially affected marine users in order to avoid, reduce or mitigate impacts associated with port impacts on existing operations. |
| Relevant Strategies | <ul style="list-style-type: none"> Local Water Quality Management Strategy (formerly Local Water Quality Environmental Values and Objectives). |
| Timing for Implementation | <ul style="list-style-type: none"> Upon establishment of the Port. |
| Review Process | <ul style="list-style-type: none"> This strategy will be reviewed every three years by the Precinct Control Group, in consultation with the Precinct Management Committee. |

Table A4.7 Summary of Social and Economic Impact Management Plans by Impact Category

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|--|--|
| Impact category: Workforce Behaviour Precinct | |
| Worker Behavioural Management Plan (Precinct Condition) | |
| Objectives: | <ul style="list-style-type: none"> To minimise the potential for Precinct worker behaviour to negatively impact on Broome and the Dampier Peninsula communities. To provide a respectful and healthy living and working environment for Precinct workers |
| Responsibility: | <p>Foundation Proponent and additional proponents.</p> <p>Key stakeholders include but are not limited to the following: GJJ Traditional Owners, Shire of Broome.</p> |
| Management plan content: | <p>The management plan will need to describe:</p> <ul style="list-style-type: none"> Worker orientation processes including provision of information on health and safety issues internal and external to the Precinct. A Worker Code of Behaviour which addresses policies and procedures regarding: <ul style="list-style-type: none"> alcohol and drug use and testing; respectful living onsite including issues of diversity (race and gender); behaviour while in transit to the precinct (e.g. on flights); worker access to community facilities (e.g. recreation and tourism activities) when on rostered days off; measures to manage worker visibility when not at the Precinct; measures to prevent damage to wild resources; and monitoring of worker behaviour, reporting and penalties for not conforming to the Code of Behaviour. A Cultural Awareness Training Program (see below). |
| Cultural Awareness Training Programs (Precinct Condition) | |
| Objectives: | To ensure that all Precinct workers have an understanding of cross-cultural sensitivities, legal obligations regarding heritage sites, and behave in an appropriate and respectful manner when in or out of the Precinct. |
| Responsibility: | <p>Foundation Proponent, additional proponents, and Precinct-related government entities (e.g. LandCorp, Broome Port Authority).</p> <p>Key stakeholders include but are not limited to the following: GJJ Traditional Owners.</p> <p>Note: The term Site Manager in the BLNG Project Agreement refers to the Foundation Proponent; an Additional Proponent; the Port Authority; LandCorp; and the State, in relation to their respective BLNG Precinct activities.</p> |
| Management plan content: | As described in the BLNG Project Agreement, Site Managers will be required to engage one or more Indigenous Businesses to work with the Site Manager to develop and procure the delivery of a cultural awareness training course. Among its objectives are the following: |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|--|
| | <ul style="list-style-type: none"> to familiarise Precinct-related staff (i.e. any personnel, contractor, sub-contractor, tenant, subtenant or other invitees on the area of the LNG Precinct by the State, Port Authority, LandCorp or a Proponent) with Aboriginal traditions and culture in relation to the region in general and the LNG Precinct specifically; to promote a knowledge and understanding of and respect for Aboriginal tradition and culture; and to foster good relationships between Aboriginal and non-Aboriginal persons. <p>Each of the Foundation Proponent or Additional Proponent will also provide cultural awareness training for Aboriginal personnel to familiarise them with the Precinct work culture and expectations.</p> |
| Impact category: Workforce Accommodation | |
| LNG Proponent Accommodation Plan (Precinct Condition) | |
| Objectives: | <ul style="list-style-type: none"> To ensure that developments at the Precinct have adequate strategies and plans in place to accommodate their workforces and minimise affordability and availability impacts on accommodation in Broome and surrounding areas. To establish a managed-access FIFO workforce camp near the Precinct that provides a respectful and healthy living environment and minimises the potential for negative impacts on local communities. |
| Responsibility: | <p>Foundation Proponent and additional proponents.</p> <p>Key stakeholders include but are not limited to the following: GJJ Traditional Owners, Shire of Broome, LandCorp.</p> |
| Management plan content: | <p>The Foundation Proponent and any Additional proponents will be required to prepare and implement a workforce accommodation plan that covers all phases of their project. The management plan must address each stage in the life of the project: pre-construction, construction, operations, and decommissioning and post-closure.</p> <p>Issues to be addressed in the management plan include the following:</p> <ul style="list-style-type: none"> How short-term accommodation needs will be met, especially in the pre-construction phase. How the requirement that FIFO construction workers be accommodated in a managed access facility near the Precinct will be achieved. This is to include the following: <ul style="list-style-type: none"> How the requirements of the Shire of Broome's Local Planning Policy 8.8 and Western Australia's Construction Camp Regulations 2004 will be met. An analysis of the physical characteristics of the site and worker profile. The measures to manage access to and from the construction camp. Transportation of workers to the site where construction is taking place. Transportation of workers from Broome airport to construction camp. Strategies for managing the consumption of alcohol. Strategies for preventing the consumption of illicit drugs. Strategies to manage worker health issues. Information regarding how essential services are to be provided to the site. |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|--|
| | <ul style="list-style-type: none"> How the accommodation needs of residential and FIFO operations workers will be met, including the use of the construction camp location during the operations phase. How the accommodation provisions can result in an ongoing community benefit in the longer term (e.g. potential to transfer ownership of assets to the local government or other party). The strategies (e.g. hiring policies) that will be implemented to discourage opportunistic workers from coming to Broome seeking project employment. How the plan is compatible with the Broome Housing Management Plan (described below). |
| Broome Housing Management Plan | |
| Objective: | To ensure that the residential housing needs of the operations workforce do not exacerbate the housing affordability and availability issues in Broome. |
| Responsibility: | <p>LandCorp and DoP and DoH.</p> <p>Key stakeholders include but are not limited to the following: Shire of Broome, Department of Housing WA, Foundation Proponent and Additional proponents.</p> |
| Management plan content: | <p>This management plan will address the following:</p> <ul style="list-style-type: none"> provide an understanding of current housing issues in Broome (All); identify potential impacts on different types of housing during the different phases of the BLNG Precinct (Woodside); monitor housing supply and demand (DoP); identify appropriate land for Broome growth (LandCorp); ensure timely release of land for housing and corresponding construction capability (LandCorp); and address short-term accommodation deficits, affordable housing, social housing and homelessness issues (DoH). |
| Impact category: Community Services and Infrastructure | |
| Broome Community Services Strategy | |
| Objectives: | <ul style="list-style-type: none"> To ensure that the additional demands generated by the Precinct do not exceed the delivery capacities of social services in the regional service centre of Broome. To increase the capacity of social services that are currently under pressure and thereby vulnerable to any increased demand from the combined effects of projected population growth and population increases due to the Precinct. |
| Responsibility: | <p>DSD.</p> <p>Key stakeholders include but are not limited to the following: Shire of Broome, DoH, Broome-based social service and education providers.</p> |
| Management plan content: | <p>This strategy will address the following:</p> <ul style="list-style-type: none"> mapping of the existing health and social service provision in Broome (State, Local, Commonwealth and NGOs); identify trends and current and projected gaps or serious deficits in service provision capacity; |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|---|
| | <ul style="list-style-type: none"> establish priorities for the upgrading of social services in consultation with the public and stakeholders; and analysis of funding needs and an action plan. |
| Precinct Health, Emergency and Security Management Plan (Precinct Condition) | |
| Objective: | To ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp without detracting from service provision to Broome. |
| Responsibility: | <p>Foundation Proponent and additional proponents.</p> <p>Key stakeholders include but are not limited to the following: Police, Shire of Broome, DoH, FESA.</p> |
| Management plan content: | <p>This Plan will address the following:</p> <ul style="list-style-type: none"> an analysis of the level of service provision needed for the Precinct and construction camp; a description of the services to be provided at the Precinct to meet the service needs; consultation undertaken with key stakeholders (e.g. police, Shire of Broome) in developing the plan; and responsibilities for provision of services. |
| Transport Management Plan (Precinct Condition) | |
| Objective: | To minimise the impact that the Precinct-related traffic and movements of materials by land, sea or air have on disrupting or increasing the risk to other users of these transport routes. |
| Responsibility: | <p>Foundation Proponent and additional proponents and MRWA, Broome Port Authority and Broome International Airport</p> <p>Key stakeholders include but are not limited to the following: Shire of Broome, Police and Emergency Services .</p> |
| Management plan content: | <p>The management plan will address:</p> <ul style="list-style-type: none"> accommodation of high or wide loads requiring access to the BLNG Precinct from Broome Port or elsewhere; potential increased heavy vehicle use and any related increases in traffic in Broome centre; the management of airport FIFO transfers; precinct related helicopter movements and amenity issues; new, upgraded or modified roads in vicinity of the Precinct; and a public information strategy to inform road users of transport issues and timing. |
| Impact category: Local content (Vocational Education & Training, Employment and Procurement) | |
| Indigenous Participation Plans (Precinct Condition) | |
| Objective: | To maximise the Indigenous employment and training and business development and contracting opportunities generated by State Government involvement in the BLNG Precinct. |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|--|--|
| Responsibility: | LandCorp, Broome Port Authority. Key stakeholders include but are not limited to the following: GJJ Traditional Owners and other Broome and Dampier Peninsula Traditional Owners, Job Services Australia providers located in the Kimberley. |
| Management plan content: | As described in the BLNG Project Agreement with GJJ Native Title claimants, the State will require that LandCorp, the Port Authority and other government entities prepare an Indigenous Participation Plan in relation to their LNG Precinct-related operations. An Indigenous Participation Plan must contain components or initiatives for achieving an effective Indigenous workforce strategy, including a high level outline of a workforce strategy for the West Kimberley region. It will also include procedures for engagement with Job Services Australia providers located in the Kimberley, and include implementation procedures. In preparing their Indigenous Participation Plan, each Government Entity will consult with the Native Title Party. |
| LNG Proponent Employment and Training Strategy (Precinct Condition) | |
| Objective: | To maximise training and employment of West Kimberley people on the BLNG Precinct. |
| Responsibility: | Foundation Proponent and additional proponents Key stakeholders include but are not limited to the following: WA Department of Training and Workforce Development, KDC, KLC |
| Management plan content: | The strategy would include the following: <ul style="list-style-type: none"> • strategies to maximise training (e.g. Apprenticeships) and employment of West Kimberley people on BLNG Precinct projects; • integration with State and Commonwealth education, training and employment initiatives (above); and • specific strategies to maximise indigenous training and employment and meet performance targets set forth in the BLNG Project Agreement. |
| Vocational Education and Training Strategy (Precinct Condition) | |
| Objective: | To maximise vocational education and training opportunities to ready the local community for the direct and indirect employment opportunities generated by the BLNG Precinct. |
| Responsibility: | WA Department of Training and Workforce Development (under discussion). Key stakeholders include but are not limited to the following: TAFE, commercial proponents, GJJ Traditional Owners and other Broome Dampier Peninsula Traditional Owners and Shire of Broome. |
| Management plan content: | The development and implementation of a new Training Service and Infrastructure Model to bring together training and employment providers with other key stakeholders to operate under a regional service agreement to successfully train Indigenous people and non-Indigenous people for employment in the oil and gas and civil and construction industries in the West Kimberley. |
| Industry Participation Plans (Precinct Condition) | |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|---|
| Objective: | To maximise the opportunities for local, regional and WA based companies to provide goods and services to the Precinct during its planning, construction and operation phases. |
| Responsibility: | Foundation Proponent and additional proponents. Key stakeholders include but are not limited to the following: WA Department of Commerce, Shires of Broome and Derby / West-Kimberley, KDC. |
| Management plan content: | Through the State's <i>Building Local Industry Policy (BLIP)</i> , the State Government will enter into dialogue with the Browse Joint Venture (BJV) to ensure that local industry is provided full, fair and reasonable opportunity to bid for project work and that the benefits flowing to the WA economy from the project are maximised. The project will be required to prepare a comprehensive industry participation plan, which will be a clear statement of how the BJV proposes to engage with local industry, together with measurable outcomes. The BJV will also be encouraged to utilise the services of ICNWA and Project Connect to seek out appropriate and competitive local suppliers. |
| West Kimberley Industry Participation Initiative | |
| Objective: | To champion and assist the capability of local businesses in the Shires of Broome and Derby / West Kimberley to participate in the direct and indirect opportunities created by the BLNG Precinct. |
| Responsibility: | Department of Commerce. Key stakeholders include but are not limited to the following: Shires of Broome and Derby / West-Kimberley. |
| Management plan content: | The State Government, as part of a strategic local content initiative for Browse, is establishing a Browse Local Content Steering Committee. The Committee, which will comprise representatives from the BJV, industry and government, will: seek to identify, at an early stage, opportunities for local suppliers in the Project; examine regional initiatives; identify and address gaps in local industry capability and competitiveness; and, identify and seek to address potentially contentious issues. Additionally, the State Government will encourage and support the local procurement of supplies and services for the Browse LNG Precinct through the West Kimberley Industry Participation Initiative. The primary focus of this initiative will be the Shires of Broome and Derby/West Kimberley and secondly, the Kimberley as a whole. This initiative will be led by the Local Content Unit of the Department of Commerce and will amongst others: <ul style="list-style-type: none"> • develop and implement measures to increase the capability and competitiveness of Kimberley based suppliers; • run local forums to connect suppliers with the project; • identify synergies and potential opportunities for Kimberley based suppliers outside of the Region; and • identify opportunities for Indigenous engagement. <p>Although the focus of the WKIPI will be primarily related to the establishment and development of the Precinct, there is likely to be some synergy between this initiative and the work of the Browse Local Content Steering Committee.</p> |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|---|
| Impact category: Dampier Peninsula | |
| Dampier Peninsula Planning Strategy | |
| Objectives: | To sustain the cultural, environmental and heritage values of the Dampier Peninsula, resolve land management issues. |
| Responsibility: | <p>State Government agencies (DoP/WAPC, in consultation DEC, DIA and other relevant agencies).</p> <p>Key stakeholders include but are not limited to the following: Dampier Peninsula Traditional Owners and Shire of Broome.</p> |
| Management plan content: | <p>The Strategy is to address the following:</p> <ul style="list-style-type: none"> amongst a suite of land use identification, define areas of cultural, environmental and heritage significance on the Dampier Peninsula and may identify land tenure and land management opportunities; define recreation and tourism opportunities (including nature based tourism) and may identify management measures for their environmental sustainability; incorporate and have clear linkages to a number of existing and approved management plan for such things as Cultural Heritage and other Management Plans and Indigenous Protected Area Management Plans; and an action plan. <p>Note: The SAR referred to this plan as the Dampier Peninsula Land Use and Infrastructure Plan.</p> |
| Recreation Management Strategy (Precinct Condition) | |
| Objective: | To establish clear policies and procedures to manage access for recreational and cultural purposes in the vicinity of the Precinct. |
| Responsibility: | <p>Foundation Proponent and any additional proponents.</p> <p>Key stakeholders include but are not limited to the following: GJJ Traditional Owners, and State government agencies undertaking the Dampier Peninsula Planning Strategy (above).</p> |
| Management plan content: | <p>The management plan will include the following:</p> <ul style="list-style-type: none"> identify the recreational and cultural activities affected by the Precinct including its buffer zones; describe the types of activities permitted, restricted or prohibited within the Precinct buffer zones; compatibility with State buffer zone policies for industrial areas. identify how any significant displacement of activities can be addressed (e.g. alternate locations); how access will be managed including informing community and visitors; and compatibility with the Dampier Peninsula Planning Strategy. |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|---|
| Impact category: Broome Tourism and Character | |
| Broome Tourism and Destination Marketing Strategy | |
| Objective: | To maintain or enhance Broome's image as a tourist town of national and international significance and its distinctive character. |
| Responsibility: | Tourism WA. Key stakeholders include but are not limited to the following: Shire of Broome, local and regional tourism bodies, Broome Airport, Broome Chamber of Commerce. |
| Management plan content: | This strategy will include addressing the following: <ul style="list-style-type: none"> • a situation analysis, mission, vision and objectives with respect to tourism; • strategies to maintain Broome's status as a tourism town and its character (i.e. sense of place); • the implications for regional tourism; and • key strategies required to achieve identified outcomes, and the initiatives that will underpin those strategies. |
| Impact category: Marine Resource Use | |
| Commercial, Recreational and Customary Fishing, Pearling and Aquaculture Management Plan | |
| Objective: | To minimise the impact of the Precinct and associated activities on marine resource uses. |
| Responsibility: | Foundation Proponent and any additional proponents. Key stakeholders include but are not limited to the following: GJJ Traditional Owners, commercial and recreational fishing organisations, aquaculture and pearling organisations, BPA and Department of Fisheries. |
| Management plan content: | This Management Plan will address the following: <ul style="list-style-type: none"> • access limitations within the Precinct and buffer zones; • Management of Precinct construction worker recreational fishing activities; • strategies to minimise disturbance to existing commercial fishing and pearling areas as well as favoured recreational fishing areas; • measures to minimise the risks associated with interaction between Precinct vessel movements and commercial fishing (including pearling and aquaculture); and • management measures to avoid or minimise the Precinct's impact on customary use of marine resources. |
| Impact category: Human Health | |
| Health Risk Assessment and Management Plan (Precinct Condition) | |
| Objective: | To ensure the people's health is not negatively impacted by environmental health hazards associated with activities at or related to the BLNG Precinct. |
| Responsibility: | Foundation Proponent and any additional proponents. |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|---|
| | Key stakeholders include but are not limited to the following: DoH and regional health services, Shire of Broome, Dampier Peninsula and Broome Traditional Owners. |
| Management plan content: | LNG proponents will be required to prepare a Health Risk Assessment (HRA) including a risk management and monitoring plan based on the outcomes of the HRA, and a complementary risk communication plan . |
| Impact category: Stakeholder Engagement | |
| Precinct Engagement Plan | |
| Objective: | To ensure that stakeholders (including local communities) have appropriate opportunities to engage with the planning and activities of the BLNG Precinct over its lifetime. |
| Responsibility: | DSD. Key stakeholders include but are not limited to the following: Shire of Broome, GJJ Traditional Owners and other Broome Dampier Peninsula Traditional Owners and commercial proponents. |
| Management plan content: | The DSD will prepare and implement a BLNG Precinct Engagement Plan. The engagement plan will be designed in consultation with a range of stakeholders. Following an initial round of stakeholder consultation, a draft Engagement Framework will be sent to these stakeholders for their review and comment and subsequently be made publicly available for public comment before being finalised. The Engagement Plan will address the following: <ul style="list-style-type: none"> objectives and principles; how the Plan will provide different levels of engagement (e.g. information /education, consulting, partnering, collaboration); complement the engagement needs of the various stakeholders; actions to remove barriers to effective engagement with indigenous people and other traditionally under represented sectors of the community; linkages to the Precinct governance structure; and the relationship of the Precinct Engagement Plan to the engagement processes of the Foundation proponents and any additional proponents (see below). |
| LNG Project Engagement Plans | |
| Objective: | To ensure that stakeholders in local communities have appropriate opportunities for engagement with LNG Projects within the Precinct so that proponents can effectively respond to community needs. |
| Responsibility: | Foundation proponent and any additional proponents. Key stakeholders include but are not limited to the following: local government, state agencies, GJJ Traditional Owners and other Broome Dampier Peninsula Traditional Owners, and Precinct Managers. |
| Management plan content: | Each LNG proponent will put in place its own project-level engagement processes. These should: |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|---|
| | <ul style="list-style-type: none"> provide different levels of engagement (e.g. information /education, consultation, collaboration); complement the engagement needs of the various stakeholders; remove barriers to effective engagement with indigenous people and other traditionally under represented sectors of the community; and clarify linkages to the Precinct Engagement Plan (see above). |
| Impact category: Social Impact Monitoring | |
| Precinct Socio-Economic Impact Monitoring Program | |
| Objective: | To monitor the accuracy of impact predictions and the effectiveness of impact management measures and ensure a timely and appropriate responses if required. |
| Responsibility: | Social Management Committee reporting to the Precinct Control Group. |
| Management plan content: | <p>The Precinct-level monitoring program would address:</p> <ul style="list-style-type: none"> the social and economic variables to be monitored during different phases of the Precinct; a description of the baseline conditions and trends relative to the selected variables; guidelines for the data collection process (e.g. sources, type of data, frequency of collection); mechanisms to review and adapt mitigation and management if existing measure prove inadequate; and arrangements for independent auditing. <p>Relevant reporting arrangements including:</p> <ul style="list-style-type: none"> linkages to Governance arrangement; contribution of data to the Precinct level monitoring program (see above); and how monitoring results will be made publicly available. |
| LNG Project-level Socio-Economic Impact Monitoring Program | |
| Objective: | To monitor the accuracy of impact predictions and the effectiveness of impact management measures and ensure a timely and appropriate responses if required. |
| Responsibility: | Foundation Proponent and additional proponents. |
| Management plan content: | <p>The project level monitoring program would address:</p> <ul style="list-style-type: none"> the social and economic variables to be monitored during different phases of the Precinct; a description of the baseline conditions and trends relative to the selected variables; guidelines for the data collection process (e.g. sources, type of data, frequency of collection); and mechanisms to review and adapt mitigation and management if existing measure prove inadequate. <p>Relevant reporting arrangements including:</p> <ul style="list-style-type: none"> linkages to Governance arrangements. |

| Summary of Social and Economic Impact Management Plans by Impact Category | |
|---|--|
| | <ul style="list-style-type: none">• contribution of data to the Precinct level monitoring program (see above); and• how monitoring results will be made publicly available. |

Annexure 5 - Dampier Peninsula Planning Strategy

This annexure provides further background and current status of planning for the Dampier Peninsula.

This page has been intentionally left blank.

Annexure 5 - Dampier Peninsula Planning Strategy

The State Government through the Department of Planning and Western Australian Planning Commission are preparing a land use plan for the Dampier Peninsula (**DP**). The process for the development of the plan started in 2007 after Ministerial request following the publication of the Dampier Peninsula Access Management Plan.

The then Department of Planning and Infrastructure initiated the preparation of a DP land use plan. At the commencement of this project this plan was identified with the title of "Dampier Peninsula Land Use and Infrastructure Plan". Consultation with communities on the DP and technical advisory group during 2007 and 2008 resulted in the preparation of a number of internal reports and papers. The project was put on hold pending negotiations for the Browse LNG precinct and funding issues.

The Department of Planning (**DoP**) reinitiated the project in the second half of 2009, with funding being allocated for the Kimberley Land Council (**KLC**) to undertake Traditional Owner (**TO**) and other indigenous people of the DP. It was identified at this point that the direction and intent of the plan needed refocusing and as such the format of the draft "Dampier Peninsula Land Use and Infrastructure Plan" was amended to follow the Local Planning Strategy guidelines in the Local Planning Manual and the unamended version was converted to internal discussion paper. In doing this, the title has changed to the "Dampier Peninsula Planning Strategy" which is currently a working draft.

The Dampier Peninsula Planning Strategy will identify issues, gaps and challenges in delivering best practice planning outcomes for social and economic development on the Peninsula. This will include potential visitor impacts on environmental and cultural assets. The Strategy will be prepared in consultation with Traditional Owners, stakeholders with a direct interest on the Peninsula and government agencies delivering services to the people of and visitors to the Peninsula. TO and other indigenous people of the DP consultation was commence in late June 2011. It is anticipated that this will conclude in December 2011 weather permitting.

The objective is to prepare a strategy for the study area that reflects the communities' long-term land use, access and development aspirations for the Peninsula, satisfies the requirements of local, state and federal agencies and provides a framework for guiding decisions about beneficial and mutually reinforcing economic, social, cultural and environmental outcomes.

The purpose of the Dampier Peninsula Planning Strategy is to:

- reflect the long-term land use, infrastructure provision, access and development aspirations of Dampier Peninsula residents, Traditional Owners (**TOs**) and other land holders;
- satisfy the requirements of Local, State and Commonwealth agencies; and
- provide a sustainable framework for guiding decisions about beneficial economic, social and environmental outcomes.

The Elements of the Dampier Peninsula Planning Strategy are:

- a community vision for the study area;
- guiding principles for future land use and development on the Peninsula;
- a strategy for future land use and development; and
- an implementation plan.

On the basis of information assessed in the previous tasks, consultation with stakeholders, and an understanding of future trends, the Plan will identify and discuss the key land use and development issues that are currently apparent or will become apparent in the study area in the next 25 years.

It should be noted that both the Shires of Broome and Derby West Kimberley are in the process of finalising their draft Local Planning Strategies (LPS) which have been forwarded to the Western Australian Planning Commission for consent to advertise during 2011. Both LPSs will rely on the finalisation of a Dampier Peninsula Plan to fill the current strategic and statutory planning gaps on the Peninsula.

The DPPS will:

- Amongst a suite of land use identification, define areas of cultural, environmental and heritage significance on the Dampier Peninsula and may identify land tenure and land management opportunities;
- define recreation and tourism opportunities (including nature based tourism) and may identify management measures for their environmental sustainability;
- Incorporate and have clear linkages to a number of existing and approved management plan for such things as Cultural Heritage and other Management Plans and Indigenous Protected Area Management Plans; and
- Deliver an Action Plan for future issues that fall within the heads of power of the Planning and Development Act and identify issues that will need to be dealt with under other legislation, regulations and/or policies.

The project is not expected to be completed until Q4 2012 due to the sensitive nature in seeking stakeholder engagement and approval from no less than five Native Title Holder / Claim Groups (Traditional Owners); other indigenous community groups who reside on the Peninsula (non Traditional Owners); and other stakeholders who have an interest in the Peninsula (pearlers, pastoralists, tourism operators etc.)

Annexure 6 - Groundwater Dependent Ecosystem Review

This annexure presents an appraisal of the James Price Point monsoon vine thicket and drainage basin vegetation water dependence.

This page has been intentionally left blank.

Annexure 6 (A6) - Groundwater Dependent Ecosystem Review

This appraisal of the James Price Point Monsoon Vine Thicket and drainage basin vegetation water dependence has been undertaken by the Land and Water Management Group at SKM. The report has been subject to independent peer review by Ray Froend at the School of Natural Sciences, Edith Cowan University.

Introduction

The Strategic Assessment of the Browse LNG Precinct completed an assessment of the potential risks to terrestrial ecological receptors identified in the James Price Point coastal area, with particular reference to Monsoon Vine Thicket (**MVT**) and drainage basin vegetation communities. As part of the Response to Submissions process, and through engagement with the Department of Environment and Conservation (**DEC**), the Proponent has sought to address concerns raised regarding the understanding of the inter-relationships between the vegetation with the hydrological and hydrogeological regimes and the management of potential threats.

Taking into consideration these theme comments regarding the Groundwater Dependent Ecosystem (**GDE**) status and water dependence of these ecological communities, and as agreed with DEC, this additional review has been undertaken to inform the Proponent's Response to Submissions.

The aim of this report is to provide a synthesis of available information combining data from scientific literature, field observations, an appraisal of remotely sensed data to infer potential use of groundwater by vegetation, and a conceptualisation of the groundwater environment.

The review has been undertaken consistent with the GDE Toolbox and framework for assessing environmental water requirements of GDEs⁽⁹⁾, drawing on currently available tools available at this stage of project development.

Literature was sourced from freely available peer-reviewed research papers, available via Google Scholar and the Web of Science database, including studies conducted on other similar communities and environments, and on vegetation and water dependency in general.

An appraisal of remote sensing data has been undertaken to determine whether there is potential for groundwater use during the dry season.

The available information has been used to develop a conceptualisation of the possible relationships between vegetation and groundwater. The conceptual model presented in this report represents an updated summary of the local surface-groundwater inter-relationships from that presented originally in the Strategic Assessment Report.

Key Management Consideration

The key management consideration regarding the MVT and drainage basin vegetation communities is the relationship between vegetation, surface water and groundwater. This is considered pivotal in the understanding of potential impacts and the manner in which they may be managed. In order to further this understanding the following questions must be addressed:

- What are the potential sources of water for the vegetation?
- What role does surface water play?
- What surface water and/or groundwater regime is needed to sustain the vegetation and how sensitive is the vegetation to change, recognising that variability will exist?
- What are the potential threats?
- How might the vegetation change if surface water and groundwater conditions change?
- What are the practical management responses (e.g. engineering design and monitoring-contingency planning)?

In the first instance the focus of investigations is on establishing a conceptualisation of the relationship between water sources and vegetation. The key questions can form the basis of a series of hypothesis relating to potential impacts, which are used to design appropriate monitoring and evaluation strategies.

9 Currently being prepared by SKM, Froend, CSIRO for National Water Commission

Description of the Vegetation Communities

The James Price Point coastal area features the monsoon vine thicket (**MVT**) vegetation community, which is closely aligned to rainforest systems, and drainage basin vegetation. These vegetation communities have been the subject of a number of ecological field surveys and investigations at a local and regional context to inform the BLNG Precinct Strategic Assessment. Both of these vegetation types are of high conservation significance due to their unique floral assemblages and limited distribution and both are assumed to have some dependency on groundwater for survival (DSD, 2010d). The MVT of the Dampier Peninsula is a State-listed Threatened Ecological Community (**TEC**) and has been recently nominated for listing under the Commonwealth *EPBC Act*.

MVT in the James Price Point coastal area is divided into two sub-types as the vine thickets vary from predominantly discrete, closed-canopy patches of evergreen on the coastal sand dunes to semi-deciduous linear belts along the inland base of the dunes (Biota, 2009). The rain-green canopy dominates the vegetation during the monsoonal wet season (November to March), while the semi-deciduous or deciduous species are more obvious during the dry season as they appear dead, with this potentially correlating to higher stress during seasonal periods of low water availability. In some areas, a mosaic of both sub-types occurred. At James Price Point the MVT vegetation covers an area of approximately 5.72km². The MVT vegetation community potentially provides important habitat for birds and mammals, in particular frugivores (especially birds and bats), and is an important resource for Indigenous communities. Its limited distribution and unique vegetation assemblage makes it of high conservation significance, however, it is highly vulnerable to weed invasion, cattle grazing and inappropriate fire regimes (DSD, 2010d).

Drainage basin vegetation is analogous of the permanent/ephemeral wetlands, damplands and riparian habitat of the Dampierland Bioregion and covers an area of 3.95km² at James Price Point. The drainage basin vegetation, often similar to MVT, is characterised by an overstorey of Northern Swamp Mahogany (*Lophostemon grandiflorus* subsp. *grandiflorus*) and Swamp Teatree (*Melaleuca dealbata*), which delineates it from the vine thicket communities. It is located behind the coastal dunes and subject to seasonal inundation, from three upstream catchment areas characterised in the local area (refer to the SAR **Part 4, Section 1.3.2, Figure 1.8**). The total area of the three catchments forms 122km². It also has a restricted distribution in a local context and is susceptible to weed invasion, cattle grazing and inappropriate fire regimes (DSD, 2010d).

Influence of Surface Water and Groundwater

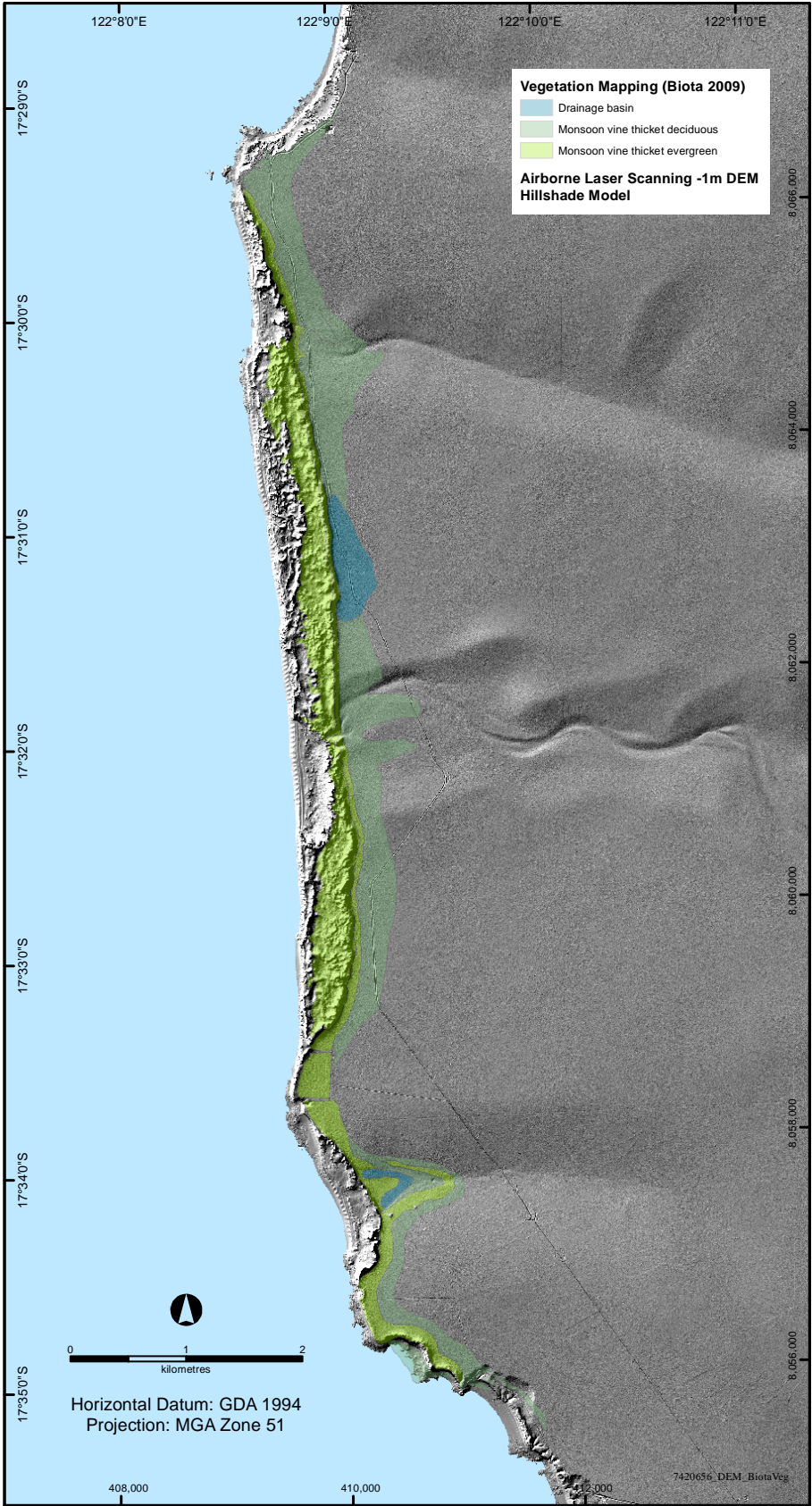
Minor ephemeral drainage lines deliver surface water to the dunal environment along a slight gradient. Short term ponding of surface water behind the dunal system may occur in the wet season. During this period the surface water is believed to recharge the underlying aquifer within the dunal system. The timing of flows/floods, episodicity of extreme events, area and depth of inundation will be important considerations in an evaluation of water requirements (Eamus and Froend, 2006).

The digital elevation model for James Price Point is presented in **Figure A6.1 'Digital Elevation Model Showing Location of Vegetation Communities'**. The locations of the MVT and drainage basin vegetation communities are represented. Given the spatial settings of the vegetation communities it seems evident that, during the wet season, surface water flows to the dunal system which can be accessed directly by vegetation or indirectly as surface water infiltrates the underlying aquifer.

The area of the catchment affected by the Precinct is relatively small at around 16% of the total catchment area (refer **Part 4, Figure 1-8, SAR**). This suggests that significant volumes of water will flow to the dunal system regardless of the Precinct construction. Given the relatively high rates of infiltration in sandy soils the change to run-off to the dunes is not expected to be significant at a catchment scale.

In general, terrestrial vegetation is known to be potentially dependent on groundwater. Groundwater provides soil moisture through the capillary fringe (the zone directly above water table), which is accessed by root systems (Nevill *et al.*, 2010). The degree of dependency can vary spatially and temporally. For example, Eamus and Froend (2006) highlight studies where seasonal variability in groundwater use has been measured.

Figure A6.1 Digital Elevation Model Showing Location of Vegetation Communities



Facultative groundwater dependency means that vegetation may use groundwater when available (but groundwater is not crucial to maintenance of ecosystem condition) and obligate groundwater dependency means that groundwater is more critical to the ecosystem (Eamus *et al.*, 2006), for example, during occasional inter-annual dry periods when other sources of water are absent. The depth to groundwater and root access is a critical determinant to the degree of dependency (Nevill *et al.*, 2010). A fall in groundwater levels can potentially impact vegetation state, as evidenced by studies on Banksia woodland on the Swan Coastal Plain.

It is important to consider the timing of groundwater level change (e.g. seasonal maximum and minimum), magnitude of change and period of change when assessing groundwater requirements (Eamus and Froend, 2006). This shouldn't mean that water requirements of vegetation can always be reduced to simple groundwater relationships as other factors related to surface water management, land management and climate may be influential.

While a decline in groundwater conditions can potentially impact vegetation there is also acknowledgement within the literature that there may be resilience to impacts, with the right management approaches (Eamus and Froend, 2006) so that vegetation is maintained in an acceptable condition.

It is considered unlikely that the MVT and drainage basin vegetation communities are wholly reliant on groundwater sources, however, given that the depth to groundwater is considered to be less than 10m from the surface, it is likely that the dominant species in the communities are utilising groundwater to some extent (DSD, 2010d). This is taking into consideration the likely maximum root depth of 6-8 metres of the dominant plant species characteristic of the vegetation communities. Plant species that obtain water from groundwater and surface water in this manner are referred to as phreatophytes. Surface water is likely to be utilised by the vegetation in a direct pathway during the wet season and an indirect pathway during the dry season, via the underlying shallow aquifer. Groundwater use by vegetation is likely to vary spatially and temporally throughout the community, with greatest potential reliance on groundwater likely to occur during the dry season (DSD, 2010d).

Given the current understanding of the conceptual model of the James Price Point coastal area (refer to the following **Conceptual Model** section), it appears that the semi-deciduous vine thicket communities, located directly behind the dunes, potentially utilise surface water during the wet season, with some reliance on groundwater during the dry season. The evergreen vine thicket communities, however, likely rely on rainfall (stored within the soil) and surface water during the wet season and are potentially maintained by a shallow (mounded) watertable within the dune during the dry season. While little investigation of the groundwater flow regime in the James Price Point coastal area has been undertaken due to site access constraints, an examination of similar vegetation types across Australia and other communities that utilise coastal environments can give an understanding of the possible hydraulics and evapotranspiration responses anticipated to be occurring in the area.

Liddle *et al.*, (2008) conducted a comprehensive study into the water use of spring-fed monsoon vine forests, located in the Howard Springs region near Darwin, Northern Territory. Their results indicate that the monsoon vine forests relied on groundwater for 43-50% of its water requirements during the late dry season, with results varying spatially. The floristic structure of their sites appeared to play a role in determining dependency, with the sites most dependent on groundwater also having the highest proportion of large trees with high groundwater dependence. Liddle *et al.*, (2008) also state that a shortfall exists between the water required by the vegetation and community and the water available from soil water, so the monsoon vine forests must be accessing deep water stores for continued growth.

A similar monsoon forest community at the confluence of the Douglas and Daly Rivers, also in the Northern Territory, reported highly seasonal water use at the site (O'Grady *et al.*, 2002). They also report that water use varies with geomorphology and position in the landscape. In this community trees that were located at lower elevations, closer to the river, relied more on groundwater sources than trees at high elevations (O'Grady *et al.*, 2002). Furthermore, Boggs *et al.*, (2008) found that trees located on the edge of an MVT community depended more on groundwater during the late dry season, than trees located within the core of the community, which utilised more soil water. This will relate to stress and climate influences, where internal microclimates buffer the individuals from external stress.

A study into a coastal community of heath and woodland at the Tomago Sandbeds (near Newcastle, NSW) and Tomaree Sandbeds (near Nelson Bay) identified a variety of water dependent strategies within the vegetation communities (Driscoll & Bell 2006). At Tomago Sandbeds, all vegetation was found to be groundwater dependent

to some extent, with 90% of the community obligate, meaning they are reliant on groundwater. The other 10% are described as facultative, meaning they can draw on groundwater resources but are able to utilise surface water sources if groundwater resources are insufficient. Communities reliant on perched aquifers were also identified at Tomago Sandbeds. By contrast, the Tomaree Sandbeds communities were more diverse, with only 16% of the community obligate in their groundwater dependence, 37% of the community was facultative and 47% were not reliant on groundwater at all, that is reliant solely on surface water (Driscoll & Bell, 2006). This study highlights the diversity of water dependency that can occur across vegetation communities.

Some groundwater dependent vegetation can adapt to changes in groundwater level by extending root networks to greater depths (maximum rooting depths range from 0.3 to 68m for different plant species; Canadell *et al.*, 1996). However, many species could be expected to be sensitive to the rate of water table decline. Banksias growing over the Gnangara (groundwater) mound in Western Australia were found to tolerate some decline in groundwater level, so long as they occurred at a rate of less than half a metre per year (Groom *et al.*, 2000). Roots of Eucalyptus seedlings have been measured to elongate at rates of 5 mm/day (Misra, 1997).

Vegetation communities that do not source their water from groundwater are dependent on surface water for survival (Poff *et al.*, 1997). Due to the wide range of water dependency regimes described above, surface water changes could potentially affect any communities that are not reliant on groundwater, as well as any facultative communities. Changes to surface water flow are also likely to have an impact on surface water-groundwater interactions and could, therefore, affect species reliant on either water source (Loheide & Booth, 2001).

The determination of reliance on surface water or groundwater is difficult to predict without conducting a comprehensive hydraulic assessment of the community in question (O'Grady *et al.*, 2006) and can require long term monitoring datasets (Eamus *et al.*, 2006). Variations occur temporally, spatially, with depth to water table and with rooting distribution of each species (O'Grady *et al.*, 2006). Reliance of an ecosystem on groundwater is to be assessed through collection of time series data that quantifies the use of groundwater seasonally (and ideally through inter-annual wet and dry periods).

Local changes to groundwater conditions due to abstraction may cause changes in vegetation reliance. However, the regional nature of the shallow groundwater system is likely to provide a buffer to these impacts.

If, as conceptualised, the evergreen vine thickets, semi-deciduous vine thickets and drainage basin vegetation located on and behind the dunal system are maintained by the regional water table, these communities may be impacted by groundwater regime changes nearby, subject to management of surface water.

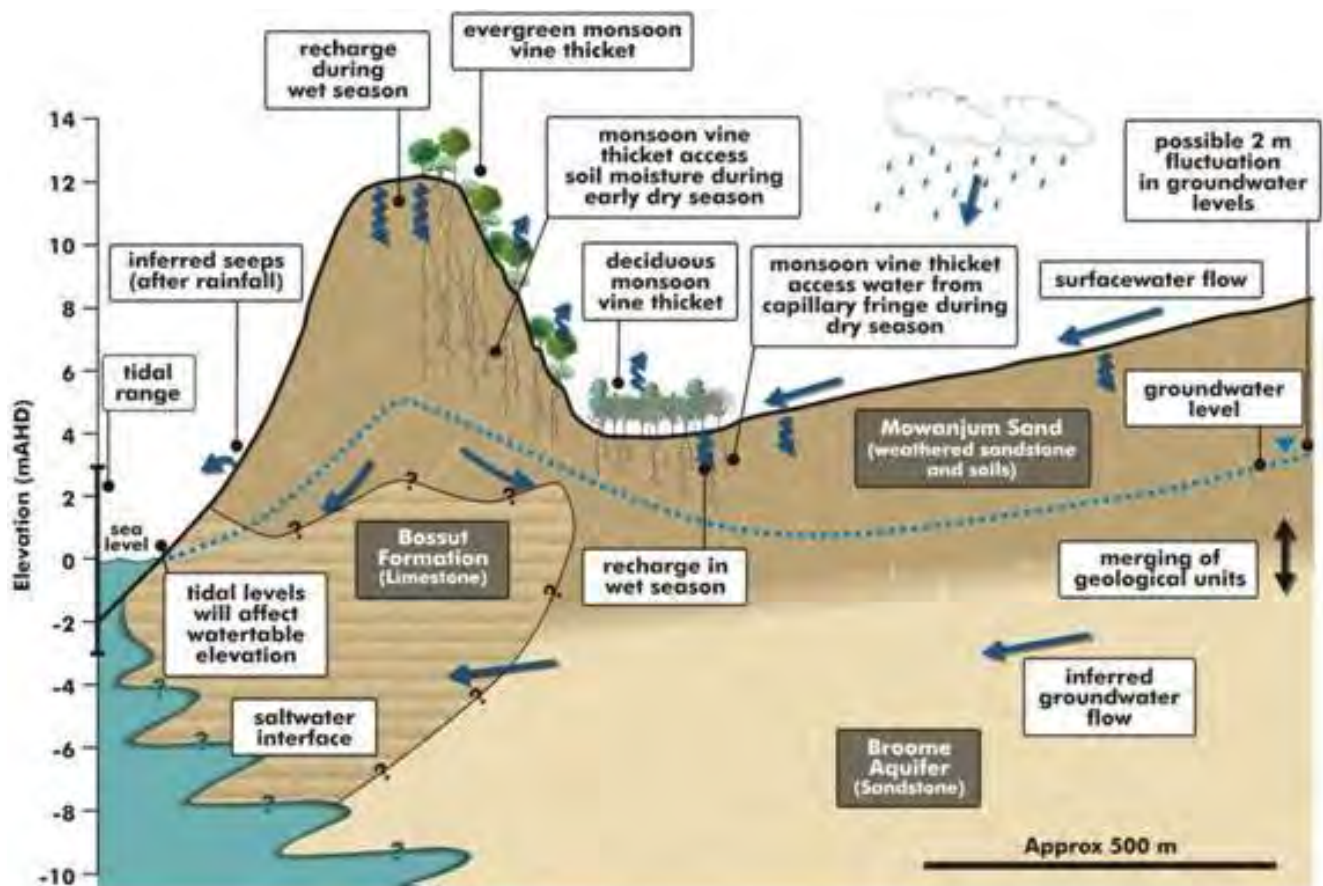
Conceptual Model

The simplified conceptualisation of the groundwater system at James Price Point is presented in **Figure A6.2 'Simplified Conceptual Model'**.

The key lithological units associated with the Precinct are (taken from the SAR **Part 4, Table 1-1**):

- Quaternary sand plain (Mowanjum Sand, max thickness 10 metres), sand or gravel plains; quartz sand sheets commonly with ferruginous pisoliths or pebbles, minor clay, local calcrete, laterite, silcrete, silt, clay alluvium, colluviums, Aeolian sand and Pindan sand;
- Quaternary beach dune complex (max thickness 20 metres), beach sand, sand dunes, coastal dunes, beaches and beach ridges; calcareous and siliceous, locally shelly and or cemented (beach rock) reworked sediments;
- Early Cretaceous Broome Sandstone (max thickness 300 metres), fine to very coarse grained sandstone with minor mudstone and conglomerate. Considered to be deltaic sedimentary sequence. Regionally, the Broome Sandstone is known to be variably cemented to wholly uncemented (V&C Semeniuk Research Group, 2000); and
- Quaternary limestone of the Bossut formation, fine to coarse grained calcareous sandstone, quartzose sandstone and calcilutite.

Figure A6.2 Simplified Conceptual Model



A shallow unconfined watertable aquifer lies within the Quaternary sediments (e.g. Mowanjum Sand) at depths of approximately 5 metres below ground level, which is in hydraulic connection with an underlying aquifer within the Broome Sandstone. It is expected that regional groundwater flow occurs from the east to west where it discharges in the coastal environment. Flow of groundwater would be dependent on tidal fluctuations and recharge of surface water. Upward leakage of water from the deeper aquitards and aquifer may also occur.

Mounding of groundwater levels within the shallow regional aquifer potentially occurs within the coastal dune system. The mounded conditions are most likely created by recharge of rainfall through the top of the dunes and by recharge of surface water flow to the edge of dunal system. The saturated thickness of the mounding will vary seasonally.

The MVT (evergreen and deciduous) and drainage basin vegetation communities are potentially dependent on the shallow water table aquifer.

The evergreen MVT is located on the top and rear slopes of the dunal system and can potentially source water from capillary fringe above the mounded regional aquifer, especially during the dry season.

Collection of time series water level data will provide a picture of how the processes inferred from the conceptual model vary between wet and dry periods, and how they vary due to tidal fluctuations.

The hypothesis inferred by the simplified conceptual model is as follows:

- evergreen MVT is fed by soil moisture store (created from rainfall recharge) during and immediately following the wet season;
- mounding of groundwater levels in the shallow regional aquifer within the dunal sands may be accessed by vegetation during extended dry seasons;
- deciduous MVT and drainage basin vegetation are fed by rainfall recharge and the shallow regional aquifer; and
- rainfall and surface water runoff is an important source of water by providing a direct source during the wet season and an indirect source (soil moisture) during the dry season.

It should be noted that additional studies are required by future proponents of derived proposals, to further confirm this conceptual model (drilling and groundwater monitoring). The conceptualisation will also be improved with further analysis of geomorphology, elevation and geology.

Initial Appraisal of Remote Sensing Data

One of the most long-standing and commonly used algorithms for analysis of remote sensed data related to vegetation water use is the NDVI (normalised difference vegetation index), which uses the ratio of red and infrared band widths to produce an NDVI (value between +1 and -1) for each pixel of the area being sensed. This then results in a new processed image, in which the different visual and thermal properties of surfaces can be readily distinguished. NDVI is strongly correlated with primary productivity and therefore is used as an indicator of live, green vegetation. Leaves absorb photosynthetically active radiation, which they use as an energy source when they are photosynthetically active and scatter (reflect or transmit) near-infrared radiation. Other biophysical characteristics of vegetation also have been estimated using NDVI, including canopy coverage, photosynthetic capacity of canopies (through detection of chlorophyll or 'greenness') and leaf-area index (**LAI**) etc.

There are acknowledged limitations to using NDVI. For example, contributions from the soil and vegetation understorey can influence the relationship between NDVI and other measures of vegetation, such as leaf area index. These have led to the development of several derivatives and alternative algorithms for data analysis/interpretation; each was developed to account for anomalies in remotely sensed data and/or allow application of the data for other purposes. Some work in the James Price Point area has been undertaken by CSIRO who used NDVI to map the occurrence of MVT which highlighted some of the limitations (Wallace, 2010).

In addition to mapping MVT, temporal changes in NDVI can be used to make inferences regarding the availability of water for vegetation. For instance, a consistent NDVI across both dry and wet periods is indicative of vegetation being able to access a relatively stable water source such as deeper soil water stores and/or groundwater. As such, temporal changes in NDVI can be used to infer potential GDEs.

Four Landsat images have been acquired to analyse temporal changes in NDVI for the MVT. The images were taken during the wet and dry seasons of 2005 and 2008. In each year, a direct comparison is made between the wet and dry season NDVI; and comparisons can be made between 2005 and 2008. These years were selected due to marked differences in rainfall seasonality (**Figure A6.3 'Rainfall Data from Broome Airport 2005 & 2008'**). In 2005, some anomalous rainfall occurred during the dry season. While in 2008, there was negligible rainfall during the dry season. Seasonal rainfall since 1998 is shown in **Figure A6.4 'Rainfall Data from Broome Airport 1998-2011'** and shows that little rainfall occurs in the dry season from year to year.

Figure A6.3 Rainfall Data from Broome Airport 2005 & 2008

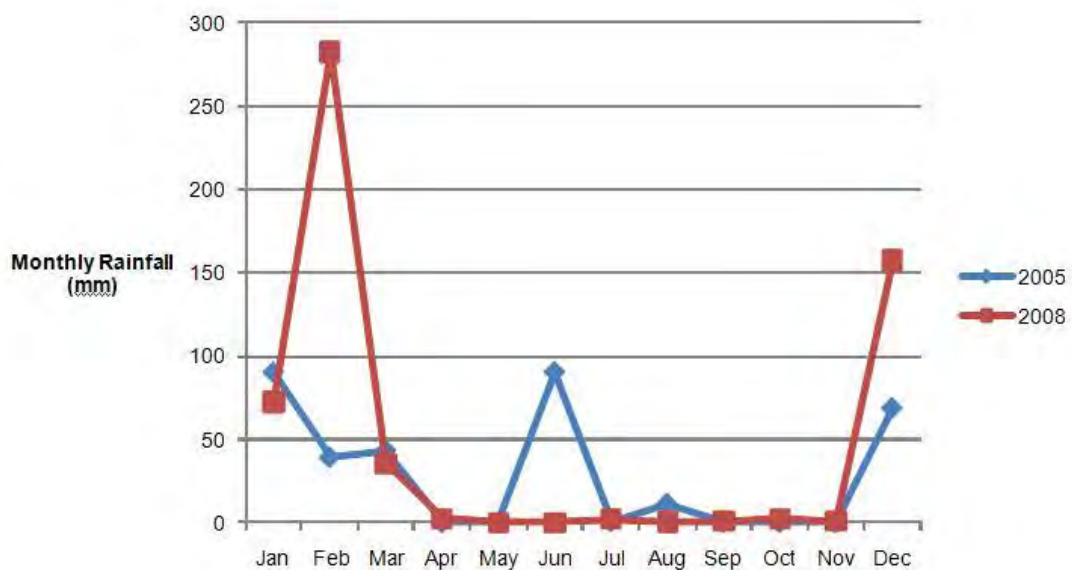
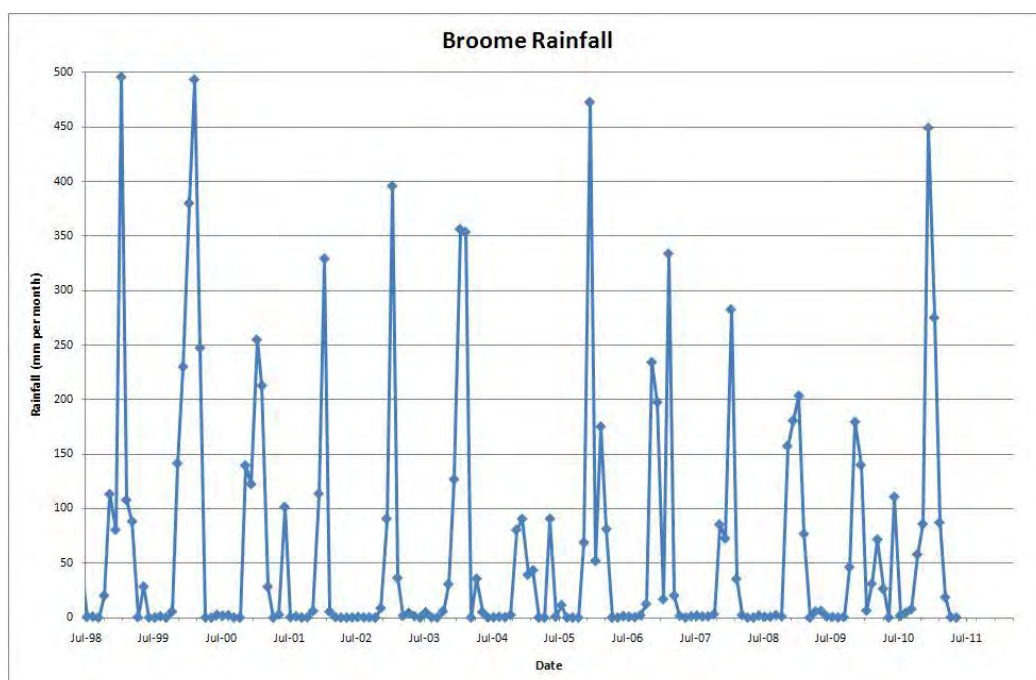


Figure A6.4 Rainfall Data from Broome Airport 1998-2011



The four NDVI images are shown in **Figure A6.5 'Broome NDVI 2005'** and **Figure A6.6 'Broome NVDI 2008'** which list the major NDVI trends identified. In 2005, the evergreen MVT shows a relatively consistent NDVI across the wet and dry period, indicating a continuing source of dry season water. Yet in 2008, when the dry season was much more pronounced, much of the evergreen MVT has a lower NDVI during the dry season. The lower NDVI signal in the lower rainfall period suggests less access to a stable water source such as groundwater in that year. However, there are pockets of MVT (e.g. location D in **Figure A6.6 'Broome NVDI 2008'**) where the NDVI remains high in the dry season of 2008, and these zones are inferred to have a greater potential of being dependent on groundwater.

The initial appraisal of the remote sensing data indicates that patterns of water use by MVT are spatially and temporally variable. It is possible that the occurrence of dry season rainfall (e.g. 2005) is an opportunistic factor in maintaining photosynthetic activity with the greater dependence being on the wet season rainfall and surface water flows. The persistence of the MVT during the dry season implies some use of groundwater as a water source. Greater persistence of photosynthetic activity in the dry season is more likely near surface water drainage lines, and in some isolated areas.

During 2008 low levels of photosynthetic activity are noted over both the dry and the wet seasons. However, MVT has shown some resilience and continues to function in this region beyond 2008 levels.

Further analysis of the remote sensing data is required to confirm these initial observations.

Figure A6.5 Broome NDVI 2005

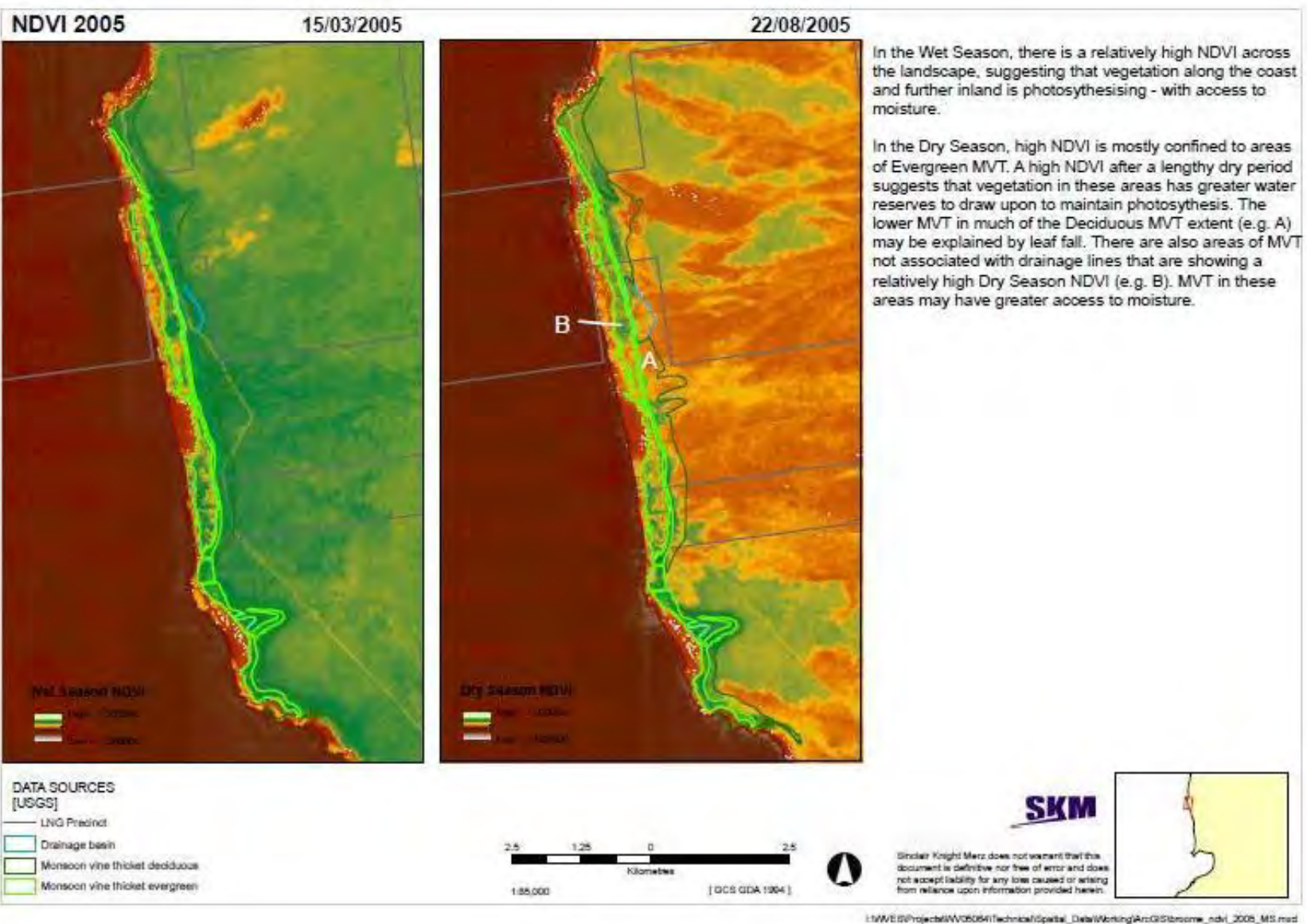
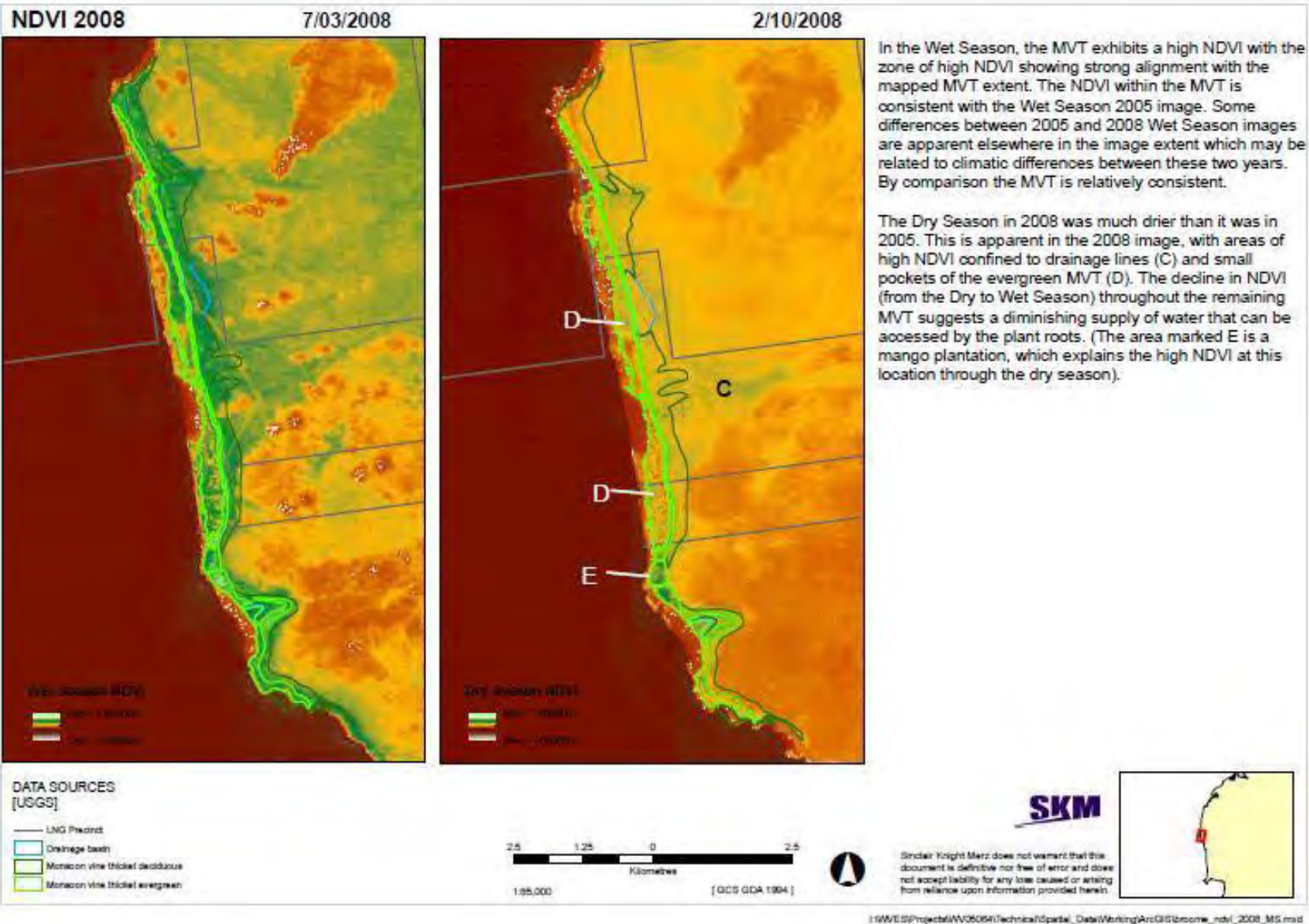


Figure A6.6 Broome NDVI 2008



Key Aspects

The key aspects (relevant to protection of GDEs) highlighted by the Strategic Assessment Report (SAR) are considered to be:

- Physical Presence
 - Change in discharge of existing catchments caused by stormwater drainage system (e.g. altered peak flows and flow timing).
 - Reduced recharge and baseflow due to presence of impervious surfaces.
- Groundwater Abstraction
 - Potential changes in hydrogeological conditions as a result of possible groundwater abstraction.
- Site disturbance and excavation associated with the shore crossing
 - Site disturbance and excavation.

The potential impacts to vegetation quality and health are difficult to predict, due to the number of hydraulic variables in the ecosystem (Begg *et al.*, 2001) and the uncertain nature of surface water and groundwater dependence in the James Price Point coastal vegetation communities. However, as concern around the effects of groundwater extraction on vegetation has risen in recent decades, a number of studies of other similar communities have been conducted (Liddle *et al.*, 2008). Changes in hydraulics have been seen in many Australian landscapes, due to groundwater extraction for agricultural, urban and commercial land use (O'Grady *et al.*, 2002).

Reduction in the groundwater or surface water available to MVT and drainage basin vegetation could result in the reduction of water accessible within the vegetation root zone (Begg *et al.*, 2001). Phreatophytic vegetation, such as MVT and drainage basin vegetation, tend to be poorly adapted to water stress outside of the normal variations of seasonal change (O'Grady *et al.*, 2002). Depending on the length of time that the vegetation has reduced water access, potential consequences are poor health, loss of canopy maintenance and, ultimately, tree death and reduction of the community's conservation value. However, the NDVI analysis undertaken in the previous section indicates that the MVT and drainage basin vegetation display some natural resilience to long dry periods.

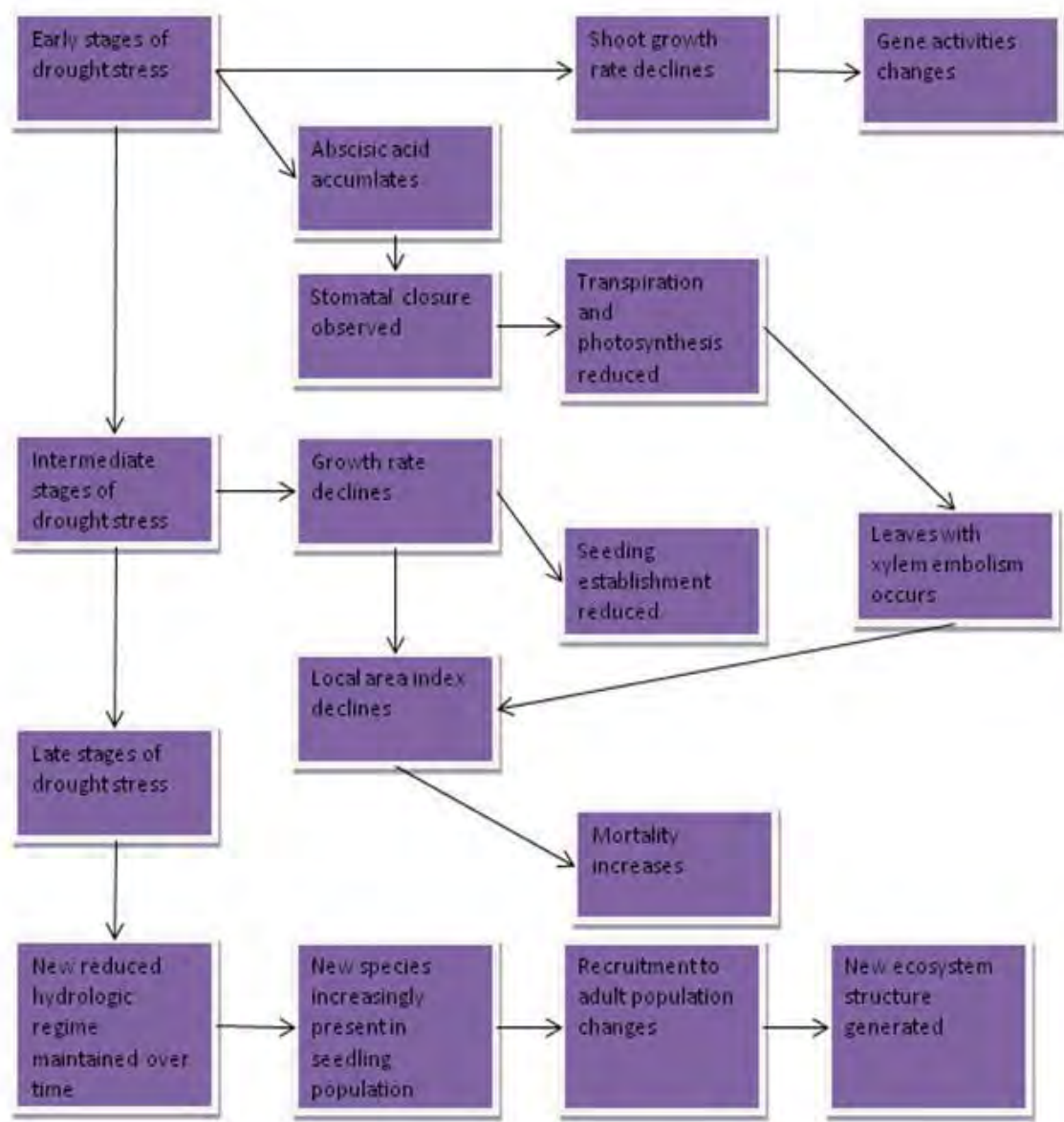
In the context of this strategic proposal, it is expected that the forward licensing process under the *Rights in Water and Irrigation Act 1914 (RIWI Act)* will determine the sustainable yield of any proposal to extract groundwater, consistent with regional water allocation planning strategies, and schedule 1, Section 7(2) of the RIWI Act.

The floristic structure of the MVT and drainage basin vegetation communities may also be impacted due to long term changes in surface and groundwater hydraulics. Lack of available water deprives dependent species, potentially resulting in mortality, and may allow species with higher tolerance to water stress to establish in their place (Driscoll & Bell, 2006; Liddle *et al.*, 2008; Strong *et al.*, 2009). Practically, this means that MVT and drainage basin vegetation communities could be gradually replaced by woodland communities or other vegetation types over the long term, resulting in the loss of the vegetation communities and reduction of the conservation significance of the area. **Figure A6.7 'Schematic of Changes In Community Structure due to Prolonged Water Stress'** illustrates the possible changes in structure that can occur in a water dependent species due to prolonged changes to the water hydraulics.

Changes in surface water and groundwater hydraulics also have indirect effects on the MVT and drainage basin vegetation communities. The decline in health of the communities can result in a drier community with poor canopy health, increasing the potential for bushfire in the area (Liddle *et al.*, 2008).

Careful management strategies need to be executed to manage potential adverse effects on MVT and drainage basin vegetation, where changes in the surface water or groundwater delivery are anticipated. Potential management options are discussed in the following section.

Figure A6.7 Schematic of Changes In Community Structure due to Prolonged Water Stress



Potential Management Options

Overview

The overall approach to mitigation of identified impacts will occur under the framework of the implementation conditions to be established as part of the Strategic Assessment. In the context of this report, future proponents of derived proposals will be expected to prepare and implement comprehensive Environmental Management Plans (**EMPs**) to achieve acceptable outcomes and to meet the Department of Water's (**DoW**) expectations under the RIWI Act process.

Water Licensing

The RIWI Act groundwater abstraction licensing process is designed to ensure that potential impacts from groundwater abstraction are analysed, described and managed. The DoW determines the level of groundwater abstraction that may occur without unacceptable environmental or social impacts on other water users, and this limit is defined as the sustainable yield of the aquifer. The DoW will not approve licence applications for groundwater abstraction beyond the sustainable yield. A Groundwater Abstraction Management Plan is proposed to mitigate the risk of adverse impacts, supported by a robust groundwater monitoring regime.

Ecological Surface Water Requirements Management Plan

An Ecological Surface Water Requirements Management Plan is an EMP designed to deal with potential threats to ecological assets, including threats associated with changed surface water regime. As required by the SAR (refer **Part 4, Table 2.2-4, Impact Assessment Summary for Surface Water**) the mitigation measures will target:

- Drainage measures to manage surface water flows and minimise environmental impacts as far as practicable on MVT and drainage basin vegetation communities within the affected catchments.
- A vegetation composition, health and condition monitoring program for areas of vegetation determined likely to be dependent on surface water flows, including the regional aquifer, for seasonal water requirements.
- Process to be implemented if monitoring indicates declining vegetation condition or changing composition as a result of changes in surface water flows.

The following section provides additional contextual information to inform an assessment that the identified risks can be appropriately managed with the application of best practicable measures.

Management Approaches - General

High quality data and an improved understanding of the hydraulic regimes in the area are essential for effective management outcomes to be achieved (Erskine *et al.*, 2003; Kelley *et al.*, 2002; Liddle *et al.*, 2008). Accurate identification of vegetation communities' water use is important to incorporate into management plans and inaccurate data has been a major issue for management in the past. Many southern Australian systems have already been impacted by alteration in water dynamics, leading to reductions in ecosystem health (Kelley *et al.*, 2002). Collection of baseline data for the MVT and drainage basin vegetation, including habitat composition and diversity, as well as a further understanding of the vegetation communities' water use will occur, to feed into an effective management plan. Groundwater and surface water flows will be considered within an integrated approach (as suggested by Begg *et al.*, 2001). A flexible and incremental approach to water management is needed to ensure protection of the MVT and drainage basin vegetation.

It is important that flood peaks and minimum seasonal stream flows are maintained at sufficient levels to avoid adverse effects on vegetation. Effective sedimentation and erosion control is also required.

The literature contains examples of management actions targeting catchment-scale initiatives such as limits on aquifer extraction to maintain water flow in critical flow periods, setting buffer distances on groundwater extraction (e.g. Erskine *et al.*, 2003) and limits on extraction during critical ecological processes such as flowering, seed development or germination (Driscoll & Bell, 2006).

Adoption of an adaptive ecosystem management approach, supported by appropriate collection of monitoring data (e.g. stream gauging, groundwater level measurements, water quality monitoring, ecological monitoring) and evaluation and benchmarking programs, is an important component of an appropriate management response (Eskine *et al.*, 2003). The management responses will need to recognise the probability of a time lag between the system response to a management action and the earlier detection of stress within a monitoring program.

Mitigation Measures

Targeted mitigation measures need to address the key threats of:

- change in discharge of existing catchments caused by stormwater drainage system;
- reduced recharge and baseflow due to presence of impervious surfaces;
- changes in the hydrogeological regime as a result of groundwater abstraction; and
- site disturbance and excavation associated with the shore crossing.

Change in the site hydrology due to physical presence of the site can occur as paved areas are constructed across drainage features and as the shore crossing is developed. The area of the catchment affected by the Precinct is around 16% (refer **Part 4, Figure 1-8**, SAR). Given the relatively high rates of infiltration in sandy soils the change to run-off to the dunes is not expected to be significant.

The literature information indicates that continued seasonal delivery of surface water to the dune environment is required to minimise impacts to vegetation. This can be achieved through engineering design that allows for controlled routing of surface water from the up gradient catchment and from the LNG industrial zone to the dune environment. The operation of the regulating surface water controls will occur in a manner that (as far as practicable) delivers water in a manner consistent with the needs of ecosystems. Consideration will be given to management of peak flows, timing of flow, sedimentation and erosion management in the engineering design and planning.

A fall in groundwater levels may occur if groundwater abstraction occurs. Impacts to vegetation in the dune may be buffered from this effect through irrigation or the design of an abstraction regime which is sympathetic to the environmental needs for example by reducing abstraction when there is peak environmental demand on groundwater (Eamus and Froend, 2006). The feasibility of this approach is yet to be tested.

The design of mitigation measures will also be supported by monitoring and contingency planning. Hydrogeological and hydrological monitoring will be implemented to better understand changes to groundwater depths, salinity, timing and magnitude of flow, and areas of inundation.

The shore crossing may require excavation through the dune environment which could potentially intersect the mounded aquifer (depending on the depth of excavation) and may result in some localised drainage of water. The impact of this is not expected to be extensive given the localised nature of the excavation and the availability of wet season rainfall recharge to the dune sediments (a potential source of water for the MVT). However, engineering design can consider two approaches (either conventional excavation or tunnelling) in order to minimise impacts to MVT.

Summary

This appraisal has been established through a review of available literature related to how vegetation may interact with surface water and groundwater, initial appraisal of remote sensing data and an initial conceptualisation of the groundwater environment.

The key issue regarding the MVT and drainage basin vegetation in the James Price Point coastal area is that there is limited site-specific information to fully characterise the dependency of the vegetation on groundwater and surface water. The vegetation communities are conservatively conceptualised to be, at least, somewhat reliant on groundwater, however the extent and timing of reliance is difficult to determine without further monitoring at the site. It is possible that some MVT is supported by the occurrence of a mounded water table below the dunes and that MVT behind the dune may be sustained by the shallow regional aquifer.

The literature highlights examples of where MVT is sensitive to the availability of both surface water and groundwater. However, the initial appraisal of the NDVI data has indicated that the MVT at James Price Point displays some natural resilience to extended dry periods.

A review of the available literature has indicated that the following management options are to be recommended. These have been incorporated into the strategic assessment process which will define implementation conditions and commitments to be delivered through adaptive management and monitoring programs:

- Additional baseline data and understanding of flow regime are essential for the development of an effective management plan.
- Regular monitoring of the vegetation communities (through health and condition monitoring against reference sites) is required to detect any unacceptable water stress, and extraction and management activities should be adapted accordingly, to maintain the integrity of ecological values.
- Engineering controls can be designed to continue to deliver surface water to the dunal systems and to limit impacts from groundwater abstraction and excavation of the shore crossing.

The ongoing studies will give better definition to the groundwater dependency of the MVT and the drainage basin vegetation in the James Price Point coastal area allowing management options to be developed in greater detail, in consultation with regulatory agencies.

Annexure 7 - ASIA Recommendations

This Annexure contains the Aboriginal Social Impact Assessment (**ASIA**) Recommendations and how they are addressed in the Strategic Assessment.

This page has been intentionally left blank.

Annexure 7 - ASIA Recommendations

The terminology of the ASIA recommendations refers to commercial proponents as 'The Proponent'.

| ASIA Recommendations by Theme | Response to Recommendations |
|---|---|
| Precinct Governance | |
| <p>Recommendation 1 The Proponent, State, Commonwealth, and Precinct Operators must commit themselves to developing the capacity to hear, understand and respond to the aspirations of Traditional Owners and other Indigenous people affected by the LNG Precinct, and demonstrate that commitment in tangible ways.</p> | <p>BLNG Project Agreement Schedule 6:</p> <p>The Native Title Party will be represented on all management committees in the Precinct Governance framework. This includes the Precinct Control Group (reports to the Minister of State Development); the Precinct Management Committee (PMC) and the Social Management Committee.</p> |
| <p>Recommendation 2 The Proponent, the State, the Commonwealth, and Precinct Operators must commit themselves to negotiating time frames for future or ongoing impact assessment and negotiation processes that balance a realistic assessment of commercial requirements with the need for culturally appropriate decision-making processes and Indigenous informed consent.</p> | <p>The parties to the BLNG Project Agreement (including the Native Title Group) have agreed to the procedures for the operation of the Precinct Management Committee which will oversee compliance with the terms of the BLNG Project Agreement, which includes dispute resolution.</p> |
| <p>Recommendation 75 The Proponent, the State, the Commonwealth, the KLC and Traditional Owners must:</p> <ul style="list-style-type: none"> promote transparency and the free flow of information in relation to LNG development, so that misunderstandings regarding processes and decisions relating to gas development are minimised; and promote adherence to values of mutual tolerance and respect, through a public information campaign using local media, and stressing the benefits to all of maintaining such values in the face of conflict over gas development . | <p>The Native Title Party Representatives will also annually meet with the following: the Minister responsible for the State Implementing Agency, CEO of the Port Authority, CEO of LandCorp, CEO of the Foundation Proponent, and the senior executive officer with responsibility for the Additional Proponent Project.</p> <p>Annually, the Native Title Party Representatives on the PMC will provide a scorecard of the status of the provisions of the management plans considered by the PMC. The scorecard will be published by the other members of the PMC.</p> |
| Social Impact Monitoring | |
| <p>Recommendation 4 The Proponent, the Commonwealth, the KLC and other relevant Indigenous regional organisations, and Traditional Owner representatives must establish an LNG Precinct Indigenous Social Impact Monitoring and Management Board (the Board) immediately following any approval of the Plan, and must maintain the Board throughout the life of the LNG Precinct. The State and Commonwealth must, at the earliest possible opportunity, establish a legislative basis for the Board to ensure its continued existence and the ongoing availability of funds to support its operations.</p> | <p>The Department of State Development, the KLC and the Commonwealth are holding discussions about an appropriate impacts management mechanisms, including resourcing requirements, to allow a cumulative impact approach to monitoring social and economic impacts on Indigenous people in the West Kimberley.</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|---|---|
| Recommendation 57 The Board, discussed in Chapter 4.4.2, must establish and maintain monitoring of prices for key components of Indigenous living costs in the Area of Impact. | The Precinct's social monitoring program will include indicators of cost of living impacts. |
| ILUA | |
| Recommendation 72 Any endorsement of the Plan must be subject to the conclusion of an ILUA which allows the Traditional Owners to ensure that any impact of the LNG Precinct and associated developments on their cultural heritage is avoided where possible and, where avoidance is not possible, is minimised. Recognising the principle of Indigenous Free Prior Informed Consent, no damage to Indigenous cultural heritage must be permitted without the informed consent of Traditional Owners. | On 30 June 2011, the State of Western Australia and the Goolarabooloo Jabirr Jabirr Peoples signed the Browse (Land) Agreement. The State shall introduce and sponsor a Bill in the State Parliament of Western Australia as soon as reasonably practicable and prior to 30 June 2012 or such later date as may be agreed between the parties to ratify this Agreement. The State shall endeavour to secure the timely passage of such Bill as an Act. |
| Recommendation 38 Parties to the negotiation of the ILUA and related agreements must ensure that information on negotiation processes and outcomes is communicated on a regular basis to Indigenous people and groups affected by the LNG Precinct. | On the same date, the State of Western Australia, GJJ Peoples, Woodside Energy Limited, Broome Port Authority and LandCorp signed the BLNG Project Agreement which sets out the terms on which the Native Title Party has agreed to the development of the LNG Precinct. These Agreements, along with the Browse LNG Precinct Regional Benefits Agreement, are to be public documents. |
| Indigenous Rangers | |
| Recommendation 37 Responsible State and Commonwealth authorities must fund a substantially expanded and adequately resourced Indigenous ranger system, including female rangers, for Broome and the Dampier Peninsula, to assist in managing growing visitor numbers and pressures on wild resources. Rangers must be granted the authority to enforce relevant laws and regulations in relation to restrictions on access to areas of land and sea country, including cultural sites of significance, and on the use of wild resources. This authority must include powers to inspect boats, vehicles and fish catches and to detain individuals suspected of acting unlawfully. Indigenous Rangers must work with the support and direction of senior Traditional Owners, and in close partnership with relevant State Authorities including the WA police and fisheries and land management agencies. | <u>Rangers</u> The Foundation Proponent will provide funding, up to a total of \$1,000,000 per year, for each of the 10 years following commencement of construction of the Foundation Proponent Project to support training of members of the Native Title Claim Group as Indigenous Rangers to engage in monitoring activities. In relation to each of the first three LNG Trains in the Additional Proponent Project, the Additional Proponent will provide \$3,350,000 for a ranger program or such other program designed to conduct environmental and cultural heritage monitoring at the LNG Precinct and surrounds. |
| Recommendation 14 The LNG Precinct Environmental Management Plan must contain provisions that explicitly recognise the value and importance of Indigenous environmental knowledge, and specific measures to ensure that Traditional Owners can apply this knowledge to environmental | See Rangers Program above. See Cultural Awareness Training below. See Environmental Impacts below. |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|--|
| <p>monitoring and management systems, in a manner that is consistent with their cultural values. These measures must include, but may not be limited to:</p> <ul style="list-style-type: none"> • provision by the Traditional Owners of cross-cultural awareness training for Proponents' environmental staff and consultants; • conduct of specific environmental monitoring and management activities jointly by the Proponent's environmental specialists and Traditional Owners; • training of Traditional Owners in environmental monitoring to ensure real and effective participation and skills development; and • use of information from customary resource use surveys in environmental monitoring activities. | |
| Cross-Cultural Awareness | |
| <p>Recommendation 15 Representatives of the Proponent and of responsible State and Commonwealth authorities attending Regional Environmental Forums must undertake cross cultural awareness training provided by Traditional Owners that includes information on Indigenous understandings of country, environmental knowledge, and use of wild resources.</p> | <p>The purpose of the Cultural Awareness Training component of the BLNG Project Agreement (Schedule 9) is:</p> <ul style="list-style-type: none"> • to familiarise Precinct-related staff (i.e. any personnel, contractor, sub-contractor, tenant, subtenant or other invitees on the area of the LNG Precinct by the State, Port Authority, LandCorp or a Proponent) with Aboriginal traditions and culture in relation to the region in general and the LNG Precinct specifically; • to promote a knowledge and understanding of and respect for Aboriginal tradition and culture; and • to foster good relationships between Aboriginal and non-Aboriginal persons. <p>Each Site Manager shall engage one or more Indigenous Businesses to work with that Site Manager to develop and procure the delivery of a cultural awareness training course. The Site Manager will also develop and deliver content in the cultural awareness training which relates to the Site Manager's policies, corporate culture and legal compliance mechanisms.</p> <p>Each Site Manager will use their best endeavours to ensure that any Invitees to the LNG Precinct for an extended period complete this course. Senior Precinct personnel will undergo more extensive cultural training. Precinct visitors for short durations will complete a site induction that will include cultural awareness content.</p> <p>Aboriginal personnel engaged in relation to the Site Manager's Activities will also undergo cultural awareness training for the following purposes:</p> |
| <p>Recommendation 47 The Proponent must ensure that Precinct Workers who supervise Indigenous workers are provided with cross-cultural training that gives them an understanding of the family and cultural obligations of Indigenous workers.</p> | |
| <p>Recommendation 29 The Proponent must, in conjunction with the Traditional Owners, provide cross cultural training for all Precinct workers, including information on land ownership, restrictions on movement and use of wild resources, the permit system, and Indigenous cultural values.</p> | |
| <p>Recommendation 50 The Proponent must provide cross-cultural training for Precinct workers, which includes material alerting them to the personal and social costs that can result from inappropriate sexual relations.</p> | |
| <p>Recommendation 73 All Precinct Workers and State and Commonwealth employees and consultants required to interact with Traditional</p> | |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|--|
| Owners in a substantive manner should undergo cross-cultural training provided in conjunction with the Traditional Owners. | <ul style="list-style-type: none">to familiarise the Aboriginal Personnel with the work culture and expectations of the Site Manager or their contractors;to explain any work induction program, including company policies and procedures, in a culturally appropriate manner having regard to the particular needs of Aboriginal Personnel; andto foster confidence in the Aboriginal Personnel in relation to their employment or service arrangements and to support the Aboriginal Personnel. |
| Recommendation 46 The Proponent must make provision in the employment arrangements of Indigenous workers for variations to standard rosters, and for grants of leave, that recognises their cultural and family obligations. | Woodside's FEED contractors are required to consider cultural leave and work rostering enable recognition of cultural and family obligations. Woodside already has a company wide cultural leave policy for its Indigenous employees. |
| Recommendation 48 The Proponent must, on an ongoing basis, make available counselling, including advice on financial management, to workers and their families to assist them in dealing with the pressures created by FIFO and long work rosters | Woodside is developing a 'barriers to Indigenous employment risk identification and mitigation' plan. The outcome of this plan will be design considerations for wrap around support services for Indigenous in training or employment including the provision of counselling and financial literacy. |
| Recommendation 62 Proponents and their contractors must offer their employees access to, and encourage them to participate in, personal financial counselling, and support them in efforts to channel a portion of their wages into savings. | |
| Environmental Impacts | |
| Recommendation 11 Any approval for the LNG Precinct must have as a condition the conclusion of an Indigenous Land Use Agreement between Woodside (to the extent Woodside remains the lead proponent), the State, the KLC and Traditional Owners, that guarantees to Traditional Owners substantive and effective participation in environmental management of the LNG Precinct and associated development. The endorsement of the Plan will be conditional on the ILUA containing provisions to ensure that Traditional Owners: <ul style="list-style-type: none">Have decision-making, and not just advisory, roles in relation to environmental management through: substantial representation on committees or boards with decision making powers; or a capacity to require suspension of any activity that is resulting in environmental damage, or appears likely to do so, until the danger of damage is removed; or such similar mechanisms that meets this requirement to the satisfaction of Traditional Owners acting reasonably. | <p>The Native Title Party will be represented on all management committees in the Precinct Governance framework. This includes the Precinct Control Group (reports to the Minister of State Development); the Precinct Management Committee (PMC) and the Social Management Committee.</p> <p>The PPA (Environment Management Schedule 8) provides the mechanism through which a Site Manager and the Native Title Party will ensure there is an ongoing discussion and regular flow of information regarding the implementation of the Site Manager's environmental commitments.</p> <p>Quarterly meetings will be held between a Site Manager and the Native Title Party and any other party that the Site Manager or the Native Title Party reasonably considers will be required at the meeting. The purposes of the meetings are to provide a mechanism to inform the Native Title Party regarding the implementation of the Site Manager Commitments; and provide the Native Title Party with a regular flow of information relating to the Site Manager Commitments.</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|---|--|
| <ul style="list-style-type: none"> • Have access to independent technical advice that allows them to engage with and challenge Western scientific information, in part by reviewing technical documents compiled by proponents or government regulators • Have the capacity to inspect, accompanied by their technical advisers, all industrial areas of the LNG Precinct as required • Have automatic access to all environmental reports provided by the Proponent to State or Federal regulatory authorities • Are able to comment on all applications for environmental approvals prior to the provision of those applications to the relevant regulatory authorities and have those comments included • Are involved in design and review of environmental planning and management systems • Are centrally involved in design and implementation of rehabilitation and decommissioning and rehabilitation plans. | <p>Schedule 8 also sets forth the procedures to be followed if the Native Title Party reasonably believes that an ongoing activity associated with the conduct of a Site Manager's Activities is likely to cause Serious Environmental Harm.</p> <p><u>Monitoring</u></p> <p>The Site Manager will:</p> <ul style="list-style-type: none"> • consult with the Native Title Party regarding the proposed monitoring plans; • provide a summary of monitoring results to the PMC as appropriate; and • consult with the Native Title Party, through the PMC, on measures to minimise environmental and social impacts to the extent reasonably practicable. |
| <p>Recommendation 10 Traditional Owners and other Indigenous users of country in the Area of Impact must play a central and ongoing role in identification and definition of environmental issues and impacts, and in environmental monitoring and management.</p> | <p>The Native Title Party may provide a copy of the summary of monitoring results to an independent expert, on a strictly confidential basis, for the purposes of taking advice in relation to those results. If, on the basis of the independent advice, the Native Title Party believes that there is a risk arising from a Site Manager's Activities, and that the Site Manager should take additional or different steps to mitigate the environmental impacts of that activity, the Native Title Party may request a meeting to the Site Manager to present the Native Title Party's recommendations. If a suitable agreement cannot be reached between the parties, the PPA (Schedule 8) sets forth the procedures to be applied.</p> <p>Schedule 8 also sets forth the procedures to be followed if the Native Title Party reasonably believes that an ongoing activity associated with the conduct of a Site Manager's Activities is likely to cause Serious Environmental Harm.</p> <p><u>Reporting</u></p> <p>Site Managers will provide quarterly updates to the Precinct Management Committee, whether in writing or at a PMC meeting, in relation to:</p> <ul style="list-style-type: none"> • environmental performance of their Activities in the LNG Precinct; • compliance with any Principal Acts and Project Approvals; and • implementation of any improvement plan in relation to environmental management within and in relation to the LNG Precinct. |

| ASIA Recommendations by Theme | Response to Recommendations |
|-------------------------------|---|
| | <p>A Site Manager must provide the Precinct Management Committee with details of any breach or default notice, clean-up notice or other form of notice issued under any Law in relation to the Environment within the LNG Precinct or relating to their Activities.</p> <p><u>Compliance Officer</u></p> <p>The State will provide a compliance officer specifically for the LNG Precinct during the life of the LNG Precinct. The Compliance Officer will be an employee of the Office of the Environmental Protection Authority. An objective of the role of the Compliance Officer is to facilitate the effective ongoing working relationship between the Native Title Party and the State in relation to environmental management of the LNG Precinct. The Compliance Officer will engage with the Native Title Party to ensure there is appropriate communication and information flow between the Native Title Party, the Precinct Management Committee and the Office of the Environmental Protection Authority.</p> <p><u>Rehabilitation</u></p> <p>If the State makes a Closure Decision, the State must promptly notify the Native Title Party. As soon as practicable following the making of a Closure Decision, a Remediation and Rehabilitation Works management plan will be prepared. The management plan will be designed to remediate and rehabilitate the LNG Precinct to a condition:</p> <ul style="list-style-type: none"> • consistent with applicable legislation, policy and relevant standards (including those relating to Contamination and environmental rehabilitation); • having regard to the condition of the LNG Precinct as determined in the LNG Precinct Baseline Report; and • having regard to the use made of the LNG Precinct prior to the commencement of the Remediation and Rehabilitation Works. <p>Once the Remediation and Rehabilitation Works are complete, the State will procure the preparation of an Environmental Status Report by a suitably qualified expert to determine if the conditions above have been met. The Native Title Party will be given a copy of the Environmental Status Report and may provide comments within 6 months of receiving the Report. The State must consider the Native Title Party's comments and take such action as it considers appropriate (acting reasonably) to address the matters raised in the comments.</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| | <p><u>Decommissioning (BLNG Project Agreement Schedule 11)</u></p> <p>No later than five years prior to the date a Proponent reasonably expects to issue a Proponent Closure Notice, the Proponent shall issue a Decommissioning Plan Notice. Upon receipt of a Decommissioning Plan Notice, a Site Manager must prepare a Site Manager Decommissioning Plan. Each Site Manager must develop their Site Manager Decommissioning Plan in consultation with the Native Title Party.</p> |
| Best Practice Dredging | |
| <p>Recommendation 16 It must be a condition of any approval that the Proponent:</p> <ul style="list-style-type: none"> employ 'world's best practice' in ensuring that the impacts of dredging and blasting on sea country are minimised; involve Traditional Owners in decisions that help determine the location and duration of impacts on sea country from blasting and dredging; closely monitor the conduct of blasting and dredging and its environmental impacts must be closely monitored, with the participation of Traditional Owners; and regularly inform Indigenous people who use sea country affected by dredging and blasting about its impacts. | <p>SAR Part 5pg. 4-28.</p> <p>Prior to commencement of dredging, proponents of derived proposals shall prepare and implement a Dredging and Dredge Spoil Disposal Management Plan (DSDMP) to the satisfaction of the Western Australian Minister for Environment, demonstrating the application of best practice management techniques and technologies to minimise potential dredging impacts.</p> <p>The Plan shall include:</p> <ul style="list-style-type: none"> Consideration of the re-use of suitable dredge material for MOF construction, where practicable. Design of the MOF including construction of bunds to isolate fill material from wind and wave action. Consideration of applicability of management techniques and technology in meeting location specific WQ environmental values and environmental quality objectives. Consideration of the re-use of reclaimed material to minimise ocean disposal. Measures to minimise dredging impacts during sensitive ecological windows. A monitoring strategy for ecological receptors and health during marine construction (including baseline surveys). The development of trigger levels for benthic communities and water quality that define additional management responses. Mechanisms to audit and assess environmental performance of proponent during construction. A communications strategy to inform other local marine users of times of peak construction activity that may influence non-construction related activities within the area. |
| <p>Recommendation 17 Prior to commencement of dredging, the Proponent must undertake an assessment of the potential impacts of the dredging program on marine and terrestrial environments (Dredging Assessment). The Assessment must:</p> <ul style="list-style-type: none"> address the degree of certainty of the identified impacts and the significance of those impacts; include an analysis of the impact of the proposed dredging program on wild resources and their use by Traditional Owners and Indigenous communities (see recommended conditions 7 – 9); include a period of consultation with Indigenous communities and Traditional Owners; and generate a 'Dredging Assessment Report' which must be approved by the Board. | |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|--|
| <p>Following its approval by the Board the Dredging Assessment Report must be provided to the Minister. The Minister may accept the Dredging Assessment Report if, in accordance with clause 7.3(e) of the Strategic Assessment Agreement, the Minister is satisfied that it addresses the impacts of the actions. Within 2 years of commencement of dredging, and every three years thereafter, the Proponent must undertake a review of the impacts of the dredging program on the marine and terrestrial environment ("Dredging Impact Review"). The Dredging Impact Review must:</p> <ul style="list-style-type: none"> include an assessment of whether the projected significance of impacts in the Dredging Assessment Report was accurate; identify any new or unanticipated impacts; include an analysis of the impact of the dredging program on wild resources and their use by Traditional Owners and Indigenous communities include a period of consultation with Indigenous communities and Traditional Owners; and the Dredging Impact Review Report must be approved by the Board. | <p>The DSDMP will be subject to assessment under the <i>Environment Protection (Sea Dumping) Act 1981</i> (Cwth), including appropriate stakeholder consultation.</p> |
| <p>Recommendation 21 The following conditions are recommended to minimise the risk that shipping activity associated with the LNG Precinct might result in the introduction of exotic species. The Proponent, including any party who is responsible for management of port facilities and movements, must not permit any ships to enter into the waters of the LNG Precinct unless these conditions are fully implemented.</p> <ul style="list-style-type: none"> The Proponent and responsible State and Commonwealth authorities must ensure that all ships travelling to the LNG Precinct site are inspected prior to departing their country of origin to ensure that no exotic marine life is attached to their hulls. The Proponent and responsible State and Commonwealth authorities must ensure that ships' ballast water is tested prior to departure from country of origin and again prior to its discharge to ensure it does not contain any organisms or toxins that might threaten marine life. Reports on testing must be provided to Traditional Owners on a regular basis (see also Recommendation 13 above). The Proponent and responsible State and Commonwealth authorities must ensure that | <p>SAR Part 3, pg. 2-170</p> <p>Proponents of derived proposals shall prepare and implement an Invasive Marine Species Management Plan, to the satisfaction of the Western Australian Minister for Environment on advice from and in consultation with the Department of Fisheries, to minimise the risk of introducing IMS into Australian waters during the life of the activity. The plan shall be developed in consultation with the AQIS and will be applied to vessels, barges and immersible equipment that plan to enter and operate within the Precinct.</p> <p>The IMSMP will be consistent with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry.</p> <p>The IMSMP will adhere to the AQIS Australian Ballast Water Management Requirements under the Quarantine Act (1908).</p> <p>Proponents shall, for the life of the activity, notify the DEC, the DoF, AQIS and the Broome Port Authority of any IMS detected in the waters of the BLNG Precinct.</p> <p>Also, see Ranger Program above.</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|---|---|
| <p>measures to deal with the potential introduction of exotic species comply with relevant Australian policies and standards.</p> <ul style="list-style-type: none"> Responsible State and Commonwealth authorities must maintain a presence in overseas ports and on board ships to ensure these requirements are complied with. Traditional Owners must, in advance of the commencement of shipping movements to the LNG Precinct site, develop and implement a program to monitor sea country for any indications of exotic species. The program must be developed and implemented in conjunction with AQIS. The program costs must be met by the Proponent. | |
| Groundwater | |
| <p>Recommendation 23 Prior to the commencement of activities under the Plan, the Proponent must undertake a thorough assessment of water resources on the Dampier Peninsula (Water Resources Assessment). The Water Resources Assessment must include the following:</p> <ul style="list-style-type: none"> Availability of water resources on the Dampier Peninsula, and an evaluation of their adequacy to meet the long-term demands of Broome, the Dampier Peninsula communities, nature and culture based tourism and other existing commercial operations, the LNG Precinct, and other potential commercial activities. An assessment of existing water quality, in particular whether existing resources are likely to provide sufficient amounts for domestic use by residential communities on the Dampier Peninsula. An assessment of the potential impacts of the Plan on the availability of water for other uses, including as a result of competing allocations, reduction of quality, and changes to water table levels. A draft plan for the allocation of water over the life of the LNG Precinct to ensure that the needs of Traditional Owners and other Indigenous residents of the Peninsula, including commercial needs for activities such as nature and culture based tourism and environmental allocations, are met into the future. | <p>As described in the BLNG Project Agreement Schedule 8, in assessing the feasibility of water options for the Foundation Proponent Project, and prior to Project FID, the Foundation Proponent will consult with the Native Title Party in relation to the use of groundwater from the Broome aquifer. The Native Title Party may take independent advice on the impact on the Broome aquifer.</p> <p>If the Native Title Party receives independent advice that reasonably raises environmental concerns about the impact on the Broome aquifer as the result of such operations, then the Native Title Party may request consultation with the Foundation Proponent. Within 10 days following such consultation, the Native Title Party may:</p> <ul style="list-style-type: none"> direct the Foundation Proponent to modify the Foundation Proponent's proposal for taking water from the Broome aquifer; or direct the Foundation Proponent not to proceed to draw from the Broome aquifer; and either direct the Foundation Proponent to: <ul style="list-style-type: none"> elect to obtain water for operations from desalination of either seawater or water from deep bores or aquifers other than the Broome aquifer; or obtain water for operations from desalination of seawater. <p>In response to such a direction, the Foundation Proponent will either:</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| Recommendation 24 Within 2 years of commencement of activities under the Plan, and every three years thereafter, the Proponent must undertake a review of the impacts of those activities on water resources on the Dampier Peninsula (Water Resources Impact Review). | <ul style="list-style-type: none"> • modify the proposal as requested ; and/or • obtain water for operations from desalination of either seawater or water from deep bores or aquifers other than the Broome aquifer. |
| Emergency Response | |
| Recommendation 18 In order to ensure that any oil or gas spills or similar incidents are addressed quickly and effectively, the Proponent must maintain an insurance policy in favour of Traditional Owners and Indigenous communities on the Peninsular to pay for any remediation that is required as a result of oil and gas spills. | <p>The State will implement an overarching Emergency Response Plan for the Precinct that addresses:</p> <ul style="list-style-type: none"> • risk assessment of potential emergencies (including bushfires, introduction of foreign pests, flooding and spills); • emergency response equipment and training; • emergency response procedures; • responsibilities during emergency response; and • reporting, review and improvement as required. |
| Recommendation 19 The Proponent, including any party who is responsible for management of port facilities and movements, must not permit shipping movements into or out of the Precinct, and must require vessels to stand no less that 30km off the coastline, if a cyclone is imminent. | <p>The Port Authority will be responsible for preparing an Emergency Response Plan including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures.</p> |
| Recommendation 20 The Proponent must work with responsible State or Commonwealth authorities to prepare an upgraded and comprehensive disaster management strategy for Broome and the Dampier Peninsula, to reflect the additional risks and responses required as a result of the presence of an LNG Precinct. | <p>LNG Project proponents will be required to implement a Hydrocarbon and Chemical Spill Contingency Plan for construction and operation activities to the satisfaction of the WA Minister for Environment.</p> <p>Also see Section 4.4.1 Emergency Response.</p> |
| Indigenous Employment | |
| <p>Recommendation 61 The Proponent must establish employment programs that operate throughout the life of the LNG Precinct and include, at a minimum, the following components:</p> <ul style="list-style-type: none"> • an employment preference for Traditional Owners and other affected Indigenous people in the Area of Impact; • allocation of specific financial and other resources to employment programs; • targets for local Indigenous employment that increase over time and apply to all areas of LNG Precinct operations; • mechanisms that ensure that any failure to meet these targets automatically requires | <p>The following employment commitments have been made through the BLNG Project Agreement.</p> <p><u>State Commitment</u></p> <p>In consultation with the Native Title Party, each Government Entity⁽¹⁰⁾ must prepare an Indigenous Participation Plan in relation to their LNG Precinct related operations. The following employment and training principles will be applied through the Indigenous Participation Plans:</p> <ul style="list-style-type: none"> • employment and training opportunities exist for Kimberley Indigenous People during all phases of the LNG Precinct; |

¹⁰ Government Entity means: (a) Port Authority in relation to activities it carries out within the Port; (b) LandCorp in relation to activities it carries out within the LNG Precinct; and (c) other government entities carrying out activities within, or in relation to, the LNG Precinct.

| ASIA Recommendations by Theme | Response to Recommendations |
|---|---|
| <p>additional allocation of resources and enhanced training and recruitment efforts;</p> <ul style="list-style-type: none"> specific initiatives to aid retention of Indigenous workers, including measures to make the workplace a positive environment for Indigenous people; training on anti-discrimination legislation and human rights; establishment of clear paths for career and professional development; and use of work rosters that recognise cultural and family and social obligations; provision of transport between communities in the Area of Impact and the LNG Precinct site employment initiatives aimed specifically at recruiting and retaining Indigenous women; initiatives to overcome 'threshold' issues that can prevent Indigenous people from entering the industrial workforce, including limited English language skills, lack of a driver's licence, convictions for minor criminal offences, and absence of formal qualifications. Such initiatives must include recognition of prior learning and skills; the establishment of career pathways and the provision of ongoing professional and skills development for indigenous workers; and periodic reporting on compliance with this condition to the Board and the Minister. The reports must be made publicly available. Non-compliance with this condition will result in penalties. | <ul style="list-style-type: none"> Government Entities must work with the Native Title Party to jointly develop employment strategies to maximise Indigenous employment opportunities in the construction, operation, decommissioning and remediation phases of the LNG Precinct; priority must be given to maximising the employment of members of the Native Title Claim Group, with a particular focus on employment opportunities for Indigenous women; suitable members of the Native Title Claim Group on the employment and contracting register must be invited to apply for employment and training opportunities as they arise; and these principles must be applied to a Government Entity's contractors and sub-contractors where practicable. <p>The Indigenous Participation Plans must:</p> <ul style="list-style-type: none"> contain initiatives for achieving an effective Indigenous workforce strategy, including a high level outline of a workforce strategy for the West Kimberley region; include procedures for engagement with Job Services Australia providers located in the Kimberley; include notification processes for contracts for tender; and implementation procedures. <p>Each Government Entity will aim to achieve the following targets for employment of Kimberley Indigenous People in connection with their LNG Precinct related operations:</p> <ul style="list-style-type: none"> a target that 20% of the Government Entity's LNG Precinct related operations workforce will be Indigenous by the end of the first 5 years of operations. a long term target that the percentage of Kimberley Indigenous People employed by Government Agencies in connection with their LNG Precinct related operations reflects Indigenous representation in the West Kimberley community, and is otherwise not less than 40% of the Government Entity's LNG Precinct related operations workforce. <p>Each Government Entity will report progress against all targets: (a) quarterly to the Precinct Management Committee; and (b) publicly on an annual basis.</p> <p><u>Foundation Proponent</u></p> <p>The Foundation Proponent will apply the following principles:</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|-------------------------------|---|
| | <ul style="list-style-type: none"> the Foundation Proponent Project will provide employment and training opportunities to members of the Native Title Claim Group and other Kimberley Indigenous People. This will apply to contractors and sub-contractors where practicable and not prohibited by Law; these opportunities will occur during the construction, operation, decommissioning and rehabilitation phases of the Foundation Proponent Project; the Foundation Proponent Project maximise Indigenous employment opportunities in all phases of the Foundation Proponent Project in consultation with the Native Title Party; the Foundation Proponent will establish Indigenous employment initiatives in relation to the Foundation Proponent Project, which give priority to members of the Native Title Claim Group and then to Kimberley Indigenous People; specific training programs targets will be developed by the Foundation Proponent to maximize employment opportunities and with the provision of support services; where practicable and unless prohibited by Law, contractors or sub-contractors are required to ensure, that their workplaces and work practices are conducive to Indigenous employee recruitment, retention and promotion; the Foundation Proponent will develop and implement specific career paths for Indigenous employees and provide leadership development opportunities; Indigenous women are provided with training and employment opportunities during all phases of the Project; and irrelevant criminal records will not be treated as an impediment to the employment or training of Indigenous employees unless contrary to State or Federal Government law (eg Maritime Security Identification Card). <p><u>Employment Targets</u></p> <p>The Foundation Proponent will set targets for employment of Indigenous people in connection with the Foundation Proponent Project. Different targets will apply during different phases of the Project. The Foundation Proponent will aim to achieve the following targets for the Foundation Proponent Project:</p> |

| ASIA Recommendations by Theme | Response to Recommendations | | | | |
|--|---|-----------------------|----------------------|-------------------|---|
| | <ul style="list-style-type: none"> a target of 300 Indigenous persons employed or engaged during the construction phase; and a target that 15% of the LNG Precinct-based operations workforce will be Indigenous by the end of the first five years of operations. <p>The Foundation Proponent will report progress against all targets quarterly to the Precinct Management Committee; and publicly in the Foundation Proponent's annual sustainability report. The targets may be satisfied by the Foundation Proponent directly, or via the Foundation Proponent's contractors and subcontractors.</p> | | | | |
| Indigenous Training | | | | | |
| <p>Recommendation 60 The Proponent, the State and the Commonwealth must make substantial and sustained investment, starting immediately, in training and training facilities to permit the program to be effectively implemented. This investment must include:</p> <ul style="list-style-type: none"> development of suitable training facilities in the Area of Impact, and improved access to specialist facilities in Perth or elsewhere; building on existing training resources, programs and organisations in the Area of Impact, development of training programs which prepare Indigenous trainees for employment in skilled as well as semi-skilled positions, in construction, operation of the LNG Precinct and related industries. These programs must include on-the-job training at existing LNG facilities in the Pilbara or Darwin; specific training initiatives that focus on allowing former and current CDEP workers to make a successful transition to 'mainstream' employment; a focus on skills development for governance and community development and employment opportunities in areas other than the LNG Precinct; a concerted effort to recruit and retain high-calibre trainers, recognising the keen competition that exists for such skills; and legally-binding commitments by the Proponent to provide specified training outcomes throughout the life of the LNG Precinct and to apply a preference in favour of Traditional Owners and other Indigenous people living in the Area of Impact in providing access to training opportunities. | <p>BLNG Project Agreement Schedules 12 & 14:</p> <p>Each Government Entity and the Foundation Proponent will apply the following principles in its training commitments:</p> <ul style="list-style-type: none"> training opportunities are provided to members of the Native Title Claim Group and other Kimberley Indigenous People in the pre-construction phase; where practicable and as permitted by Law, contractors or sub-contractors are required to ensure, that their workplaces and work practices are conducive to Indigenous employee recruitment, retention and promotion; the Foundation Proponent will develop and implement specific career paths for Indigenous employees and provide leadership development opportunities; Indigenous women are provided with training and employment opportunities during the construction, operation, decommissioning and rehabilitation phases of the Project; and irrelevant criminal records are not treated as an impediment to the employment or training of Indigenous employees unless contrary to State or Federal Government law. <p>The Foundation Proponent will provide training opportunities to members of the Native Title Claim Group and other Kimberley Indigenous People through the following initiatives:</p> <table border="1" data-bbox="751 1879 1409 2060"> <tr> <th data-bbox="751 1879 1008 1968">Commencement of Phase</th><th data-bbox="1008 1879 1409 1968">Training Initiatives</th></tr> <tr> <td data-bbox="751 1968 1008 2060">Commencement Date</td><td data-bbox="1008 1968 1409 2060">Work ready training for construction related activity</td></tr> </table> | Commencement of Phase | Training Initiatives | Commencement Date | Work ready training for construction related activity |
| Commencement of Phase | Training Initiatives | | | | |
| Commencement Date | Work ready training for construction related activity | | | | |

| ASIA Recommendations by Theme | Response to Recommendations | |
|--|---|--|
| | Project FID | Training for preparation for operations phase |
| | Commencement of Commercial Production | Ongoing operations training and training of new starters |
| Indigenous Contracting and Businesses | | |
| <p>Recommendation 63 The Proponent must support local and Kimberley Indigenous enterprises by implementing a Business Support program which includes measures as follows:</p> <ul style="list-style-type: none"> Assisting them to obtain access to capital, for example by providing documentation regarding potential contracts to financial institutions, establishing joint ventures, or creating a revolving loan fund. Helping them develop relevant business skills, including planning and management skills, by sharing technical and financial expertise and appointing Indigenous business development officers. <p>Assisting them in overcoming the barriers they face in seeking to compete with large, established suppliers, for instance by allocating certain types of contracts to Indigenous businesses; applying a preference clause to Indigenous businesses; offering them right of first refusal on specific contracts; waiving standard tendering procedures; unbundling large contracts into smaller ones that are within the capacity of Indigenous businesses.</p> | <p><u>State</u></p> <p>Each Government Entity will endeavour to provide contracting opportunities in relation to the LNG Precinct for suitably qualified Indigenous Businesses or businesses or Joint Ventures with indigenous participation. This will include provisions, in relevant contracts, requiring contractors and sub-contractors to promote the inclusion of Indigenous Businesses in the carrying out of contracts.</p> <p><u>Foundation Proponent</u></p> <p>The Foundation Proponent will provide guaranteed Foundation Proponent Project contracting opportunities of a minimum of \$5,000,000 per year with the Browse Joint Venture, its contractors and sub-contractors, for suitably qualified NTBs⁽¹¹⁾ in the manner and subject to the qualifications set out in PPA Schedule 13. As defined in Schedule 5, the Foundation Proponent will also make a monetary contribution to funding a Business Development Organisation to provide assistance to the members of the Native Title Party and other Indigenous people with respect to: capacity building; starting up and running businesses; applying for loans; increasing capability in tendering for contracts and other business development initiatives; and taking advantage of employment and contracting opportunities connected with the LNG Precinct.</p> | |
| <p>Recommendation 64 The Proponent and State and Commonwealth must help address the particular difficulties facing small Indigenous businesses in the Area of Impact, and in particular must:</p> | | |

11 Native Title Claim Group Business / NTB means a business or joint venture (as the case may be) which, in the Foundation Proponent's opinion, has a substantial and genuine level of participation by members of the Native Title Claim Group in the ownership, funding and operation of the business (the criteria for which will be set from time to time by the Foundation Proponent in consultation with the Native Title Party).

| ASIA Recommendations by Theme | Response to Recommendations |
|--|--|
| <ul style="list-style-type: none"> address land tenure issues on the Dampier Peninsula that deny potential businesses secure tenure and so the capacity to raise loan finance; provide specific assistance to potential business operators who previously drew on CDEP for support and/or have no credit history; and <p>recognise the difficulty that Indigenous people can face in accessing business support services, facilitate their access to government services that support and promote newly-formed businesses or assist small businesses to expand their operations.</p> | <p>The Foundation Proponent will, to the extent permitted by Law, ensure that successful contractor for operations phase accommodation, will be to require to engage in a joint venture with a suitably qualified entity that has 100% ownership by members of the Native Title Claim Group.</p> <p>At each PMC meeting, the Foundation Proponent will provide a summary of:</p> <ul style="list-style-type: none"> all contracts associated with the Foundation Proponent Project and based in the Kimberley awarded in the previous quarter by the Foundation Proponent or its contractors; and all activities associated with the Foundation Proponent Project and based in the Kimberley, which may present contracting opportunities, in the upcoming quarter. |
| <p>Recommendation 58 The Proponent, State and Commonwealth Authorities, and Indigenous organisations must encourage the establishment of Indigenous enterprises that produce food and other consumables for the local market, and that supply transport and communication services to the LNG Precinct.</p> | <p><u>Additional Proponents</u></p> <p>Each Additional Proponent will:</p> <ul style="list-style-type: none"> develop and implement a business development and contracting management schedule to provide business development and contracting opportunities to members of the Native Title Claim Group. develop and implement an employment and training management schedule with the Administrative Body. <p>In relation to each of the first three LNG Trains comprised in the Additional Proponent Project, the Additional Proponent agrees to make annual payments of \$135,000 to assist in funding the Business Development Organisation. The Additional Proponent will also make 10 annual payments of \$335,000 to assist in funding the Business Development Organisation.</p> <p>In relation to each of the first three LNG Trains in the Additional Proponent Project, the Additional Proponent will provide guaranteed contracting opportunities with a value of \$1,700,000 annually with the Additional Proponent, its contractors and sub-contractors, for suitably qualified Indigenous Businesses.</p> |
| <p>Recommendation 41 The Commonwealth and the State must provide material support to the KLC and Traditional Owners in establishing effective Indigenous governance structures that maximise the impact of benefits provided for in an LNG Precinct ILUA(s) and enhance the quality of service delivery to Indigenous communities in the Area of</p> | <p><u>Administrative Body</u></p> <p>The State will pay \$5 million to fund the Native Title Claim Group in establishing and operating the Administrative Body (and Corporate Trustee) to support the implementation of the BLNG Project Agreement.</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|---|---|
| <p>Impact. The KLC and Traditional Owners must disseminate information on such governance structures to Indigenous people in the Area of Impact to promote transparency and understanding.</p> | <p>Membership of the Administrative Body is open to all members of the Native Title Claim Group (at least 18 years of age). The Administrative Body will include a Board and a Management Group (including a chief executive officer).</p> <p>Among the responsibilities of the Administrative Body are maintaining an Employment and Contracting Register of members of the Native Title Claim Group seeking employment, training, business or contracting opportunities in relation to any Proponent Project and the LNG Precinct.</p> <p><u>Regional Body</u></p> <p>A Regional Body (i.e. body corporate) will be established to support the implementation of the Regional Benefits Agreement. The State will pay \$20 million dollars for a period of ten years in annual instalments of \$2 million to fund the operation of the Regional Body.</p> |
| Education | |
| <p>Recommendation 59 The State, the Commonwealth, the Proponent and relevant Indigenous organisations must develop a program which will operate for 30 years and may be extended to the life of the project if that life exceeds 30 years, to raise the quality and effectiveness of Indigenous education in the Area of Impact and in the Kimberley generally. This program must include:</p> <ul style="list-style-type: none"> • a strong and sustained focus on numeracy and literacy from early education onwards; • initiatives to enhance parental involvement in education; • specific incentives to reduce staff turnover and retain experienced teachers; • provision of additional student accommodation in Broome and the Dampier Peninsula; • design and delivery of school, TAFE and university courses that are relevant to Indigenous students and to the employment opportunities available to them, and are readily accessible to students in the Dampier Peninsula, including on-site delivery on the Dampier Peninsula, and through distance learning; • provision of reliable IT facilities and services in the Dampier Peninsula communities to enable Indigenous students to access on-line education and training programs; • initiatives to enhance literacy and numeracy skills among adults; | <p><u>Regional Education Fund</u></p> <p>The State will pay \$20 million in annual instalments of \$1 million for the Regional Education Fund for the period of 20 years from the Secured Foundation Proponent Date. The Foundation Proponent will pay to the trustee of the Regional Education Fund Trust \$1,300,000 each year from the Commencement Date.</p> <p>The purpose of the Regional Education Fund is to increase the level of educational achievement among the Regional Beneficiaries and increase the number of Indigenous professionals, including skilled and qualified workers, living and working in the Kimberley through:</p> <ul style="list-style-type: none"> • encouraging Regional Beneficiaries to take up educational opportunities; • providing assistance to Regional Beneficiaries in attaining high standard educational outcomes; and <p>providing practical support and assistance to Regional Beneficiaries in achieving professional and vocational goals.</p> <p>The objectives of the Regional Education Fund include:</p> <ul style="list-style-type: none"> • increasing the number of local and regional Indigenous students that achieve a Western Australian Certificate of Education at the completion of year 12; |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|--|
| <ul style="list-style-type: none"> major public investment to help meet the housing and health needs of Indigenous students; a substantial scholarship scheme, funded by the Proponent and Responsible State and Commonwealth authorities, to enhance Indigenous access to university and VET education; and Child care support and services to permit Indigenous students of any age to access formal education. | <ul style="list-style-type: none"> increasing Indigenous and mature-age enrolment in vocational education and university programs; encouraging Indigenous and mature-age Regional Beneficiaries to achieve a recognised qualification from a university, approved higher education provider or TAFE provider and apply for funding from the Regional Education Fund; and assisting Regional Beneficiaries to attain a trade or vocational qualification that is not available in the Kimberley. <p><u>Kimberley Reading Recovery Program</u></p> <p>The Foundation Proponent will pay the Native Title Party \$8,000,000 to fund a Reading Recovery Program in the Kimberley for a period of six years starting on the Commencement Date. The Reading Recovery Program is to be an early intervention literacy support program designed to improve the literacy of Indigenous students in the Kimberley.</p> <p>In relation to each of the first three LNG Trains in the Additional Proponent Project, the Additional Proponent will provide \$2,700,000 for a reading recovery program or such other early intervention literacy or education support program designed to improve the literacy or education of Indigenous students in the Kimberley.</p> <p><u>Broome Community Services Strategy</u></p> <p>The State will evaluate the capacity of social services (e.g. health, education) to service the existing level of need in Broome and develop a strategy to close any existing gaps and develop suitable capacity is in place to accommodate the predicted population growth in Broome and the effects of the BLNG Precinct.</p> |
| Beagle Bay | |
| <p>Recommendation 40 Responsible State authorities must, as a matter of urgency, facilitate the establishment of a local governance structure at Beagle Bay. In doing so it must offer relevant governance training to Indigenous office holders and potential office holders, and the Beagle Bay community generally.</p> | <p>In partnership with the Commonwealth Government under the Remote Service delivery – National Partnership Agreement, the Department of Indigenous Affairs is the leading State authority to facilitate the establishment of a local governance structure at Beagle Bay. Under the guidance of the Local Area Coordinator, the Beagle Bay community has established an Interim Governance Working Group based on seven building blocks: schooling, health, early childhood, safer communities, economic participation, healthy homes and governance and leadership. The emerging and innovative Governance model is inclusive of representation from the whole Beagle Bay community and is built on consultation and collaboration of community members. The charter of the</p> |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| | <p>model is to monitor and coordinate the 7 building blocks in order for the community to be in a strong position to influence service delivery to Beagle Bay in a manner that best serves the community needs.</p> |
| Dampier Peninsula Planning | |
| <p>Recommendation 27 The State must, in cooperation with the Traditional Owners and with community councils and other Indigenous organisations in Broome and the Dampier Peninsula, act to limit the numbers of, and effectively manage the activities of, the growing number of Broome residents and of short-term visitors attracted to the Peninsula as a result of the LNG Precinct and developments likely to be associated with it, including the sealing of the remainder of the Broome - Cape Leveque road.</p> | <p>As described in the SAR, the Dampier Peninsula Planning Strategy will:</p> <ul style="list-style-type: none"> • Define areas of cultural, environmental and heritage significance on the Dampier Peninsular. • Incorporate and have clear linkages to a number of existing and approved management plan for such things as Cultural Heritage Management Plans and Indigenous Protected Area Management Plans. <p>The State Government will implement a Fire Management Strategy for the Dampier Peninsula. The objective is to provide a coordinated approach to managing the fire regime of the Dampier Peninsula for the benefit of the environment, Precinct and community safety and recreational use.</p> |
| <p>Recommendation 30 The State, in cooperation with relevant Indigenous organisations including Indigenous ranger groups and community councils, must introduce a permit system that limits travel to the Dampier Peninsula by people who are not Traditional Owners and do not reside there. Permits granted to visitors to the Area of Impact or to Broome residents must specify locations in the Dampier Peninsula where the permit holder is allowed to visit and camp. The permit system must be accompanied by the establishment of visitor centres at appropriate locations, including the turn-off to the LNG Precinct from the Cape Leveque Road, which would issue permits and provide maps indicating information on land ownership and locations open to visitors and a visitor code of behaviour.</p> | <p>Per the RBA, the State will undertake the Dampier Peninsula Indigenous land reform process in relation to up to 350,000 hectares of land with a commitment to grant a minimum of 600 hectares of freehold land to the Dampier Peninsula Native Title Parties upon the securing of a Foundation Proponent.</p> <p><u>Indigenous Land Reform on the Dampier Peninsula</u></p> <p>Following the Secured Foundation Proponent Date, the State will reform Indigenous land on the Dampier Peninsula. The purpose of the Indigenous land reform process is to identify those areas of land currently held by the Aboriginal Lands Trust or the Aboriginal Affairs Planning Authority for the benefit of Aboriginal people and determine ways in which that tenure can be reformed to improve outcomes for Indigenous people on the Dampier Peninsula. Land reform will enable more effective forms of tenure to support home ownership and economic development and where possible, fulfil the land use aspirations of the Dampier Peninsula Native Title Parties.</p> |
| <p>Recommendation 31 The State must provide visitor facilities including camping grounds, ablution blocks and waste disposal facilities in areas permit holders are allowed to visit.</p> | <p>The KLC will (if it can obtain the consent of the relevant native title party) identify:</p> |
| <p>Recommendation 32 Responsible State authorities must establish, in cooperation with relevant native title claim groups, 'exclusion zones' where only Indigenous residents of the Dampier peninsula are permitted to harvest wild resources.</p> | <p>The KLC will (if it can obtain the consent of the relevant native title party) identify:</p> |
| <p>Recommendation 36 Responsible State and Commonwealth authorities must provide support for Traditional Owners, other native title holders and Indigenous communities in the Area of Impact to live on their outstations and play an active role, in</p> | <ul style="list-style-type: none"> • the priority land areas to be reformed; and • registered native title bodies corporate or other appropriate entities to which land may be transferred. |

| ASIA Recommendations by Theme | Response to Recommendations |
|---|--|
| <p>conjunction with Indigenous rangers, in monitoring and managing the activities of tourists and other visitors.</p> | <p>The State and the KLC will form a project team to implement the land reform process. Within 12 months of the Secured Foundation Proponent Date, the State and the KLC will jointly issue an implementation plan, including a timetable for tenure reform. The State must ensure that the Dampier Peninsula Native Title Parties receive Grants of an aggregate area totalling no less than 600Ha from the land reform process.</p> |
| <p>Recommendation 70 The State must act to resolve uncertainty in relation to land tenure in the Dampier Peninsula as a matter of urgency, and within 3 years of the endorsement of the Plan. In the event that any land transfer within the area of a native title determination remains outstanding at that anniversary, then (except in relation to the area of the Beagle Bay Community or outstations), the State will transfer unconditional freehold title, under an ILUA which provides for no extinguishment of native title as a result of that future act, to the relevant Registered Native Title Bodies Corporate. The State will pay a bond of \$100 million or some other amount negotiated between the State, the KLC and Traditional Owners, to fund a process to resolve any outstanding tenure issues in the area of the Beagle Bay Community or outstations which remain unresolved at the third anniversary of the endorsement of the Plan.</p> | |
| <p>Recommendation 26 Responsible State authorities must, in cooperation with the Dampier Peninsula communities, develop a single and coordinated fire management plan for the Peninsula.</p> | |
| <p>Recommendation 25 The State must provide adequate resources to Dampier Peninsula communities to mount effective fire prevention and fire management programs. The State will afford communities the degree of control over allocation of these resources required to deal with fire risks in a timely and effective manner.</p> | |
| Housing | |
| <p>Recommendation 52 Responsible State and Commonwealth authorities must inject substantial additional funding into construction of public housing in Broome and the Dampier Peninsula, upgrading of the existing housing stock, provision of hostels to accommodate Indigenous youth, and emergency and short-term accommodation to help address homelessness in the short term. To gain maximum value for money, Indigenous community members and their governing bodies must be closely involved in the design and management of housing programs.</p> | <p><u>Indigenous Housing Fund</u></p> <p>The State will pay \$20 million to the Native Title Party to create the Indigenous Housing Fund. The purpose of the Indigenous Housing Fund is to:</p> <ul style="list-style-type: none">assist members of the Native Title Claim Group to enter into home ownership and participate in Indigenous housing development projects in the Kimberley;increase the number of members of the Native Title Claim Group entering into home ownership and |

| ASIA Recommendations by Theme | Response to Recommendations |
|---|---|
| Recommendation 53 Responsible State and the Commonwealth authorities must support Indigenous people to establish and develop businesses to build houses and other forms of accommodation. | <p>residing in secure, safe, suitable and sustainable accommodation in the Kimberley; and</p> <ul style="list-style-type: none"> assist the members of the Native Title Claim Group to generate wealth and address disadvantage and poverty through investment and building asset ownership. |
| Recommendation 54 Responsible State and Commonwealth authorities must review housing and related policies to ensure that these maximise Indigenous access to housing. This policy review must recognise the need for housing policies to be regionally based and in particular recognise regional differences in cost of living. Policies that result in loss of access to housing when people gain employment and higher incomes must be changed, for instance by permitting tenants to retain their public housing but at a higher rent. | <p><u>Native Title Party Housing Land</u></p> <p>The State will provide to the Native Title Party the Native Title Party Housing Land as soon as reasonable practicable following the Commencement Date. The final timeframe for the delivery of the various Stages of Housing Land is subject to the development timeframes for stages of the Broome North Development by LandCorp.</p> <p>The first stage of the Native Title Party Housing Land (indicative timeframe being 2012/2013) will comprise:</p> <ul style="list-style-type: none"> ten serviced residential lots to be located in the Broome North Development (with an approximate 2011 value of \$2 million); and three house and land packages to be located in the Broome North Development (with an approximate 2011 value of \$2.25 million). <p>The second stage of the Native Title Party Housing Land (indicative timeframe being 2013/2014) will comprise:</p> <ul style="list-style-type: none"> ten serviced residential lots to be located in the Broome North Development (with an approximate 2011 value of \$2 million); and three house and land packages to be located in the Broome North Development (with an approximate 2011 value of \$2.25 million). <p>The third stage of the Native Title Party Housing Land (indicative timeframe being 2014/2015) will comprise:</p> <ul style="list-style-type: none"> five residential lots to be located in the Broome North Development (with an approximate 2011 value of \$1 million); and 15ha of englobo developable land on the corner of Fairway Drive and Magabala Road in the Broome North Development. <p><u>Regional Indigenous Housing Fund</u></p> <p>For the period of 25 years from the Secured Foundation Proponent Date, the State will pay \$30 million for the Regional Indigenous Housing Fund following the instalment schedule in the Regional Benefits Agreement. The purpose of the Fund is to:</p> |
| Recommendation 56 The Proponent must provide accommodation for all of their workers and contractors. The proponent must also contribute to the cost of constructing additional housing to meet the demand associated with indirect employment created by the LNG Precinct. | |
| Recommendation 55 Responsible State and Commonwealth authorities must act to increase the supply of Indigenous people skilled in the construction trades, for instance by funding additional Indigenous apprenticeships in the building industry. | |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|--|
| | <ul style="list-style-type: none"> assist Regional Beneficiaries to enter into home ownership and participate in Indigenous housing development projects in the Kimberley; increase the number of Regional Beneficiaries residing in secure, safe, suitable and sustainable accommodation in the Kimberley; and assist Regional Beneficiaries to generate wealth and address disadvantage and poverty through investment and building asset ownership. <p><u>Broome Housing Management Plan</u></p> <p>LandCorp will be responsible for the preparation of the Broome Housing Management Plan which will address the following:</p> <ul style="list-style-type: none"> provide an understanding of current housing issues in Broome; identify potential impacts on different types of housing during the different phases of the Precinct; monitor housing supply and demand; ensure timely release of land for housing and corresponding construction capability; and address short-term accommodation deficits, affordable housing, social housing and homelessness issues. <p><u>Precinct Worker Accommodation</u></p> <p>The Foundation proponent will establish worker accommodation near the Precinct to accommodate its FIFO workforces (construction and operations). In addition, Woodside will establish short-stay temporary accommodation near Broome to meet the accommodation needs of project personnel in the pre-construction phase. In April 2011, the Shire of Broome granted Woodside council approval to Woodside's application for a Temporary Offsite Workers Camp on Broome Road in Roebuck.</p> |
| Social Service Impacts | |
| <p>Recommendation 65 Prior to the commencement of activities under the Plan, the State and Commonwealth Departments of Health and other relevant agencies, in conjunction with local health organisations shall:</p> <ul style="list-style-type: none"> review and consolidate existing data relating to Indigenous health in the Area of Impact, and develop and maintain a single data base of relevant information; identify any gaps in available health information, and undertake health surveys of | <p><u>Broome Community Services Strategy</u></p> <p>To ensure that the additional demands generated by the Precinct do not exceed the delivery capacities of social services in the regional service centre of Broome, the DSD will prepare the Broome Community Services Strategy. It will:</p> <ul style="list-style-type: none"> Map the existing health and social service provision in Broome (State, Local, Commonwealth and NGO). |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| <p>relevant populations required to fill these gaps; and</p> <ul style="list-style-type: none"> on the basis of this enhanced information, expand funding for relevant health and social welfare programs, including those currently provided by NGOs and Indigenous organisations, and place funding on a more secure and long-term footing. | <ul style="list-style-type: none"> Identify trends and current and projected gaps or serious deficits in service provision capacity. Establish priorities for the upgrading of social services in consultation with the public and stakeholders. Provide an analysis of funding needs and an action plan. |
| <p>Recommendation 66 The Commonwealth and State Departments of Health must commit funding on a long-term basis, and at a higher level, to developing services for people suffering from mental illness in the Area of Impact.</p> | <p>Include monitoring and reporting on progress in strategy implementation.</p> <p>Health services will be a focus of the Broome Community Services Strategy.</p> |
| <p>Recommendation 51 Schools, colleges and health facilities in the Area of Impact must offer educational material on the risks involved in inappropriate sexual relations with workers and in unprotected sex.</p> | <p><u>Kimberley Enhancement Scheme</u></p> <p>For the period of 30 years from the Secured Foundation Proponent Date, the State will pay \$108 million for the Kimberley Enhancement Scheme in annual instalments as prescribed in the Agreement. The Foundation Proponent will pay the trustee of the Kimberley Enhancement Scheme Trust \$4,000,000 each year. The purpose of the Kimberley Enhancement Scheme is to address the social impact of the LNG Precinct on the Regional Beneficiaries through:</p> |
| <p>Recommendation 67 The Commonwealth and State Departments of Health must commit additional funding to enable expansion of regional dialysis services in the Area of Impact.</p> | <p>supplementing existing social programs within the Kimberley;</p> <p>providing a mechanism by which the Regional Beneficiaries can engage with government and non-government sectors to undertake initiatives to support their priorities;</p> <p>responding to social impacts associated with the LNG Precinct; and</p> |
| <p>Recommendation 45 Responsible State and the Commonwealth authorities must provide additional funding to drug and alcohol education programs in schools and colleges, and to alcohol and drug abuse rehabilitation facilities, in the Area of Impact.</p> | <p>providing for joint decision making where Regional Beneficiaries work cooperatively through processes of dialogue, negotiation and collaboration.</p> <p><u>Dampier Peninsula Fund</u></p> <p>The Regional Body must establish the Dampier Peninsula Fund Trust. The purpose of the Fund is to improve the general welfare of the Dampier Peninsula Native Title Party communities. Access to the Dampier Peninsula Proponent Benefits Fund will be limited to members of the Dampier Peninsula Native Title Parties. The initial objects of the Dampier Peninsula Fund include:</p> <ul style="list-style-type: none"> the relief of poverty; short term relief housing; medical assistance for health related issues; dental care; child care and care for the aged and disabled; |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| | <ul style="list-style-type: none"> • transportation; and • provision of community and social infrastructure. |
| <p>Recommendation 44 The State must supplement the resources available to WA police in the Area of Impact to enable them to address any increase in illegal activity, including sale of drugs and illicit trading of alcohol.</p> | <p>Commercial proponents will be required to implement a Precinct Health, Emergency and Security Management Plan. The plan will include:</p> <ul style="list-style-type: none"> • An analysis of the level of service provision needed for the Precinct and construction camp. • A description of the services to be provided at the Precinct to meet the service needs. • Consultation undertaken with key stakeholders (e.g. police, Shire of Broome) in developing the plan. • Responsibilities for provision of services. |
| Precinct Workforce Behaviour | |
| <p>Recommendation 28</p> <p>The Proponent must operate the LNG Precinct accommodation complex as a 'controlled access' facility. Construction and operations employees and contractors from outside the Area of Impact ('Precinct workers') must all be accommodated at this facility, and it must be a condition of their employment that they do not leave the facility to engage in recreation or other activity. The Proponent must enforce a prohibition on Precinct workers taking any form of wild resources from land or sea country.</p> | <p>Commercial Proponents will accommodate the construction workforce at a 'controlled access' accommodation facility situated near the Precinct.</p> <p>The worker code of behaviour and cross-cultural training measures will be used to manage the behaviour of FIFO workers when outside the Precinct on their rostered days off.</p> <p>The Foundation proponent's Construction Camp Management Plan will include strategies for preventing the consumption of illicit drugs in the camp including a testing program for drug use.</p> |
| <p>Recommendation 43 The Proponent must operate the LNG Precinct accommodation complex as a 'controlled access' facility, with access by Precinct Workers to the Area of Impact limited to travel to and from the LNG Precinct, and no public access to the camp. Traditional Owner access to the camp for environmental monitoring or other Precinct management activities will be governed by specific arrangements set out in a Precinct Management Plan or equivalent document.</p> | |
| <p>Recommendation 49 The Proponent must operate the LNG Precinct accommodation complex as a 'controlled access' facility, with no access by workers to the Area of Impact and no public access to the camp.</p> | |
| <p>Recommendation 42 The Proponent must apply a 'no drugs' policy to the LNG Precinct and the accommodation complex. Possession or sale of illicit drugs by Precinct workers must be grounds for summary dismissal.</p> | |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| Indigenous Engagement | |
| <p>Recommendation 13 The Proponent must, in cooperation with responsible State and Commonwealth Authorities, the KLC and Traditional Owners, ensure a regular flow of accurate and comprehensive information regarding LNG Precinct environmental issues and impacts to affected Indigenous people. This must include at a minimum:</p> <ul style="list-style-type: none"> • Production and dissemination throughout the Area of Impact of a quarterly newsletter summarising, in plain English and with photographic illustrations, outcomes of environmental monitoring and management programs, and reporting on the reasons for, and action taken to address, any incidents that cause environmental harm or threaten to do so. • Regular information bulletins in local newspapers and on radio and television. Particular care must be taken to provide information through the latter channels if environmental incidents occur, as soon as possible after the occurrence and at regular intervals until they are resolved. • The form and content of the newsletter and information bulletins must be approved by the LNG Precinct Indigenous Social Impact Monitoring and Management Board. | <p>As the BLNG Precinct transitions from strategic proposal to approved project, a Precinct Engagement Plan will be implemented. The engagement plan will be designed in consultation with a range of stakeholders (e.g. local government, state agencies, NGOs, GJJ and Yawuru representatives, and LNG project proponents). The Engagement Plan will include actions to remove barriers to effective engagement with indigenous people.</p> |
| <p>Recommendation 12 Commencing within six months of any approval for the Plan, the Proponent, responsible State and Commonwealth authorities and the KLC must convene six-monthly Regional Environmental Forums with representatives of native title claim groups within the Area of Impact and of other affected Indigenous people. At these forums the Proponent and responsible Commonwealth and State authorities must report on the results of environmental monitoring and management programs, including reporting on any environmental incidents and measures taken to address them, and respond to environmental concerns or issues raised by Indigenous participants, immediately or within time frames agreed at the Forum. The KLC and Indigenous representatives must share their perspectives on relevant environmental issues, report on any environmental monitoring activity in which they are involved, and express any concerns they have regarding specific environmental impacts or issues.</p> | |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| Cultural Impacts and Youth | |
| <p>Recommendation 74 The Proponent and relevant State and Commonwealth authorities must take specific measures to support the practice of Indigenous culture in the Area of Impact, for example by supporting:</p> <ul style="list-style-type: none">oral history projects conducted by organisations such as Goolarri mediacultural festivals and other activities conducted by KALACCIndigenous language programs offered in schoolswomen's law groupsestablishment of an interpretative display on the history of Jabirr Jabirr people, possibly as part of a Visitor's centre established on the Cape Leveque Road (see Recommendation 30)flexible work practices, particularly in the period December – February. | <p>As part of the RBA, the State will fund a Cultural Preservation Fund. The purpose of the Cultural Preservation Fund is to assist Regional Beneficiaries, in particular young people and people at risk, to enhance and protect their cultural heritage. Objectives include assisting the protection of Kimberley cultural heritage through the provision of funding to individuals, groups, projects or activities which encourage and promote the preservation of Indigenous language, customary law and culture.</p> |
| <p>Recommendation 68 Responsible Commonwealth and State authorities must expand funding for recreation and other youth activities in the Area of Impact and place funding on a more secure and long-term footing.</p> | |
| Wild Resources | |
| <p>Recommendation 7 The Proponent must, provide funding to undertake a detailed analysis of the official unpublished IFSNA data from the region. The analysis must be conducted with input from relevant Traditional Owners, especially those from communities that provided survey data. The second step is to undertake, within 12 months of any approval for the Plan, a comprehensive regional harvest study. The study must be community-based, with Traditional Owners involved in and guiding the design, implementation, analysis and reporting stages.</p> | <p>The SAR includes a number of management measures to manage impacts on wild resources. These include:</p> <p><u>Rangers Program</u></p> <p>As described in the BLNG Project Agreement, LNG project proponents will provide funding for a ranger program or such other program designed to conduct environmental and cultural heritage monitoring at the LNG Precinct and surrounds.</p> <p><u>Commercial, Recreational and Customary Fishing, Pearling and Aquaculture Management Plan</u></p> |
| <p>Recommendation 8 The Proponent must fund a comprehensive regional harvest study within 12 months of any approval for the Plan. The conduct of a comprehensive regional harvest study at 10-yearly intervals over the life of the LNG Precinct to allow updating of baseline data and ongoing monitoring of use of wild resources, and of the effectiveness of any management responses taken</p> | <p>This management plan will address the following:</p> <ul style="list-style-type: none">Access limitations within the Precinct and buffer zones.Management of Precinct construction worker recreational fishing activities.Strategies to minimise disturbance to existing commercial fishing and pearling areas as well as favoured recreational fishing areas; |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| <p>in response to observed, adverse impacts arising from the LNG Precinct and related developments such as population increases.</p> | <ul style="list-style-type: none"> Measures to minimise the risks associated with interaction between Precinct vessel movements and commercial fishing (including pearling and aquaculture). Evaluate the impact on customary use of marine resources and implement management strategies. <p><u>Recreational Fishing Access North of James Price Point</u></p> <p>The concerns of customary fishers that the BLNG Precinct would exacerbate the anticipated increase in campers and day-trippers accessing country on the Dampier Peninsula will be addressed in the following ways:</p> <ul style="list-style-type: none"> The Recreation Management Strategy will include the issue of managing worker access to the Dampier Peninsula. It will be developed and implemented by the Foundation proponent in consultation with the Native Title Party. Access by the general public, unrelated to the establishment of the Precinct, will be managed through the Dampier Peninsula Planning Strategy. <p><u>Invasive Marine Species</u></p> <p>Proponents of derived proposals shall prepare and implement an Invasive Marine Species Management Plan, to the satisfaction of the Western Australian Minister for Environment on advice from and in consultation with the Department of Fisheries, to minimise the risk of introducing IMS into Australian waters during the life of the activity. The plan shall be developed in consultation with the AQIS and will be applied to vessels, barges and immersable equipment that plan to enter and operate within the Precinct. The IMSMP will be consistent with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry. The IMSMP will adhere to the AQIS Australian Ballast Water Management Requirements under the Quarantine Act (1908).</p> <p><u>Broome Port Authority</u></p> <p>The Broome Port Authority, as the proposed statutory Port Authority for the BLNG Precinct, will prepare a BPEMP for the port area in consultation with DEC and other relevant agencies, which will include:</p> <ul style="list-style-type: none"> collation of adequate environmental baseline data for marine mammals, turtles, water quality and benthic habitat health within the port generally; an ecological and water quality monitoring program within the port boundaries and appropriate reference areas; |
| <p>Recommendation 9 The Proponent must fund periodic regional harvest studies at 10-yearly intervals over the life of the LNG Precinct.</p> | |
| <p>Recommendation 33 The Board and responsible State authorities must monitor the number of boat and fishing licences issued for use in the Area of Impact. Should numbers increase significantly and/or should stocks of wild resources appear to be under increased pressure, responsible State authorities must impose restrictions on the issue of additional licences designed to address those impacts.</p> | |
| <p>Recommendation 34 Responsible State authorities must introduce fees for fishing licences; licences must specify maximum catch levels; and the proceeds of licence fees must be used to fund relevant management initiatives, including Indigenous rangers.</p> | |
| <p>Recommendation 35 Responsible State authorities must effectively enforce existing regulatory controls on the activities of commercial fishers and the use of fish traps, gill nets and pots must be more effectively enforced. Fines must be imposed for breaches of relevant laws or regulations, and the proceeds utilised to help fund Indigenous rangers and other management initiatives.</p> | |

| ASIA Recommendations by Theme | Response to Recommendations |
|--|---|
| | <ul style="list-style-type: none"> • identification of key environmental values and development of water quality objectives and criteria for waters within the Port;and • auditing of operational marine facilities and construction activities to assess compliance of proponents against the performance requirements of the BPEMP. |
| Indigenous Household Survey | |
| <p>Recommendation 5, 6 The Proponent must, immediately on the grant of any approval for the Plan, provide funding for a full household survey of Indigenous households in the Area of Impact, if such a survey has not already been conducted. The household survey must be commissioned by the KLC, which must ensure that Indigenous people are centrally involved in its design, administration and interpretation of the survey, and must retain appropriately qualified specialist staff to support this work. The survey instrument must be consistent with the Draft Household Survey developed by the ASIA and the TONC.</p> <p>Additional Recommendation 6 The ASIA strongly recommends that the household survey should be conducted regardless of the outcome of the Strategic Assessments and should commence as soon as possible.</p> | <p>An indigenous household survey of the nature described in Recommendations 5 & 6 is not currently contemplated. However, as discussed above the State, the KLC and the Commonwealth are holding discussions about an appropriate impacts management mechanism, including resourcing requirements, to allow a cumulative impact approach to monitoring social and economic impacts on Indigenous people in the west Kimberley.</p> |

Annexure 8 - Cumulative Environmental Impacts

This annexure outlines the methodology that has been implemented to determine potential cumulative impacts associated with Category A activities.

Annexure 8 – Cumulative Environmental Impacts

Introduction

Section 5 ‘Cumulative Environmental Impacts’ of the Response to Submissions – Summary Report outlines the methodology that has been implemented to determine potential cumulative impacts associated with Category A activities. The information contained within this Annexure provides the detailed supporting information for the assessment of cumulative impacts associated with key environmental factors. This has been determined drawing upon the following key considerations:

- the generic sequencing for marine and terrestrial development activities’ to determine concurrency of activities together with period of peak activity and temporal variability (**Figure A8.1 ‘Generic Sequencing for Marine and Terrestrial Development Activities’**); and
- potential additive impacts generated from a causal link diagram tailored specifically to each environmental factor (**Figure A8.3 to Figure A8.8**).

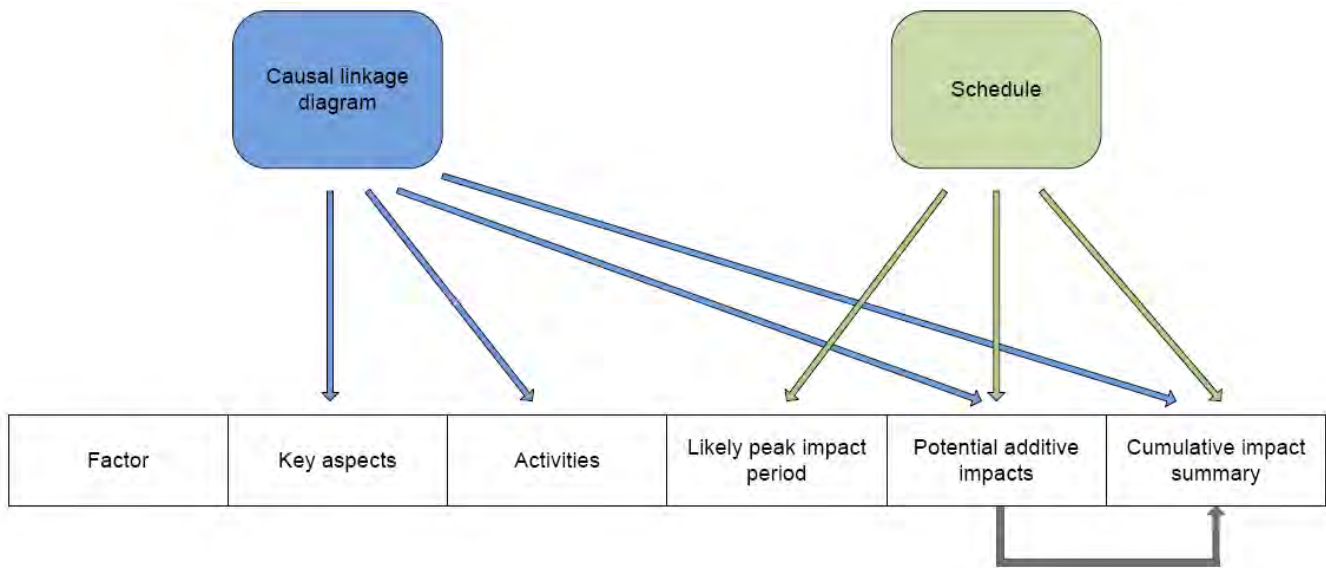
With these considerations in mind, the cumulative assessment for Category A activities has been summarised in tabular format for each environmental factor in accordance with the process considerations presented in **‘Outline of the Considerations Used to Inform the Cumulative Impact Summary Tables’**.

Figure A8.1 Generic Sequencing for Marine and Terrestrial Development Activities

| Activity | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | | | | | | | | |
|-----------------------------------|-----------------|---------------------|-----------------|---------------------------------------|--------|----|-----------|-----------------|-----------------|----|----|---------|--------|----|----|----|--------|----|-----|----|--------|-----|----|----|--------|----|----|----|--|--|--|--|--|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | | |
| MARINE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shore crossing | ① ② ③ ⑤ ⑥ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Export trunkline and SCR | | | | | | | | ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trenching and rock dumping | | | | | | | | | ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | |
| Pipelines pre-commissioning | | | | | | | | | | | | | | | | | | | ④ ⑥ | | | | | | | | | | | | | | |
| Dredging (including disposal) | ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Construction of EOF | ① ② ③ ④ ⑤ | | | ⑥ ⑦ ⑧ Barge transport and stockpiling | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Construction of MOF | | | | Wet-lock MOF ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Construction of breakwater | | | ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blasting/piling | ① ② ③ ⑤ ⑥ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TERRESTRIAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shore crossing | ① ② ③ ④ ⑤ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LNG Trains 1-3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site preparation | | ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Module installation | | | | | | | | | | | | ③ ⑤ ⑦ ⑩ | | | | | | | | | | | | | | | | | | | | | |
| Commissioning | | | | | | | | | | | | | | | | | ③ ⑧ | | | | | | | | | | | | | | | | |
| Commence operation | | | | | | | | | | | | | | | | | | | | | | ③ ⑧ | | | | | | | | | | | |
| LNG and condensate storage tanks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site preparation | | ① ③ ④ ⑤ ⑨ ⑩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Construct storage tank | | | | | | | ③ ④ ⑤ ⑦ ⑧ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commissioning | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Local Infrastructure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Build JPP construction camp | ① ② ③ ④ ⑤ ⑨ ⑩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Build JPP Ops and Turnaround camp | ① ② ③ ④ ⑤ ⑨ ⑩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | | |
| | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | | | | | | | | |

| Aspect | Code (marine/terrestrial) | |
|---|------------------------------|---|
| Site disturbance and excavation | ① | ❶ |
| Sediment deposition and turbidity | ② | |
| Noise and vibration | ③ | ❸ |
| Marine discharges (routine and non-routine) | ④ | |
| Vessel movements | ⑤ | |
| Invasive marine species | ⑥ | |
| Physical presence | ⑦ | ❷ |
| Light emissions | ⑧ | ❸ |
| Vegetation and habitat clearing | ❷ | |
| Dust emissions | ❹ | |
| Vehicle movements | ❺ | |
| Waste and discharge | ❻ | |
| Altered fire regime | ❾ | |
| Introduced weeds | ❿ | |

Figure A8.2 Outline of the Considerations Used to Inform the Cumulative Impact Summary



Key Marine Factors

The following environmental factors were identified as key marine factors in the SAR, and are considered in this section:

- Marine mammals;
- Marine reptiles;
- Marine Water Quality; and
- Benthos.

Marine Mammals

The principle cumulative impacts to marine mammals are likely to be associated with concurrent marine construction activities, concentrated primarily in the vicinity of the port area and pipeline corridors. The causal linkage diagram shown in **Figure A8.3 'Causal Link Diagram – Marine Mammals'**, derived from the SAR, shows activities associated with key aspects and the potential impacts on marine mammals. This information, along with peak impact periods for each aspect, identified from the schedule (**Figure A8.1 Generic Sequencing for Marine and Terrestrial Development Activities**) is summarised in **Table A8.1 'Summary Cumulative Impacts – Marine Mammals'**.

Figure A8.3 Causal Link Diagram – Marine Mammals

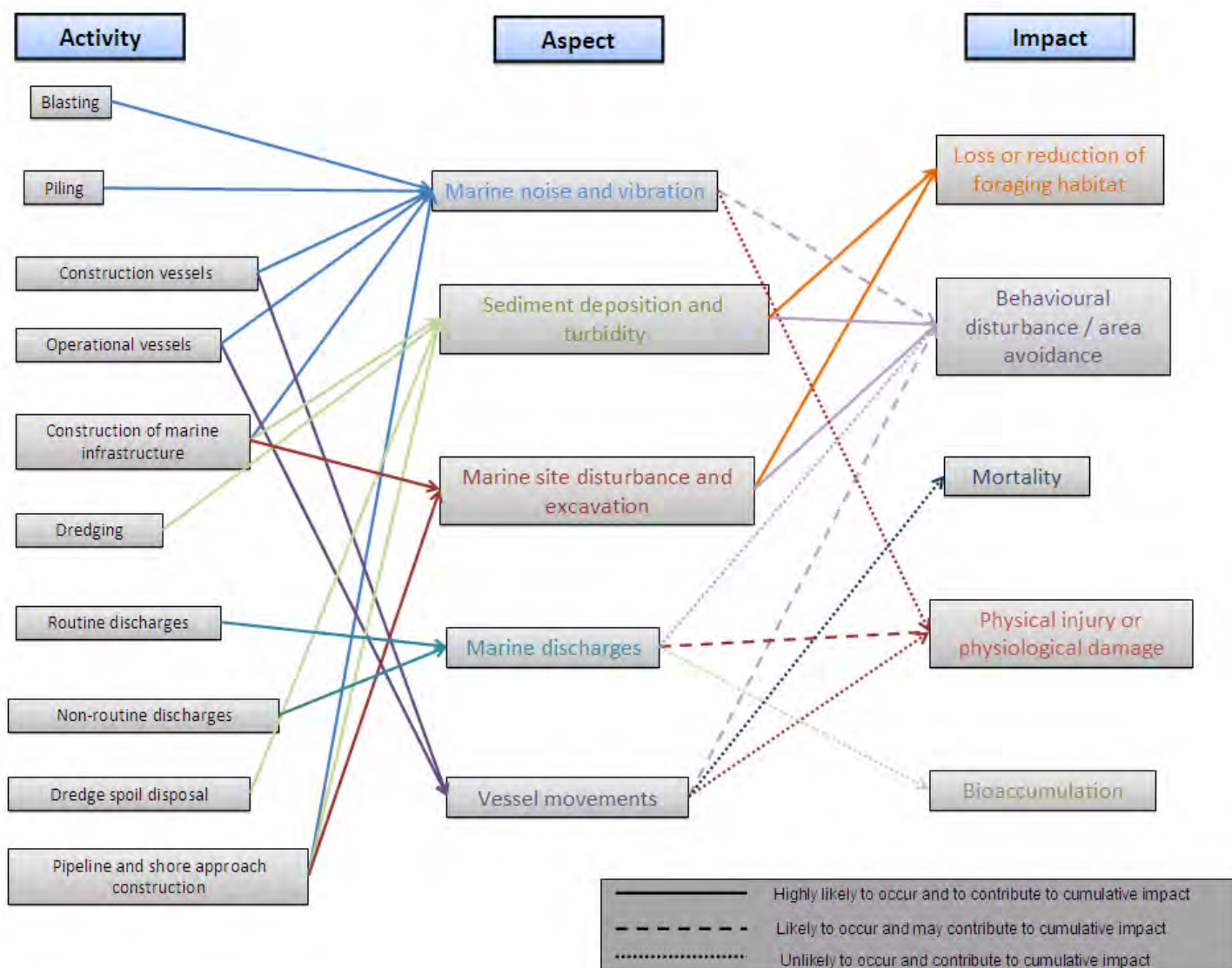


Table A8.1 Summary Cumulative Impacts – Marine Mammals

| Factor | Key Aspects | Activities | Likely peak impact period | Overview of potential additive effects and management response | Cumulative impact summary |
|----------------|--|---|---|--|--|
| Marine mammals | Marine noise and vibration | Blasting, piling, operation of construction and operational vessels, dredging, construction of marine infrastructure, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | <p>General: Marine noise and vibration during construction is highly likely to result in behavioural disturbance and avoidance behaviour by marine mammals with less likelihood of causing physiological or physical injuries, on the basis that appropriate management measures are implemented, particularly for blasting activities. These potential impacts are anticipated to be temporary (i.e. only occurring during construction) and will not persist during routine operations.</p> <p>Construction of the BLNG Precinct would result in an increased number of vessels which would be distributed over the entire construction period. The majority of the construction activities would require vessels to be stationary (e.g. during piling and drilling activities) or moving at slow speeds (e.g. dredging, pipe laying). Vessel movements at higher speeds (e.g. greater than 10km) would predominantly be limited to vessel transits between areas (e.g. between the BLNG Precinct, marine supply base, other regional ports and/or spoil disposal grounds). During operations, the most significant vessel traffic would be the regular movements of LNG, LPG and condensate tankers and the movements of associated support vessels to aid in the berthing of the tankers and movements in and out of the marine port facilities. Vessel movements during the construction and operational phases of the BLNG Precinct have the potential to cause injury to marine mammals as a result of collisions, though the likelihood of such events is extremely low (based on historical precedence and proposed management measures).</p> <p>Similarly, post-construction the physical presence of the nearshore marine infrastructure (i.e. breakwater or jetty) may impact the movement or behaviour of marine mammals.</p> <p>Wastewater will be controlled within the Precinct facilities and then discharged to the nearshore marine environment via an ocean outfall. Commercial operators within the precinct shall ensure that beyond the boundary of the Low Ecological Protection Area (i.e. outside the discharge mixing zone) toxicants meet the ANZECC/ARMCANZ (2000) 95% species protection values for at least 95% of time. As such it is highly unlikely that such routine marine discharges will have any impacts on marine mammals.</p> <p>Non-routine events arising from accidental spillages could result in the release of LNG, LPG, condensate, diesel or fuel oil. However, the likelihood of such an event is very low, considering industry standard engineering and design measures and the management measures that will be implemented.</p> <p>Cetaceans: During construction, nearshore blasting and piling works are considered to be the most intensive sources of noise and vibration. During such activities cetaceans may exhibit behavioural changes (avoidance) or physiological impacts, though the likelihood of physiological injuries is offset by expected avoidance of the area during such activities.</p> <p>It has been determined that sediment deposition or turbidity is not likely to affect whales as they are thought to rely on acoustic senses for navigation and to monitor their environment, rather than visual cues. Subsequently; an increase in turbidity associated with dredging is unlikely to cause behavioural changes and is very unlikely to add significantly to impacts arising from noise and vibration from construction.</p> <p>It is acknowledged that the risk of vessel strikes on whales during construction will increase as a result of the simultaneous operations likely to occur within the Precinct Port area. However, it is considered unlikely that the additional vessel traffic will have a significant impact on the overall whale population, as the proposed management measures to be implemented will reduce the risk of collisions.</p> <p>Dugongs: Similar to cetaceans, high intensity impulsive noise activities during construction are likely to result in the localised avoidance of individuals from the Precinct Port area, minimising the risk of exposure to other concurrent activities and impacts.</p> <p>It has been acknowledged that there is the potential for permanent and temporary loss of seagrass to impact dugongs through a subsequent loss of foraging habitat. The permanent and temporary loss of seagrass is not expected to significantly impact on the overall food resource availability for dugongs given the prevalence and</p> | <p>The dominant aspects during concurrent activities that will impact marine mammals are marine noise and vibration, and vessel movements. The likely peak impact period of these aspects is from Q3 of year one to Q2 of year four. Impacts on marine mammals associated with these aspects will be concentrated primarily in the Precinct Port area, where the bulk of the construction activity will occur. These activities are likely to result in marine mammals avoiding the Port area and pipeline corridor. This likely behavioural response (i.e. avoidance of the Precinct Port area during construction), the temporary nature of the planned activities, and the proposed management measures to be implemented are anticipated to mitigate the cumulative impacts to marine mammals.</p> <p>Impacts from sediment deposition and turbidity, marine site disturbance and excavation, and marine discharges will occur during the same time period (i.e. Q3 of year one to Q2 of year four) and will also be concentrated in the port area, in the vicinity of marine infrastructure. However, given that the Precinct Port area and broader James Price Point coastal area is not considered of regional significance for marine mammals in terms of foraging, or calving, the cumulative impacts of such construction activities are not considered to be significant.</p> |
| | Sediment deposition and turbidity | Construction of marine infrastructure, dredging, dredge spoil disposal, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | | |
| | Marine site disturbance and excavation | Construction of marine infrastructure, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | | |
| | Marine discharges | Routine and non-routine discharges. | Q4 of Year one, Q1 of Year 3, Q3 of Year three to Q2 of Year four | | |
| | Vessel movements | Construction and operational vessels. | Q4 of Year one to Q2 of Year four | | |

| | | | | | |
|--|--|--|--|---|--|
| | | | | <p>natural variability of seagrass within the wider Canning Bioregion. No loss of seagrass, either permanent or temporary, is predicted to occur within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay.</p> <p>Due to their delayed flight response, dugongs would be vulnerable to an increased risk of vessel strikes compared to cetaceans. However, the Nearshore Regional Dugong Survey Report (RPS 2010c; Appendix C-9) concluded that whilst it is known that dugongs are likely to be present around James Price Point, it is noted that this presence is in relatively low numbers compared to other areas along the west Kimberley coastline, such as Beagle Bay, Carnot Bay and Roebuck bay. Therefore, while it is likely that a small number of individuals may be affected by vessel activity associated with the BLNG Precinct Port area, no significant impact to population viability is anticipated.</p> | |
|--|--|--|--|---|--|

Marine Reptiles

The principle cumulative impacts to marine reptiles are likely to be associated with concurrent marine construction activities, concentrated primarily in the vicinity of the port area and pipeline corridors. The causal linkage diagram shown in **Figure A8.4 ‘Causal Link Diagram – Marine Reptiles’**, derived from the SAR, shows activities associated with key aspects and the potential impacts on marine reptiles. This information, along with peak impact periods for each aspect, identified from the schedule (**Figure A8.2 ‘Generic Sequencing for Marine and Terrestrial Development Activities’**) is summarised in **Table A8.2 ‘Summary Cumulative Impacts – Marine Reptiles’**.

Figure A8.4 Causal Link Diagram – Marine Reptiles

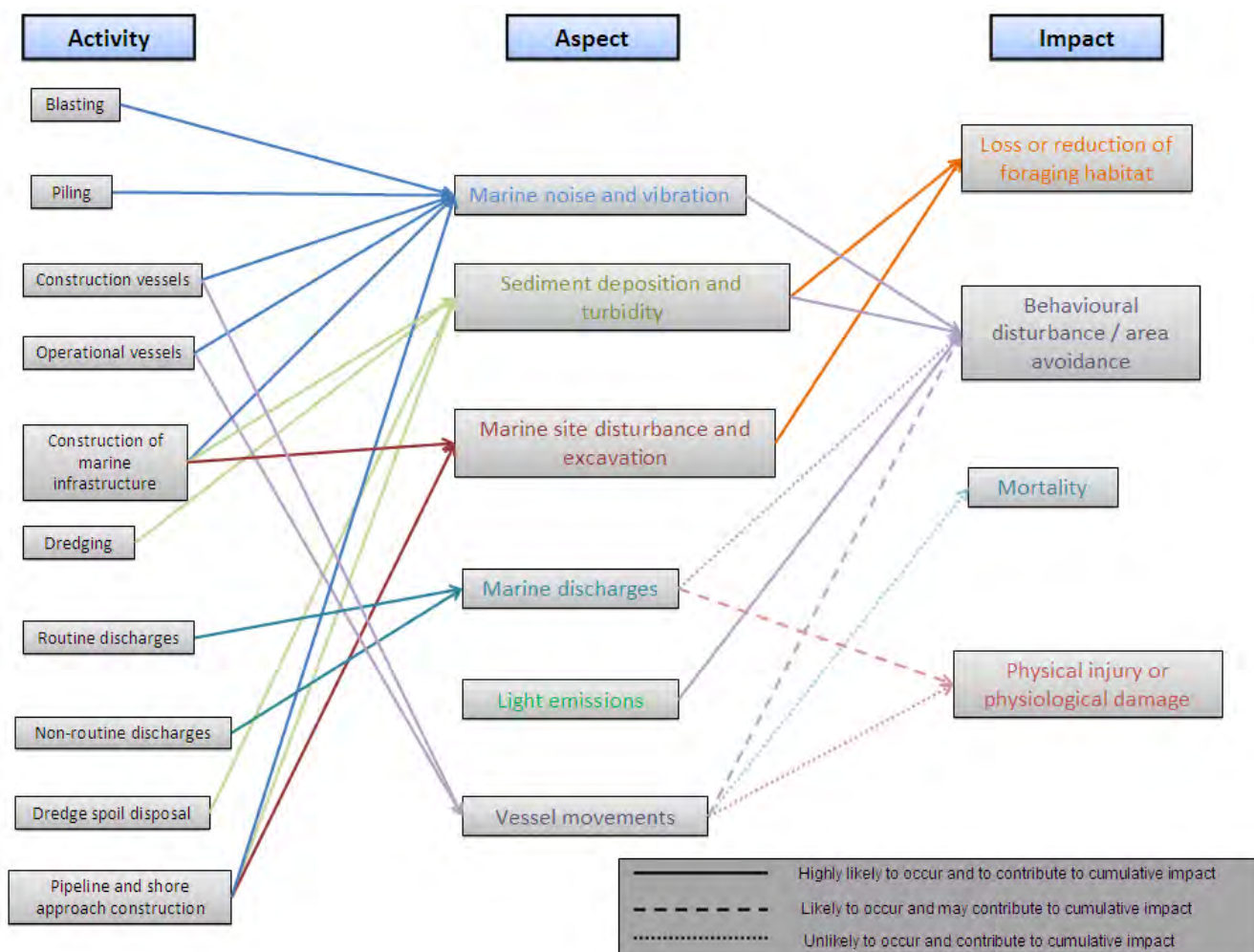


Table A8.2 Summary Cumulative Impacts – Marine Reptiles

| Factor | Key Aspects | Activities | Likely peak impact period | Overview of potential additive effects and management response | Cumulative impact summary |
|-----------------|-----------------------------------|---|---|--|--|
| Marine reptiles | Noise and vibration | Blasting, piling, vessel movements, construction of marine infrastructure. | Q3 of Year one to Q2 of Year four | <p>General: The construction and operation of the BLNG Precinct will include activities that will emit underwater noise and vibration above background levels. The marine activities that are considered to be the most noise intensive sources are nearshore blasting and piling works. As with marine mammals, underwater noise and vibration generated during construction has the potential to cause physiological injuries or a behavioural response (e.g. avoidance) in marine reptiles (turtles). These potential impacts are anticipated to be temporary and unlikely to persist beyond the construction period. It is expected that the majority of potential impacts on marine reptiles from marine noise and vibration can be successfully mitigated through application of management and mitigation measures such as a Port Facilities Construction Environmental Management Plan (PFCEMP) which would include a range of measures to manage marine reptile interactions.</p> <p>It is unlikely that increased turbidity generated during dredging and dredged spoil disposal activities would have significant direct impacts on marine reptiles. As with dugongs, there may be an indirect impact associated with the loss of benthic primary producer habitat, resulting in a reduction in foraging habitat. Foraging habitat is extensive along the Dampier Peninsula and any loss of foraging habitat within the James Price Point coastal area is likely to cause turtles to move to other foraging grounds within the wider Dampier Peninsula region. It is expected that potential impacts on marine reptiles can be successfully mitigated through the application of the proposed management and mitigation measures. An increase in turbidity associated with dredging is unlikely to add significantly to impacts arising from noise and vibration from construction.</p> <p>Construction and operation of the BLNG Precinct would result in an increased number of vessels which would be distributed over the entire construction period. The majority of the construction activities would require vessels to be stationary (e.g. during piling and drilling activities) or moving at slow speeds (e.g. dredging, pipe laying). Vessel movements at higher speeds (e.g. greater than 10km) would predominantly be limited to vessel transits between areas (e.g. between the BLNG Precinct, marine supply base, other regional ports and/or spoil disposal grounds). During operations, the most significant vessel traffic would be the regular movements of LNG, LPG and condensate tankers and the movements of associated support vessels to aid in the berthing of the tankers and movements in and out of the marine port facilities. The highest likelihood of vessel strike is during construction when vessel activity is highest and during periods of increased marine turtle activity (i.e. between dawn and dusk) at which time turtles may have a higher frequency of ascents. There is also the potential for marine turtle entrainment within dredging equipment that may result in injuries and potentially mortality. While the risk of vessel strikes on individual turtles is increased due to construction activities (i.e. there may be an additive effect from increased vessel activity), it is considered unlikely that the additional vessel traffic would have a significant impact, as proposed management measures will reduce the risk for such collisions.</p> <p>Wastewater will be controlled within the Precinct facilities and then discharged to the nearshore marine environment via an ocean outfall. Commercial operators within the precinct shall ensure that beyond the boundary of the Low Ecological Protection Area (i.e. outside the discharge mixing zone) toxicants meet the ANZECC/ARMCANZ (2000) 95% species protection values for at least 95% of time. Given the prior treatment and the commitment to meet the ANZECC / ARMCANZ 2000 guidelines outside of the mixing zone, it is highly unlikely that such routine marine discharges will have adverse impacts on marine reptiles.</p> <p>Non-routine events arising from accidental spillages could result in the release of LNG, LPG, condensate, diesel or fuel oil. However, the likelihood of such an event is very low, considering industry standard engineering and design measures and the operations management measures to be implemented.</p> <p>Artificial lighting associated with the construction and operation of the BLNG Precinct has the potential to impact marine turtles. However, significant nesting beaches are well removed from proposed light sources associated with the BLNG Precinct. The SAR demonstrated that light spill from the development will be localised, approximately 400m from the infrastructure boundary. Taking into account the very low levels of nesting activity in the vicinity of the Precinct area, and the localised effect of light overspill effects, the potential disruption to nesting activity at James Price Point is considered to be low.</p> | <p>The dominant aspects during concurrent activities that will cumulatively impact marine reptiles are vessel movements, light emissions and marine noise and vibration. The likely peak impact period of these aspects is from Q3 of year one to Q2 of year four. Impacts on marine reptiles associated with these aspects will be concentrated in the port area which is likely to result in general avoidance of the area.</p> <p>Impacts associated with marine discharges, sediment deposition, turbidity, site disturbance and excavation will occur during the same peak impact period and will also be concentrated in the port area.</p> <p>As a result of concurrent construction activities, marine reptiles are likely to experience cumulative impacts including behavioural disturbance and a reduction in potential foraging habitat. Physical injury or physiological impacts may also occur, though this is unlikely taking into account the proposed management measures. Similarly, mortality associated with the construction activities is highly unlikely, though possible. Due to the lack of significant nesting beaches within the direct vicinity of the Precinct and the abundance of foraging habitat within the broader Dampier Peninsula, cumulative impacts to marine reptiles are not expected to be significant (i.e. no potential impact to population viability).</p> |
| | Sediment deposition and turbidity | Construction of marine infrastructure, dredging, dredge spoil disposal, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | | |
| | Site disturbance and excavation | Construction of marine infrastructure, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | | |
| | Marine discharges | Routine and non-routine discharges. | Q4 of Year one, Q1 of Year 3, Q3 of Year three to Q2 of Year four | | |
| | Vessel movements | Construction and operations vessels. | Q4 of Year one to Q2 of Year four | | |
| | Light emissions | Vessel movements, infrastructure lighting, flaring systems. | Q3 of Year one to Q2 of Year four | | |

Marine Water Quality

Cumulative impacts to marine water quality are likely to arise as a result of concurrent marine activities, concentrated primarily in the vicinity of the port area and pipeline corridors, but extending out to the wider James Price Point coastal area reflecting dredging activities. The causal linkage diagram shown in **Figure A8.5 ‘Causal Link Diagram – Marine Water Quality’**, derived from the SAR, shows activities associated with key aspects and the potential impacts on marine water quality. Scheduled marine activities were used to identify peak impact periods. This information is summarised in **Table A8.3 ‘Summary Cumulative Impacts – Marine Water Quality’**.

Figure A8.5 Causal Link Diagram – Marine Water Quality

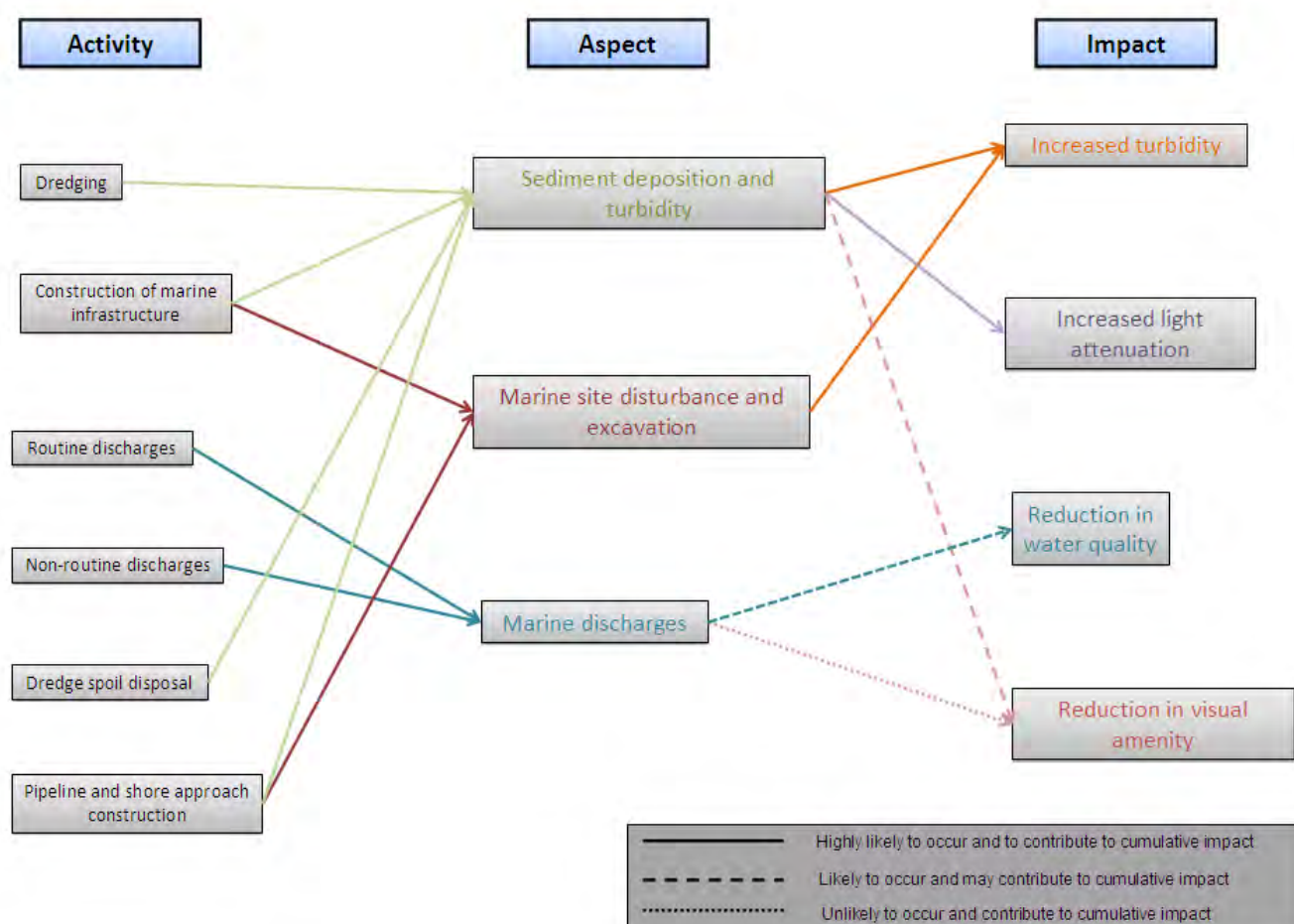


Table A8.3 Summary Cumulative Impacts – Marine Water Quality

| Factor | Key Aspects | Activities | Likely peak impact period | Overview of potential additive effects and management response | Cumulative impact summary |
|----------------------|-----------------------------------|--|---|--|--|
| Marine water quality | Sediment deposition and turbidity | Constructions of marine infrastructure, dredging, dredge spoil disposal, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | <p>Dredging and other nearshore construction activities (i.e. rock dumping) have the potential to impact water quality, primarily through increased suspended sediment concentration. Many of these activities will occur concurrently and the resulting point sources for increased turbidity will be concentrated in the port area. Increases in turbidity associated with different nearshore construction activities will have differing durations (Figure A8.1 ‘Generic Sequencing for Marine and Terrestrial Development Activities’). In addition, routine marine discharges, which may result in a zone of reduced water quality, will occur during construction and operations. Wastewater stream which originate from the onshore Precinct facilities or construction site will generally be treated by a wastewater treatment system prior to discharge. Given the dynamic receiving environment at James Price Point (i.e. strong tidal regimes resulting in good mixing), rapid dilution of the wastewater within an agreed mixing zone is anticipated to be readily achievable using standard industry practices (i.e. diffusers).</p> <p>Non-routine events arising from accidental spillages could result in the release of hydrocarbons of (i.e. LNG, LPG, condensate, diesel or fuel oil). While the likelihood of such an event is very low, considering the industry standard risk and operations management measures to be implemented, the potential impact from a major spill is acknowledged to be significant. The State Government has committed that the Broome Port Authority shall be responsible for preparing an Emergency Response Plan including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures.</p> <p>While additive impacts to marine water quality as a result of increased turbidity and marine discharges are possible, it is anticipated that potential impacts can be successfully mitigated through the application of the proposed management and mitigation measures outlined in the Strategic Assessment Report (Part 3, Section 2.3).</p> | <p>Cumulative impacts to water quality are likely during the construction period when simultaneous activities (i.e. dredging and marine discharges) will be undertaken. The likely peak cumulative impact periods will be from Q4 of year one to Q1 of year three, and from Q3 of year 3 to Q2 of year four when the majority of dredging and marine facilities construction will be occurring. The most significant cumulative water quality impacts would largely be confined to areas of direct disturbance within the Port area.</p> <p>Though cumulative impacts are likely, changes in water quality are expected to be localised and short term. In addition, the implementation of the proposed mitigation and management measures are expected to mitigate significant impacts. Therefore, cumulative impacts to marine water quality are not considered significant.</p> |
| | Site disturbance and excavation | Construction of marine infrastructure, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | | |
| | Marine discharges | Routine and non-routine discharges. | Q4 of Year one, Q1 of Year 3, Q3 of Year three to Q2 of Year four | | |

Benthos

The principle cumulative impacts to benthos from the BLNG Precinct are likely to be associated with concurrent marine construction activities, concentrated primarily in the vicinity of the port area and pipeline corridors. The below causal linkage diagram **Figure A8.6 ‘Causal Link Diagram – Benthos’**, derived from the SAR, shows activities associated with key aspects and the potential impacts on benthos. This information, along with peak impact periods for each aspect, identified from the schedule (**Figure A8.1 ‘Generic Sequencing for Marine and Terrestrial Development Activities’**) is summarised in **Table A8.4 ‘Summary Cumulative Impacts – Benthos’**.

Figure A8.6 Causal Link Diagram – Benthos

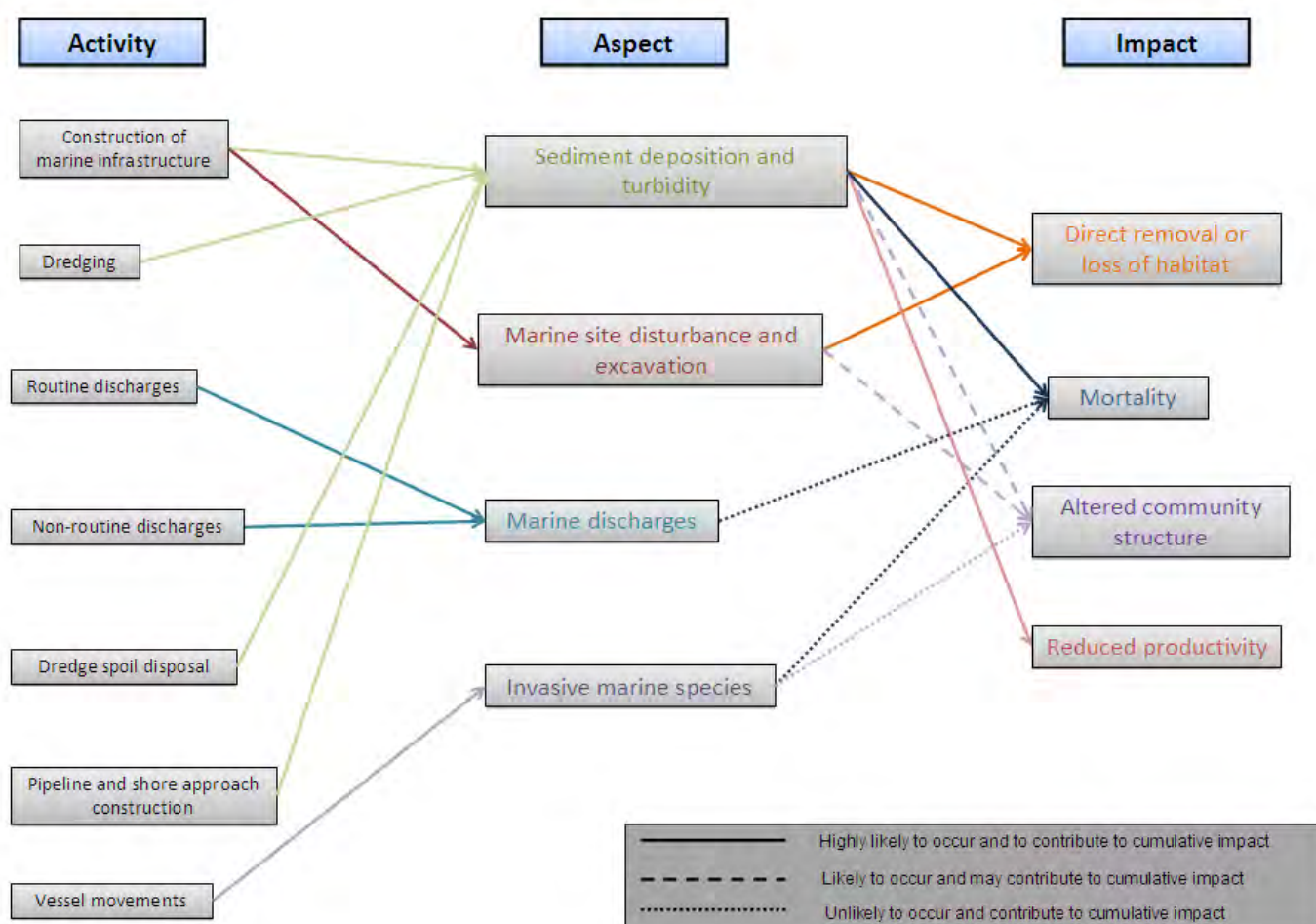


Table A8.4 Summary Cumulative Impacts – Benthos

| Factor | Key Aspects | Activities | Likely peak impact period | Overview of potential additive effects and management response | Cumulative impact summary |
|---------|-----------------------------------|---|---|---|---|
| Benthos | Sediment deposition and turbidity | Construction of marine infrastructure, dredging, dredge spoil disposal, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | Dredging and other construction activities (i.e. rock dumping, pipeline trenching and spoil disposal) have the potential to impact benthic communities, including benthic primary producer habitat (BPPH), through the direct removal and disturbance of substrates and associated increase in sediment deposition and turbidity (i.e. reduced benthic light availability). The main impacts will be the permanent removal of seabed and the subsequent sedimentation footprint, resulting in the removal and smothering of benthic habitats. Indirect impacts, though potentially more significant in terms of spatial extent, are associated with the reduction in benthic light availability causing reduced productivity from photosynthetic benthic habitats. It is expected that the spatial extent of the predicted impacts can be successfully managed and retained within the agreed impact zones through the application of the proposed management and mitigation measures detailed in the Strategic Assessment Report (Part 3, Section 2.4). | Cumulative impacts on benthos associated with concurrent Precinct construction activities will be primarily concentrated within the vicinity or in the Precinct Port area. It is acknowledged that benthos in this area may be exposed to dredging other seabed disturbing impacts as well as predicted impacts associated with marine discharges. The likely peak cumulative impact periods are from Q4 of year one to Q1 of year three, and from Q3 of year three to Q2 of year four. There is also the potential for impacts associated with invasive marine species to occur during the same time period, as construction vessels increasingly frequent the James Price Point coastal area. However, introduction of IMS as a result of BLNG Precinct activities is considered highly unlikely due to mitigation and management measures to be implemented. The cumulative loss or reduction in benthos in the Port area, pipeline corridors and dredge spoil disposal grounds is likely as a result of concurrent construction activities. A temporarily reduced productivity of photosynthetic BPP is also likely. However, significant cumulative impacts on benthos from such aspects are expected to be mitigated through the implementation of appropriate mitigation and management measures, as outlined in the Strategic Assessment Report (Part 3, Section 2.4). |
| | Site disturbance and excavation | Construction of marine infrastructure, pipeline and shore approach construction. | Q3 of Year one to Q2 of Year four | In addition, it is expected that there will be minor impacts on benthic habitats (though highly localised) associated with routine marine discharges from the onshore Precinct facilities. The continuous discharge of wastewater (though treated) is expected to result in a zone of reduced water quality, which may have indirect impacts on local benthos. Commercial operators within the precinct shall ensure that beyond the boundary of the Low Ecological Protection Area (i.e. outside the discharge mixing zone) toxicants meet the ANZECC/ARMCANZ (2000) 95% species protection values for at least 95% of time. As such routine discharges will not affect water quality outside of the defined mixing zones given the prior treatment and the commitment to meet the ANZECC & ARMCANZ 2000 guidelines. | |
| | Marine discharges | Routine and non-routine discharges. | Q4 of Year one, Q1 of Year 3, Q3 of Year three to Q2 of Year four | It has been noted that non-routine discharges can result in a significant effect on water quality, which can have flow-on impacts on intertidal benthic habitats if a spill is 'forced' onshore. The State Government has committed that the Broome Port Authority shall be responsible for preparing an Emergency Response Plan including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures. | |
| | Invasive marine species | Vessel movements | Q4 of Year two to Q2 of Year four | The introduction of invasive marine species (IMS) can potentially result in an impact to benthos via competition exclusion, the alteration in habitat composition, increased predation pressure to native species, introduction of pathogens and a reduction of biodiversity. Potential impacts could result in long term changes in marine species composition and abundance within the James Price Point coastal area. However, the introduction and establishment of IMS, as a result of Precinct activities, is unlikely to occur, due to the low endemism, high biodiversity and likely competitive exclusion exhibited by existing biota. In addition is expected that potential impacts can be successfully managed through the application of management and mitigation measures, such as the enforcement of the statutory IMS inspection requirements and routine monitoring of the marine environment to detect incursions. | |

Key Terrestrial Factors

The following environmental factors were identified as key terrestrial factors in the SAR, and are considered in this section:

- Terrestrial flora and vegetation; and
- Terrestrial fauna.

It should be noted that, while greenhouse gas emissions was also identified as a key factor in the SAR, the additive effects of total emissions from Category A activities have already been considered in a cumulative context implicit in the SAR assessment. Applying this methodology to greenhouse as a factor is not appropriate and therefore excluded.

Terrestrial Flora and Vegetation

The principle cumulative impacts to flora and vegetation from the BLNG Precinct are likely to be associated with site preparation, vegetation clearing and infrastructure/services establishment for different aspects of terrestrial infrastructure, including construction of workers accommodation and the shore crossing. The below causal linkage diagram (**Figure A8.7 ‘Causal Link Diagram – Terrestrial Flora and Vegetation’**); derived from the SAR, shows activities associated with key aspects and the potential impacts on flora and vegetation. This information, along with peak impact periods for each aspect, identified from the schedule (**Figure A8.1 ‘Generic Sequencing for Marine and Terrestrial Development Activities’**) is summarised in **Table A8.5 ‘Summary Cumulative Impacts – Terrestrial Flora and Vegetation’**.

Figure A8.7 Causal Link Diagram – Terrestrial Flora and Vegetation

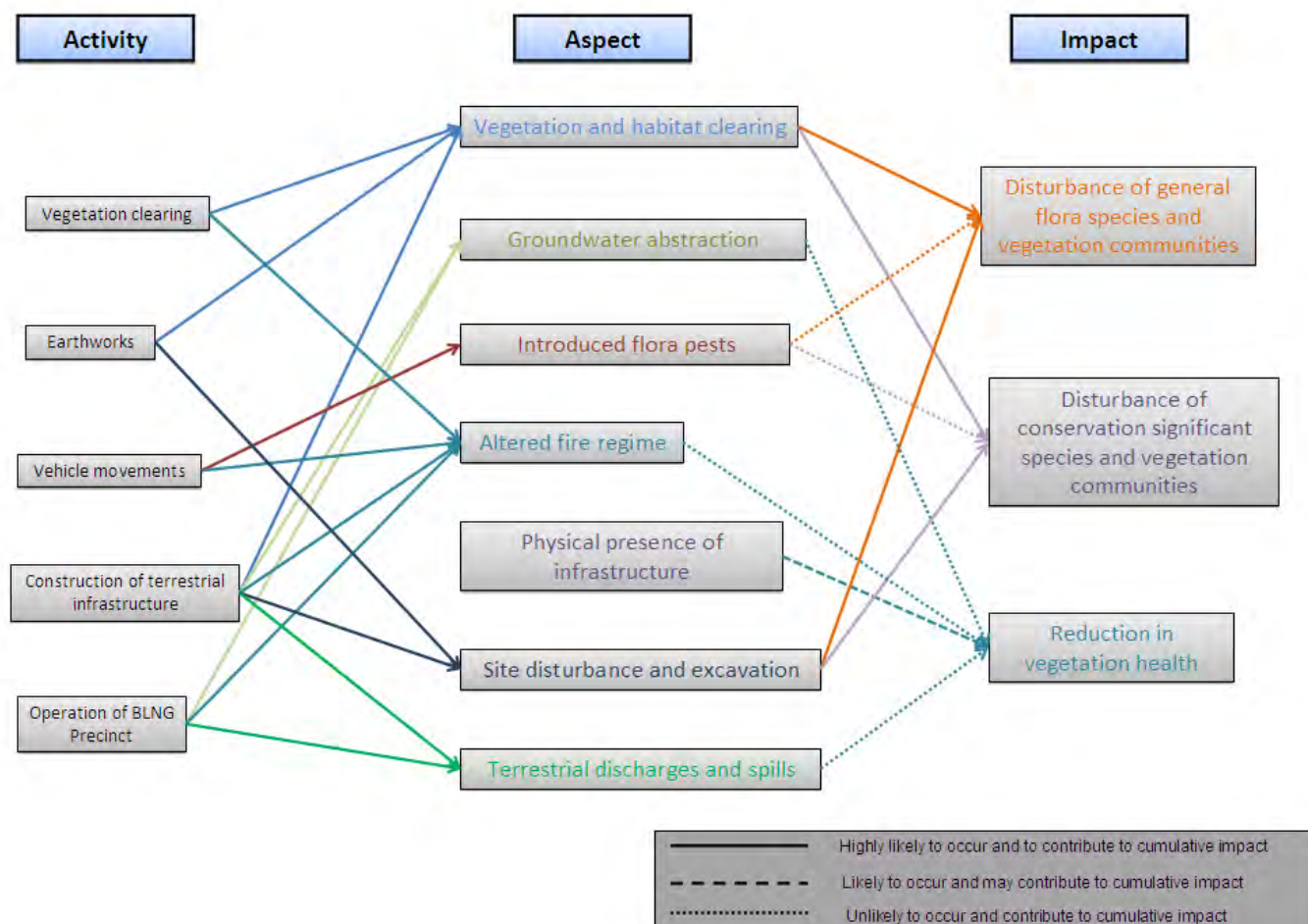


Table A8.5 Summary Cumulative Impacts – Terrestrial Flora and Vegetation

| Factor | Key Aspects | Activities | Likely peak impact period | Overview of potential additive effects and management response | Cumulative impact summary |
|----------------------|-------------------------------------|--|--|---|--|
| Flora and Vegetation | Vegetation and habitat clearing | Earthworks, construction of terrestrial infrastructure | Q2 of Year one to Q2 of Year two | <p>General: Vegetation and habitat clearing will occur as a result of site preparation in association with the BLNG Precinct, light industrial area, workers accommodation, pipeline corridors and ancillary infrastructure. Clearing to be undertaken will minimise disturbance and maintain linkages were possible.</p> <p>Vehicle and machinery movements associated with clearing and construction activities have the potential to result in the introduction or further spread of existing weed species into significant vegetation communities and vegetation that supports Priority Flora. Native flora and vegetation surrounding the BLNG Precinct may be indirectly impacted by the introduction and spread of weeds through increased rates of competition for light, nutrients, water and space, which may ultimately reduce the ecosystem integrity of the James Price Point coastal area. It is considered likely that the implementation of weed control measures, quarantine procedures, a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance combined with the management and monitoring requirements outlined in the Draft BLNG Precinct Terrestrial Ecological Management Strategy, would maintain or reduce the incidence of weed species and potentially improve the quality of vegetation communities in the JPP Coastal Area. It is unlikely that new introductions of weeds will occur from vehicle movements and excavation activities as there is already uncontrolled access and weeds established in the area.</p> <p>Flora and vegetation surrounding the BLNG Precinct may be indirectly impacted by localised drawdown from groundwater abstraction (options are not yet finalised) and dust deposition associated with site disturbance and excavation activities during the construction of the BLNG Precinct. Dust generation is likely to be more pronounced during construction rather than during operations. Dust deposition on vegetation surrounding site clearing and construction areas has the potential to reduce flora and vegetation health and condition, with impacts likely to be restricted to the immediate area surrounding clearing and earthwork locations. It is expected that the impact on flora and vegetation from dust deposition and localised drawdown of groundwater can be mitigated by measures such as industry practice dust control measures and the requirement for groundwater licences. With the implementation of management measures, the potential additive impacts from site disturbance and excavation on flora and vegetation of the James Price Point coastal area will not be significant.</p> <p>Terrestrial discharges, including non-routine discharges such as leaks, spills or the incorrect disposal of chemicals, hydrocarbons or wastes, have the potential to cause deterioration in plant and vegetation health and condition due to toxic effects. Non-routine discharges could occur during construction and operational phases, however, a Hydrocarbon and Chemical Spill Contingency Plan and Draft BLNG Precinct Emergency Response Strategy will be implemented to minimise, contain and rectify any non-routine discharges and reduce adverse impacts to flora and vegetation. It is expected that potential impacts on flora and vegetation from terrestrial wastes and discharges will be minor following the implementation of appropriate management and mitigation measures.</p> <p>The current frequent fire regime on the Dampier Peninsula is considered to be having a negative impact on all vegetation types. The introduction of a Draft BLNG Precinct Surrounds Fire Management Strategy, in conjunction with other strategies designed to monitor and manage threats to conservation significant vegetation communities, is likely to result in a reduction of frequent high intensity fires and has the potential to result in improvements to the condition of vegetation communities, such as monsoon vine thicket. It is expected that altered fire regimes arising from development activities that may impact terrestrial flora and vegetation in the vicinity of the BLNG Precinct can be mitigated through the implementation of a managed fire regime in areas around the Precinct, including the application of low intensity prescribed burning.</p> <p>The additive impacts of these key aspects and the associated management measures could potentially result in an increase in vegetation health and condition, and maintenance or reduction in weed species in the James Price Point coastal area.</p> <p>Significant vegetation communities: Some clearing of the monsoon vine thickets (MVT) and coastal community vegetation will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline. Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the foredunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the</p> | <p>The dominant aspects during concurrent activities that will cumulatively impact flora and vegetation are clearing activities, site disturbance and excavation, introduced flora pests and groundwater abstraction. The likely peak impact period of these concurrent aspects is from Q3 of year one to Q2 of year four. Impacts associated with these aspects will be concentrated in the vicinity of the industrial block and shore crossing of the BLNG Precinct.</p> <p>Loss or disturbance of general flora species or vegetation communities is a likely cumulative result of these activities. Disturbance of conservation significant species or communities and a reduction in vegetation health and condition are also possible cumulative impacts through direct and indirect means. Changes in surface water flows as a result of construction activities may add to the cumulative impact to vegetation health and condition. The implementation of appropriate management measures will mitigate significant impacts to flora and vegetation.</p> <p>The introduction or further spread of existing weeds has the potential to impact flora and vegetation, and ultimately ecosystem integrity, during the peak impact period identified above. However, the implementation of appropriate management and mitigation measures will mitigate significant impacts to this factor.</p> <p>Terrestrial discharges and an altered fire regime have the potential to impact flora and vegetation in the same area during the same time period. Physical presence will cause impacts later in the construction timeframe. However, it is considered that management and mitigation measures will reduce the risk of potential impacts associated with these aspects and will therefore not significantly increase cumulative impacts to flora and vegetation.</p> |
| | Groundwater abstraction | Groundwater abstraction activities as required and approved for construction and/or operational water supply | Not defined | | |
| | Dust emissions | Vegetation clearing, earthworks, vehicle movements | Q3 of Year 1 to Q4 of Year three | | |
| | Introduced flora pests | Vehicle movements, vegetation clearing, earthworks | Q2 of Year one to Q1 of Year two and Q2 of Year three to Q1 of Year four | | |
| | Altered fire regime | Vegetation clearing, vehicle movements, construction of terrestrial infrastructure, operation of BLNG Precinct | N/A | | |
| | Physical presence of infrastructure | Construction of terrestrial infrastructure, operation of BLNG Precinct | From Q4 of Year two | | |
| | Site disturbance and excavation | Construction of terrestrial infrastructure | Q2 of Year one to Q4 of Year three | | |
| | Terrestrial discharges and spills | Construction of terrestrial infrastructure, operation of BLNG Precinct | Q2 of Year 1 to Q4 of Year 3 | | |

| | | | | | |
|--|--|--|--|--|--|
| | | | | <p>Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain. The physical presence of the BLNG Precinct has the potential to indirectly impact on remaining areas of significant vegetation communities through altering of surface water flows, particularly the monsoon vine thicket and drainage basin vegetation. Significant vegetation communities may also be impacted by the spread or introduction of weed species caused by increased vehicle and machinery movements. However, as discussed above, the implementation of appropriate management and mitigation measures are likely to maintain or reduce the incidence of weed species and potentially improve the quality of vegetation communities in the James Price Point coastal area, including monsoon vine thicket. It is unlikely that additive impacts associated with the construction and operation of the BLNG Precinct, with implementation of appropriate mitigation measures, will significantly impact on significant communities as any disturbance will be localised. The high conservation significant vegetation communities of monsoon vine thickets and drainage basin may also be indirectly impacted by groundwater drawdown from abstraction activities, with the impacts described below.</p> <p>Groundwater and surface water dependant vegetation: Proposed groundwater abstraction will cause localised drawdown of the water table, which could affect phreatophytic vegetation, such as the monsoon vine thicket and drainage basin communities. Long term abstraction may have an impact on the condition and health of groundwater dependent ecosystems within the James Price Point coastal area, if not appropriately managed. It is expected that the potential impacts to terrestrial flora and vegetation due to groundwater abstraction can be successfully mitigated by the application of management and mitigation measures which will be detailed in a Groundwater Management Abstraction Plan such as appropriate design and location of borefields and monitoring potential impacts, as managed under the <i>Rights in Water Irrigation Act (RIWI Act)</i> to meet requirements of the Department of Water.</p> <p>The physical presence of the BLNG Precinct also has the potential to affect surface and groundwater flows to superficial aquifers which may occur in association with the coastal dunal system and, along with seasonal surface water flows, may be responsible for supporting monsoon vine thicket and drainage basin communities. It is expected that alterations to natural surface water flow regimes, which may result from the physical presence of infrastructure within the BLNG Precinct, can be mitigated by the application of mitigation measures which will be detailed in an Ecological Surface Water Requirements Management Plan such as engineering to maintain surface flows to areas where flows are obstructed where practicable.</p> <p>Priority flora: Vegetation clearing associated with site preparation will result in the loss of some Priority flora individuals. Clearing will be kept to a minimum area and impacts on the populations of Priority flora in the James Price Point coastal area will not be significant. Priority flora surrounding the BLNG Precinct may also be impacted by the potential additive impacts from site disturbance and excavation described above, in particular by the spread or introduction of weed species.</p> | |
|--|--|--|--|--|--|

Terrestrial Fauna

The principle cumulative impacts to terrestrial fauna from the BLNG Precinct are likely to arise from site preparation, clearing of supporting habitat and services establishment for terrestrial infrastructure, including construction of workers accommodation and the shore crossing. The below causal linkage diagram (**Figure A8.8 'Causal Link Diagram – Terrestrial Fauna'**), derived from the SAR, shows activities associated with key aspects and the potential impacts on terrestrial fauna. This information, along with peak impact periods for each aspect, identified from the schedule (**Figure A8.3 'Generic Sequencing for Marine and Terrestrial Development Activities'**) is summarised in **Table A8.6 'Summary Cumulative Impacts – Terrestrial Fauna'**.

Figure A8.8 Causal Link Diagram – Terrestrial Fauna

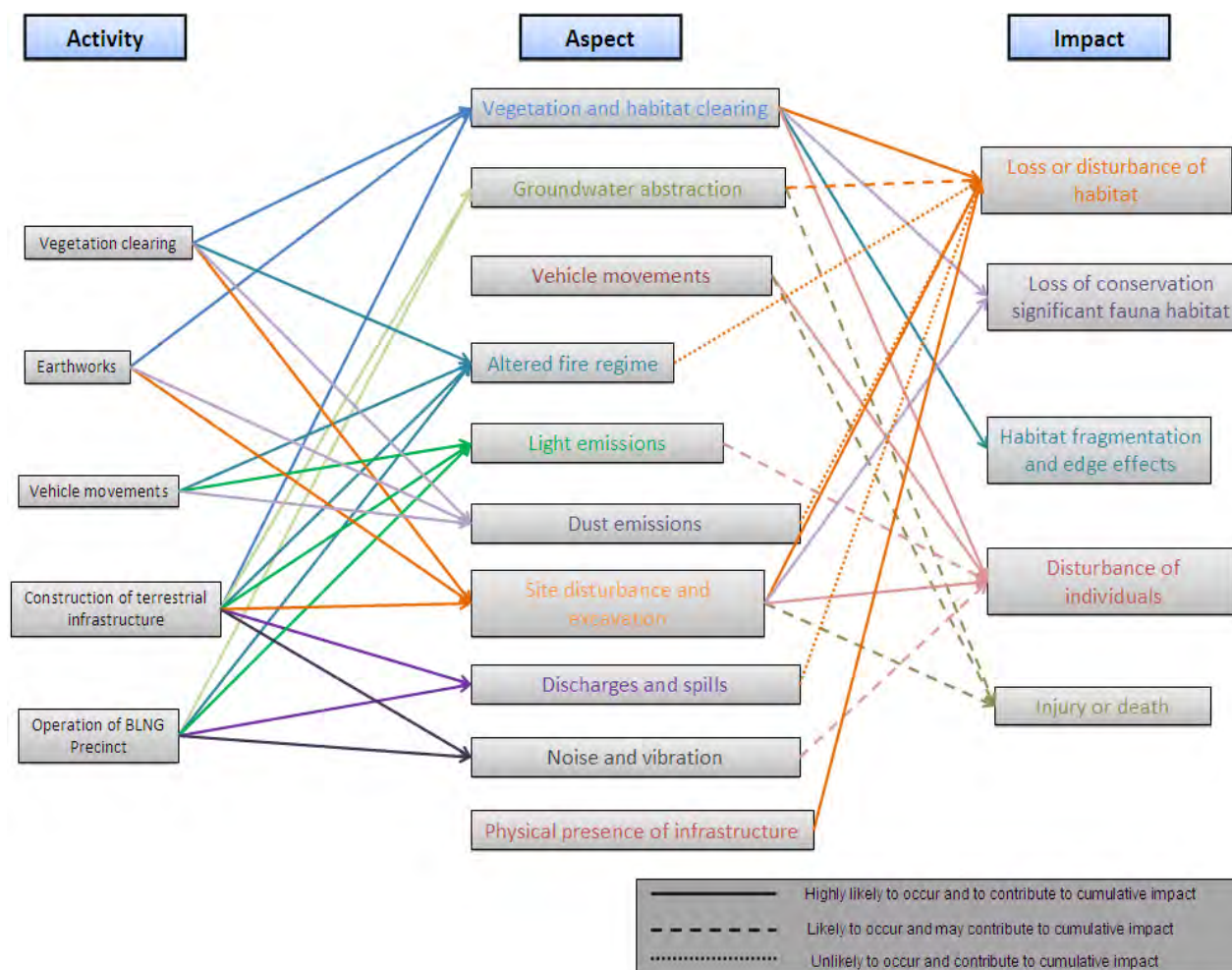


Table A8.6 Summary Cumulative Impacts – Terrestrial Fauna

| Factor | Key Aspects | Activities | Likely peak impact period | Overview of potential additive effects and management response | Cumulative impact summary |
|-------------------|-------------------------------------|--|------------------------------------|--|--|
| Terrestrial Fauna | Vegetation and habitat clearing | Earthworks, construction of terrestrial infrastructure | Q2 of Year one to Q2 of Year two | <p>General: Construction and excavation activities associated with the BLNG Precinct, light industrial area, workers accommodation, pipeline corridors and ancillary infrastructure have the potential to impact terrestrial fauna. Vegetation clearing and earthworks have the potential to cause direct mortality or injury to fauna as they may become trapped in excavation trenches or come into contact with heavy machinery associated with the construction areas. Pre-clearance surveys conducted prior to clearing and the establishment of work areas will limit potential impacts to only transient individual fauna species. While injury or death to some fauna species, including those of conservation significance, is possible it is unlikely that these would place a local population of the species at risk. An increase in vehicle movement associated with construction and operation of the BLNG Precinct may result in fauna mortality or injury. It is expected that the potential impacts to terrestrial fauna will be managed through the implementation of appropriate management and mitigation measures as detailed in the Fauna Management Plan.</p> <p>The most significant contributing sources of noise and vibration during construction of facilities for the Precinct are expected to be pile driving and blasting, whilst the intermittent discharge of gas from the gas flare is expected to be the dominant source of noise during operations. Fauna considered at most risk of noise and vibration effects generally include mammals and birds. It is considered likely that fauna may exhibit short-term displacement caused by infrequent loud noises associated with the BLNG Precinct, but they usually return when noise levels return to normal. Furthermore, many fauna species usually become habituated after repeated exposure to noise. Slight changes to local faunal assemblages and abundance may result from noise effects, but is unlikely to constitute a significant impact. Vibration effects from blasting during construction may have physiological effects on fauna in the immediate vicinity of construction works. This may result in individual fauna deaths, or reproductive consequences such as marsupials ejecting their pouch young. This would not be expected to decrease the viability of local populations and is unlikely to constitute a significant impact, given the short term and localised nature of potential impact together with the behavioural response to avoid the area and implementation of other management measures.</p> <p>Light emissions associated with the BLNG Precinct have the potential to further disrupt fauna behaviour, particularly mammals and avifauna. Light sources may attract insect predators such as birds and bats through the attraction and concentration of insects in localised well-lit areas. This potentially places species at risk to other hazards associated with the project, such as vehicle strike and gas flares. Light emissions also have the potential to disturb fauna, predominantly mammals and nesting birds, from habitat within the vicinity of the BLNG Precinct site resulting in a local decrease in fauna abundance. Any potential impact on terrestrial fauna species due to light emissions is expected to be restricted to the BLNG Precinct site and the immediate area. The potential consequence of lighting is expected to be only a minor impact on a small portion of the population resulting from minor and temporary behavioural disruption and therefore no threat to the overall population viability is likely. Light emissions will be managed and mitigated through the implementation of a Visual Amenity Management Plan. The impact of light emissions will, however, occur concurrently with other key aspects such as vegetation clearing, noise and vibration and vehicle movements.</p> <p>Non-routine discharges, such as hydrocarbon and chemical spills or leaks, into the terrestrial environment may detrimentally affect vegetation communities, surface water and groundwater and ultimately result in direct poisoning of fauna or the restriction of habitat for terrestrial fauna species. Non-routine discharges are unlikely, however, spill response procedures and a Hydrocarbon and Chemical Spill Contingency Plan will be implemented to minimise, contain and rectify any non-routine discharges and reduce adverse impacts to fauna habitat. It is expected that potential impacts from non-routine discharges into the terrestrial environment can be minimised through the application of management measures detailed in the Hydrocarbon and Chemical Spill Contingency Plan, such as spill response procedures.</p> <p>Fauna habitat: Vegetation and habitat clearing will occur as a result of site preparation in association with the BLNG Precinct, light industrial area, workers accommodation, pipeline corridors and ancillary infrastructure. This will result in a direct loss of fauna habitat, including that of conservation significance such as the monsoon vine thickets, and may result in fauna dispersal as a result of habitat fragmentation.</p> <p>Indirect effects may occur within nearby habitats from increased competition, lack of vacant niches and the increased densities may cause greater predation. Fauna habitat may also be impacted by dust deposition and groundwater abstraction leading to reduced vegetation health and condition, as discussed in Table 5. The physical presence of the</p> | <p>The dominant aspects during concurrent activities that will cumulatively impact terrestrial fauna are vegetation and habitat clearing, site disturbance and excavation, vehicle movements, and noise and vibration. The likely peak impact period of these aspects is from Q3 of year one to Q2 of year four. Impacts associated with these aspects will be primarily concentrated in the vicinity of the BLNG Precinct industrial area and shore crossing.</p> <p>Terrestrial discharges, an altered fire regime, dust and light emissions, and the physical presence of infrastructure have the potential to impact terrestrial fauna in the same area during the same time period. However, it is considered that management and mitigation measures will reduce the risk of potential impacts associated with these aspects and so will not significantly increase cumulative impacts to fauna.</p> <p>Terrestrial fauna are likely to experience cumulative impacts including behavioural disturbance and a loss or reduction in habitat in the James Price Point coastal area. Following the implementation of appropriate management and mitigation measures, these impacts are unlikely to have a significant impact on fauna populations in a regional context. Physical injury and mortality may occur in some locations as a result of cumulative activities, however it is also unlikely to have a significant impact on terrestrial fauna populations. Behavioural avoidance associated with noise and vibration from construction activities and the planned management measures to be implemented will mitigate impacts to terrestrial fauna during concurrent activities.</p> |
| | Groundwater abstraction | Groundwater abstraction activities as required and approved for construction and/or operational water supply | Not defined | | |
| | Altered fire regime | Vegetation clearing, vehicle movements, construction of terrestrial infrastructure, operation of BLNG Precinct | N/A | | |
| | Physical presence of infrastructure | Construction of terrestrial infrastructure, operation of BLNG Precinct | From Q4 of Year two | | |
| | Site disturbance and excavation | Construction of terrestrial infrastructure | Q2 of Year one to Q4 of Year three | | |
| | Terrestrial discharges and spills | Construction of terrestrial infrastructure, operation of BLNG Precinct | Q2 of Year 1 to Q4 of Year 3 | | |
| | Vehicle movements | Earthworks, construction of terrestrial infrastructure, operation of BLNG Precinct | Q2 of Year one to Q2 of Year four | | |
| | Light emissions | Vehicle movements, construction of terrestrial infrastructure, operation of BLNG Precinct | From Q4 of Year two | | |
| | Dust emissions | Vegetation clearing, earthworks, vehicle movements | Q3 of Year 1 to Q4 of Year three | | |
| | Noise and vibration | Earthworks, vehicle movements, construction of | Q2 of Year one to Q2 of Year four | | |

| | | | | | |
|--|--|--|--|---|--|
| | | terrestrial infrastructure, operation of BLNG Precinct | | <p>BLNG Precinct and subsequent alterations to natural surface water flow regimes has the potential to degrade fauna habitats sensitive to surface water flows due to the creation of drainage shadow effects and localised flooding or ponding. These potential impacts will be managed through the implementation of a Groundwater Abstraction Management Plan and Ecological Surface Water Requirements Management Plan.</p> <p>Impacts to fauna habitat associated with the BLNG Precinct are considered unlikely to have a significant impact on the populations of species within the area as the potential habitat to be retained within the James Price Point coastal would be sufficient to continue to support local populations.</p> <p>Species of conservation significance: Conservation significant fauna species have the potential to be impacted by the same factors as discussed above. The majority of conservation significant fauna species under consideration have broad habitat requirements and are likely to occur elsewhere on the Dampier Peninsula.</p> <p>Migratory birds: The removal of nearshore and coastal habitat associated with the construction of the BLNG Precinct shore crossing and pipeline corridors is unlikely to have a significant impact on migratory bird species. Although the James Price Point area does provide habitat for a range of migratory shorebird species the area supports relatively low numbers of migratory shorebirds in comparison to other sites on or near the Dampier Peninsula, such as Roebuck Bay and Eighty Mile Beach. Regionally, the James Price Point coastal area is considered to be relatively insignificant as a summer feeding site for migratory shorebirds, compared to Eighty Mile Beach and Roebuck Bay. In addition, the habitat types in the James Price Point coastal area are well represented on the Dampier Peninsula and as such, it is unlikely, that the area includes any regionally significant habitat for migratory bird species. Hence, the area is unlikely to host any regionally significant populations of migratory birds showing a preference for these habitats.</p> <p>Light emissions from the BLNG Precinct are considered unlikely to impact the nearest significant area for migratory birds, Ramsar wetland at Roebuck Bay, as the site is located greater than 60km away.</p> | |
|--|--|--|--|---|--|

Government of Western Australia
Department of State Development
Level 6, 1 Adelaide Terrace
East Perth, Western Australia 6004
Tel: +61 8 9222 0555
Fax: +61 8 9222 0505
Email: browseLNG@dsd.wa.gov.au
Web: www.dsd.wa.gov.au/browseLNG