



Browse LNG Precinct



Browse Liquefied Natural Gas Precinct Strategic Assessment Report

(Draft for Public Review)
December 2010

Appendix A-3

Appendices to the Scope of the Strategic Assessment,
Including the
State-Commonwealth Terms of Reference
for the Strategic Assessment

Appendix A :
State-Cwth Terms of Reference for the
Strategic Assessment



**ENVIRONMENT PROTECTION AND BIODIVERSITY
CONSERVATION ACT 1999**
Part 10 Strategic Assessments
Section 146 (1) Agreement

Relating to the assessment of the impacts of actions under the Plan for the Browse Basin Common-
User Liquefied Natural Gas Hub Precinct and associated activities

between

**THE MINISTER FOR THE ENVIRONMENT, HERITAGE AND THE ARTS ON BEHALF OF THE
AUSTRALIAN GOVERNMENT**

and

**THE WESTERN AUSTRALIAN MINISTER FOR STATE DEVELOPMENT AND THE WESTERN
AUSTRALIAN MINISTER FOR THE ENVIRONMENT AND CLIMATE CHANGE ON BEHALF OF THE
WESTERN AUSTRALIAN GOVERNMENT**

1 PARTIES

This is an agreement between:

The Australian Government Minister for the Environment, Heritage and the Arts (Minister) on behalf of the Australian Government

and

The Western Australian Minister for State Development and the Western Australian Minister for the Environment and Climate Change (WA Ministers) on behalf of the Western Australian Government.

2 DEFINITIONS

- 2.1 *Working days* means a business day as measured in Canberra, ACT.
- 2.2 *Browse Basin Liquefied Natural Gas Common-User Hub Precinct* (the Precinct) means an area of land suitable for development of gas processing infrastructure, gas storage and port facilities and associated activities.
- 2.3 *Plan* means the Plan for a Common-User Liquefied Natural Gas Hub Precinct and its associated activities.
- 2.4 *LNG* means Liquefied Natural Gas.
- 2.5 *EPBC Act* means the *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)*.
- 2.6 *EP Act* means the *Environmental Protection Act 1986 (Western Australia)*.
- 2.7 *EPA* means the Environmental Protection Authority (Western Australia).
- 2.8 *Environment* means environment as defined in section 528 of the EPBC Act. Note this definition includes heritage values.
- 2.9 Unless stated otherwise within this agreement, the definitions, meanings and terms in the *Environment Protection and Biodiversity Conservation Act 1999* apply to this agreement and its attachments.

3 PREAMBLE

- 3.1 The Western Australian Government and the Australian Government recognise that the Kimberley Region of Western Australia (as generally identified in Map 1) has significant environmental and heritage values as well as significant economic potential in relation to the extraction and processing of LNG from the Browse Basin.
- 3.2 Both Governments commit to undertake an assessment under section 146 of the EPBC Act, of a Plan for a Common-User Liquefied Natural Gas Hub Precinct and its associated activities, and recognise the requirements for assessment under s38 of the EP Act. To ensure the best sustainable and timely outcome, assessment of the plan will be undertaken concurrently through a coordinated and collaborative process, producing a set of reports that meet the requirements of both the EPBC Act and EP Act. The Plan will promote ecologically sustainable development and provide for the protection and conservation of the environment, especially matters of National Environmental Significance.
- 3.3 The parties agree that their Departments will share information and work collaboratively on the analysis of the environmental issues associated with the hub. Subject to a separate agreement, the parties will provide funding in relation to implementation of this agreement.

4 BACKGROUND

- 4.1 Section 146(1) of the EPBC Act allows the Minister to agree in writing with a person responsible for the adoption or implementation of a policy, plan or program that an assessment be made of the impacts of actions under the policy, plan or program on a matter protected by a provision of Part 3 of the EPBC Act. This agreement provides for the assessment of impacts of actions under the Plan for a Common-User Liquefied Natural Gas Hub Precinct on all matters protected by Part 3 of the EPBC Act.
- 4.2 In accordance with section 146(1A) of the EPBC Act, WA Ministers request that the assessment provided for by this agreement will deal with the impacts of actions under the Plan on the environment generally, being impacts referred to in the Terms of Reference (other than impacts mentioned in clause 4.1) within the area identified in Map 2.
- 4.3 Section 38 of Division 1 of Part IV of the EP Act enables the EPA to carry out a Strategic Environmental Impact Assessment (SEIA) of proposals that it considers are likely to have a significant effect on the environment, where the proponent has requested a SEIA.
- 4.4 The EPA may develop Memoranda of Understanding or guidelines with decision-making authorities to provide guidance on the environmental impact assessment of proposals under Division 1 of Part IV of the Act.
- 4.5 It is intended under this agreement that an assessment will be undertaken in accordance with the approved Terms of Reference of this agreement, to meet the requirements of both the EPBC Act and the EP Act.
- 4.6 In addition to the strategic assessment of the Plan the parties to this agreement have collaborated in the development of the draft site selection criteria (Attachment A) to cover all relevant matters, including particularly matters of National Environmental Significance. The process for selection of the Precinct will consider feasible alternatives to locations of the Precinct outside of the Kimberley Region. The parties to this agreement agree to finalise the criteria following further consultations.
- 4.7 Further to the strategic assessment of the Plan, this agreement acknowledges the outstanding natural, Indigenous and historic heritage values of the region. The parties agree to immediately commence a formal assessment of the National Heritage (and potentially international heritage) values in accordance with the requirements set out in the EPBC Act and as part of a strategic assessment of broader land use development within the Kimberley Region, as generally identified in Map 1. Regular progress reports will be provided to the parties. It is anticipated that this assessment will be completed within 2 years of signing this Agreement.

5 TERMS OF REFERENCE

- 5.1 The Western Australian Government shall as soon as possible seek public comment on the Draft Terms of Reference (Attachment B) for the preparation of a report on the impacts of actions under the Plan.
- 5.2 The Western Australian Government shall provide the Draft Terms of Reference for public comment by Notice:
 - a) posted on the Western Australian Government's website; and
 - b) published in a newspaper(s) circulating nationally, in Western Australia, and locally in the Kimberley region.

The Notice must advise that the Draft Terms of Reference is available and how copies may be obtained, provide contact details, invite public comments on the Draft Terms of Reference and set a period of 28 days within which comments must be received.

- 5.3 The Western Australian Government and Australian Government Department of the Environment, Water, Heritage and the Arts may each notify specific interested parties of the Notice and of the availability of the Draft Terms of Reference. The Western Australian Government and Australian Government Department of the Environment, Water, Heritage and the Arts will make copies of the Notice and Draft Terms of Reference available electronically through their websites.

5.4 Following the consideration of public comments on the Draft Terms of Reference the Western Australian Government will provide Revised Terms of Reference to the Minister.

5.5 The Minister shall as soon as possible either:

- a) notify the Western Australian Government that the Revised Terms of Reference are satisfactory; or
- b) if not satisfied that the Revised Terms of Reference will provide for an adequate assessment of the impacts of the actions under the Plan, the Minister will:
 - (i) notify the Western Australian Government of his concerns and provide an opportunity for the Western Australian Government to respond and provide further Revised Terms of Reference which take those concerns into account; and
 - (ii) within 15 working days of receipt of the further Revised Terms of Reference, mentioned in (i) above, either:
 - (A) notify the Western Australian Government of his acceptance of the Revised Terms of Reference; or
 - (B) provide Terms of Reference further amended to meet his requirements.

6 PREPARATION OF REPORT

DRAFT REPORT

- 6.1 The Western Australian Government will as soon as possible after agreement on the Terms of Reference cause a Draft Report to be prepared in accordance with the approved Terms of Reference (as in accordance with clause 5).
- 6.2 The parties will agree on a work program and methodology to ensure the Draft Report delivers on its objectives and achieves broad based scientific and community support for the selected location.
- 6.3 The Western Australian Government shall provide the Draft Report for public comment by Notice:
 - a) posted on the Western Australian Government's website; and
 - b) published in a newspaper(s) circulating nationally, in Western Australia, and locally in the Kimberley region.

The Notice must advise that the Draft Report is available and how copies may be obtained, provide contact details, invite public comments on the Draft Report and set a period of 28 days within which comments must be received.

- 6.4 The Western Australian Government and Australian Government Department of the Environment, Water, Heritage, and the Arts may each notify specific interested parties of the Notice and of the availability of the Draft Report. The Western Australian Government and Australian Government Department of the Environment, Water, Heritage and the Arts will make copies of the Notice and Draft Report available electronically through their websites.

COLLATION AND ASSESSMENT OF PUBLIC COMMENTS

- 6.5 If possible, within 60 days of the closure of the public comment period, the Western Australian Government will prepare an amended Draft Report, or a Supplementary Report to the Draft Report, taking account of the comments received.

7 MINISTERIAL CONSIDERATION

7.1 The WA Government will submit to the Minister:

- a) the Final Report, which must comprise of either the amended Draft Report or the Draft Report and a Supplementary Report as referred to in clause 6.5 above;
- b) the Plan;
- c) public responses relating to the Draft report; and
- d) comments on how the public responses have been taken into account in the Final Report.

7.2 In accordance with section 146 of the EPBC Act, the Minister will consider the Final Report on impacts of actions under the Plan. Attachment C outlines what the Minister will consider when deciding whether to make an endorsement of the Plan.

7.3 If not satisfied that the Plan will adequately address the impacts of the actions to which the Agreement relates:

- a) The Minister will make recommendations to the WA Ministers about the management arrangements for the Precinct, including recommendations for its modification.
- b) The Western Australian Government will consult with the Australian Government Department of the Environment, Water, Heritage and the Arts on the recommendations made by the Minister, including those for modification of the Plan, and will take those recommendations into account in amending or modifying the Plan.
- c) Where it considers it necessary, the Western Australian Government may provide to the Minister a proposed response on particular recommendations, which in its view require clarification, or where the Western Australian Government has formed a view that it may not be practicable or reasonable to implement the recommendation.
- d) The Western Australian Government will provide to the Minister the revised Plan and a summary of the way in which recommendations have been addressed, the required modifications have been made, or in which modifications having the same effect have been made.
- e) The Minister will consider the revised Plan and supporting material and may either accept it or request further modifications if not satisfied that it addresses adequately the impacts of the actions to which the agreement relates.


7.4 If satisfied that the Final Report adequately addresses the impacts to which the agreement relates, and that any recommended modifications of the Plan or modifications having the same effect have been made, and the requirements set out in Attachment C are met the Minister will endorse the Plan.

8 VARIATION

8.1 The parties may vary this Agreement by an exchange of letters (including electronic communications) to the extent only that such variation is consistent with the provisions of the EPBC Act.

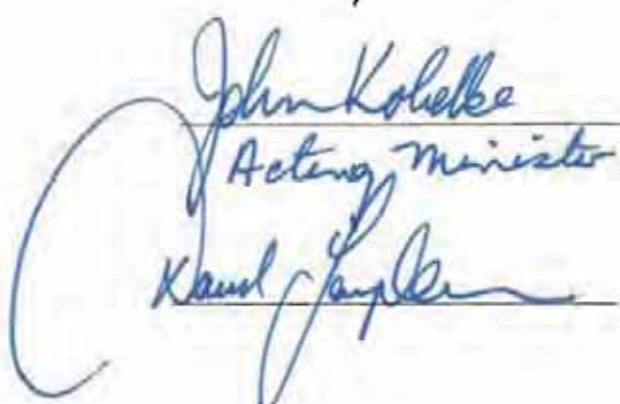
SIGNED BY:

The Honourable Peter Garrett AM MP
Minister for the Environment, Heritage and the Arts
(Australian Government)



Other Party

The Honourable Eric Ripper MLA
Treasurer; Minister for State Development
(Western Australia)



John Kollek
Acting Minister

The Honourable David Templeman MLA
Minister for the Environment; Climate Change
(Western Australia)



David Templeman

Dated this 6th day of February 2008

Attachment A: Site Selection Criteria					
Category			Definition/Description	Preliminary Objective	
Sub-cat A	Sub-cat B	Sub-cat C			
Environmental	Conservation Reserves/Marine Parks/Indigenous protected areas	Existing/recommended	Existing or Government recommended conservation reserves/IPA's	Avoid impacts on existing reserves/parks/IPA's. Seek to prioritise sites not proposed for future conservation reserves	
	Terrestrial Biophysical	Threatened Flora	EPBC Act/Wildlife Conservation Act listed. Acts also allow for newly identified taxon without formal status	Avoid, or mitigate impact . Avoid sites that would have significant impact	
		Threatened Fauna	EPBC Act/ Wildlife Conservation Act listed. Acts also allow for newly identified taxon without formal status, including migratory species subject to international agreements (Ramsar, JAMBA/CAMBA)	Seek to avoid or mitigate impact. Avoid sites that would have significant impact	
		Significant Ecological Communities	Threatened ecological community (EPBC Act or State listed) or found through site surveys	Seek to avoid or minimise impact on Threatened Ecological Communities. Avoid sites that would have significant impact	
			Presence of other ecological communities of high significance	Seek to avoid or mitigate impact. Avoid sites that would have significant impact	
			Site landform (geodiversity) and ecological/vegetation diversity	Seek to avoid or minimise impact on sites with high landform and ecological/vegetation diversity	
		Ecological Risk/Hazard	Quarantine Breaches, Weed/feral species, pathogens introduction	Seek to avoid or mitigate impact. Avoid sites that would be of risk of significant impact	
			Fire, Plant/Transport Accidents	Seek to avoid or mitigate impact. Avoid sites that would be of risk of significant impact	
		Culturally significant ecological communities and flora/fauna	Culturally significant to Aboriginal people	Seek to avoid or mitigate impact. Avoid sites that would be of risk of significant impact	
	Marine Biophysical	Coastal exposure to long period wave energy.	Sheltered coastal and shallow marine environments are more sensitive to disturbance because of low exposure to periodic disturbance from natural processes, typically slower recovery times and lower capacity to tolerate pollutants.	Seek to avoid impact on most sheltered /sensitive coastal and shallow marine environments. Classify as high, moderate, low exposure	
		Threatened Marine Fauna	EPBC Act/Wildlife Conservation Act listed species (especially endangered species such as Humpback Whales, Dugong, Turtle nesting beaches, Whale Shark), including migratory species subject to international agreements (JAMBA/CAMBA). Consider significance of impact (eg breeding, nursery, feeding, migration, resting), season of utilization and relative importance of the area	Seek to avoid high value sites. Identify sensitivities and ranking of sites and rationale for identified impacts and scope for possible mitigation strategies	
		Culturally significant ecological communities and marine flora and fauna	Culturally significant to Aboriginal people	Seek to avoid or mitigate impact. Avoid sites that would be of risk of significant impact	
		Significant Marine Benthic Primary producer Ecological Communities	Conservation value, Ecological value, Benthic Primary Producer Habitat. (e.g. Coral reef, Mangrove, Macro-algae, seagrass) (Coral loss, Coral mortality from dredging)	Seek to avoid or mitigate impact. Identify site sensitivities and rankings. Avoid significant impact sites.	
		Ecological Risk/Hazard Assessment (State waters)	Relative risk/hazard of Accidents, Spills, Quarantine breaches, exposure to/sensitivity to introduced marine pests etc.)	Seek to identify relative sensitivities of sites to risk/hazard and avoid sites with elevated risk/hazard. What is the relative significance of site surrounds including shipping and pipeline corridors	
		Dredging impacts	Marine Impacts: seasonality issues, sea dredge soil quantity, sea dumping requirements	Seek to avoid or mitigate impact. Identify site sensitivities and rankings. Avoid significant impact sites	
		Commonwealth Marine Environment	Consideration of significant impacts to the Commonwealth Marine Environment	Seek to identify relative sensitivities of sites to risk/hazard and avoid sites with elevated risk/hazard. What is the relative significance of site surrounds including shipping and pipeline corridors	
	Chemical and Physical	Light spill	Potential for significant impacts from illumination and light pollution	Seek to avoid, minimise or mitigate impacts of light pollution. Avoid sites that will impose significant light pollution / impact on turtles nesting beaches and other threatened fauna, apart from turtles	
		Location	Area of footprint, noise impacts on community/environment, obstruction through vessel movements	Seek to avoid or mitigate impact. Identify site sensitivities and rankings avoid significant impact sites	
		Stormwater management	Manage/treat stormwater on site, avoid uncontrolled discharge to sensitive environments	Avoid sites with limited capacity to manage stormwater on site	
		Greenhouse Gas Emissions (global impact) and other gaseous emissions (local impact)	Release to the atmosphere of in-gas CO2 and other gases related to gas processing of the overall operations of the Hub	Seek to avoid, minimise or mitigate release. Seek to avoid sites that would inhibit access to suitable geological storage locations should these be identified. Identify other CO2 management mechanisms	
	Landscape Assessment	Wilderness values	Large areas remote from and undisturbed by the influence of modern technological society. *Note wilderness refers to an area that is remote from and undisturbed by the influence of modern technological society and recognises that the land has been shaped by millennia of land management practices by Indigenous Australians.	Identify wilderness ecological and biophysical values and integrity of wilderness (degree of disturbance). Seek to avoid high value intact areas	
		Intactness	Degree to which location is part of intact landscape *note to be considered alongside Wilderness as a supplementary value	Seek to avoid sites that would impact significantly	
		Landscape Quality of immediate region surrounding the site including transport routes	Local - Subregional context inclusive of indigenous perceptions of landscape quality	Protect regions of highest landscape quality	
		Hub Site specific landscape significance	Quality, Rarity, Diversity of the Site inclusive of indigenous perceptions of quality	Prioritise sites of lower landscape quality	
		Natural Heritage	Areas with natural heritage values of national significance	Avoid impacts on sites with natural heritage values of national significance	
Fatal Flaw?					

Attachment A: Site Selection Criteria					
Category			Definition/Description	Preliminary Objective	
Sub-cat A	Sub-cat B	Sub-cat C			
Socio-economic / Community / Tourism	Public Perception	Interest Groups	e.g. NGOs, local business and community groups.	Respond to legitimate concerns through transparency of decision making	
		National and International Perspective	e.g. NGOs, business and community groups, media.	Respond to legitimate concerns through transparency of decision making	
		EPBC Act	Public Consultation process under strategic assessment of NES values (DEWHA)	Respond to legitimate concerns through transparency of decision making	
	Urban	Capacity	Ability to manage new influx of people in relation to housing, services and infrastructure.	The new influx should be integrated with the existing community	
		Proximity	Distance to accommodation and services	Seek to identify advantages and disadvantages of sites related to proximity to urban centres inclusive of consideration of fly in fly out options	
		Disruption	Such as to traffic, access to services, etc	Seek to avoid or mitigate impact. Rank sites according to sensitivity to impact	
	Community	Services	Medical, Education, Emergency Services, Police, Local Government, etc	Seek to access existing services if capable of supporting the project. Identify fly in/out option or potential for stand alone services	
		Health	Value to Community Health of non-industrialised environment	Seek to avoid or mitigate impact. Rank sites according to sensitivity to impact	
	Regional/local economic development	Local business	Positive and negative impact	Prioritise sites that can deliver positive impact or seek to mitigate significant negative impacts	
		Cost of living	Positive and negative impact	Prioritise sites that can deliver positive impact or seek to mitigate significant negative impacts	
		Indigenous Communities	Positive and negative impact	Prioritise sites that can deliver positive impact or seek to mitigate significant negative impacts	
		Availability of Labour	Employment of local residents	Seek sites that maximise opportunity for local employment	
	Land-/Marine Use	Recreation	Local, regional and international interests and their losses or inconvenience	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
		Industry	Obstruction or synergies with other industry operating in the area in particular Pearling, Fishing, Mining and Pastoral/Agricultural	Prioritise sites that can deliver positive impact or seek to mitigate negative impacts	
		Infrastructure	Physical infrastructure, e.g. rail, road, airport, electricity, water supply, telecommunications	Seek sites that require minimum of additional infrastructure	
		Marine use	Conflict with other shipping, commercial fishing activities, Tourism, Aquaculture, etc	Seek to avoid or minimise impact. Avoid sites or seek mitigation if there is likely to be significant impact	
	Cultural Heritage	Non-Indigenous	Significant site exhibiting aesthetic, historic, scientific and/or social characteristics valued by Western Australia and Australia	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
	Tenure	State Agreements	e.g. Koolan Island	Acknowledge legislative risks associated with areas covered by State agreements	
		Licenses	e.g. s.91 Land Administration Act	Seek to identify the sensitivities around locations covered by licensee	
		Leases	e.g. Pearling Lease, Pastoral Lease, etc.	Seek to identify the sensitivities around locations covered by lease	
	Security	Asset Protection	Exposure to asset security risks	Seek to avoid or minimise impact	
		Compliance International Port Security Legislation		Seek to optimise through site ranking.	
	Statutory Approvals Procedures	National Security / Interests	Potential threats to national security/interests	Seek to avoid or minimise potential exposure to threats	
		Planning	Requirement for planning approvals	Seek to identify complexity of planning approval issues related to each site	
	Tourism	Land Based	Commercial/Non-commercial ventures, Indigenous - Local, regional and international interests and their losses or inconvenience	Seek to avoid or minimise impact. Avoid sites that would have significant negative impact	
		Marine Based	Commercial ventures, Indigenous - Local, regional and international interests and their losses or inconvenience	Seek to avoid or minimise impact. Avoid sites that would have significant negative impact	

Attachment A: Site Selection Criteria					
Category			Definition/Description	Preliminary Objective	
Sub-cat A	Sub-cat B	Sub-cat C			
Industry / Site Technical Requirements	Location	Proximity to existing Infrastructure	e.g. Ports, airfields, towns	Seek to identify advantages or disadvantages of having site close to existing infrastructure and to reduce cost of infrastructure	
		Proximity of plant site to coastline	Reduce cryogenic pipe distance from LNG Plant to Loading Facility	Seek site close to coast and identify cost sensitivity	
		Port Suitability	Distance to navigable water for LNG carriers	Seek site close to coast with 10m+ deep water and identify cost sensitivity	
			Impact of metocean conditions, in particular currents and exposure to swell on offloading availability	Seek site with low current flows at port location	
		Proximity to gas fields	Close as possible for gas use efficiency	Minimise pipeline distance from field to processing site and identify cost sensitivity	
	Proximity to CO2 storage sites	Close as possible to potential storage sites	Minimise pipeline distance from processing site to CO2 storage site		
	Development	Safety	Emergency Evacuation/Risk Assessment	Seek site reduced cyclone risk and high evacuation potential	
		Site specific and Transport risks (land/air/marine)	Construction Phase	Seek to identify site risk sensitivities and seasonality issues prioritise low risk sites	
			Operational Phase	Seek to identify site risk sensitivities and seasonality issues prioritise low risk sites	
			Product and logistical requirements	Seek to identify site risk sensitivities and seasonality issues prioritise low risk sites	
	Physical Environment	Land area	Requirements for infrastructure hub development	Seek a hub site that can fully meet strategic requirements	
		Site Elevation	Relative to storm surge and gradient	Seek a site with low risk of storm surge damage	
		Pipeline Access	Marine and terrestrial suitability of environment for landing of offshore to onshore/onshore to offshore Gas and CO2 pipelines	Seek to identify site risk sensitivities and prioritise low risk sites	
		Site slope	<5 degrees at plant location	Seek to minimise site preparation and soil disturbance	
		Geotechnical Conditions	Geotechnically stable and relatively level site requiring limited terrestrial site and earthmoving requirements	Seek to rank sites according to suitability.	
	Bathymetry	Off shore Bathymetry	LNG tanker off shore navigation and suitable off shore bathymetry for pipeline access	Seek to rank sites according to suitability.	
Indigenous	Cultural Practice	Hunting, Gathering, Fishing	Areas of high value for maintenance of hunting, gathering and fishing by indigenous groups	Seek to avoid injury or desecration caused by inappropriate intrusions not sanctioned by traditional owners	
		Law/Lore Practices	Areas of high value for maintenance of Mythological/Ceremonial sites and traditional practice	Seek to avoid injury or desecration caused by inappropriate intrusions not sanctioned by traditional owners	
	Native Title	Nature and complexity of Tenure	Determined Claims, registered Claims, Represented and Unrepresented claims, Unclaimed Land	Seek to locate a site with the support and informed consent of traditional owners	
	Outstations and Leases	Rights to occupation	Existing outstations and leases	Seek to avoid, minimise or mitigate impact	
	Informed Consent	Traditional owners	Required by WA cabinet as precondition for site selection	Seek to identify site supported by traditional owners through their informed consent as ratified by the Native title tribunal	
	Cultural Heritage	Aesthetic	Significance in exhibiting particular aesthetic characteristics valued by the community	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
		Historic	Significance in the evolution or pattern of the history of Western Australia and Australia	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
		Scientific	Potential to yield information that will contribute to an understanding of the natural and cultural history of Western Australia	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
		Indigenous Environmental values	Value of the environment to indigenous people including ethno -biological significance	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
		Social	Significance through association with a community or cultural group for social, cultural, educational or spiritual reasons	Prioritise sites that can deliver positive impact or seek to mitigate significant negative impacts	
	Heritage Sites	DIA and Commonwealth Heritage sites (RNE,CHL,NHL)	Registered sites and those identified through site surveys or other traditional knowledge	Seek to avoid or minimise impact. Avoid sites that would have significant impact	
	Tenure	Reserves	e.g. Aboriginal Reserve	Seek to avoid reserve locations unless informed consent of traditional owners and support from local Aboriginal community to change of tenure	
Shortlist (y/n)?					

SITE SELECTION CRITERIA EVALUATION METHODOLOGY

The Site Selection Criteria (SSC) is constructed as a multivariate matrix intended to provide a means to compare the net impacts of the Gas Processing Hub on various short listed sites.

The criteria will be populated by the array of experts and working group participants assembled by the Northern Development Taskforce (NDT) and will draw upon both quantitative data and qualitative assessments.

It is not intended that the SSC alone will determine the preferred site but rather help inform the ranking of sites and identify potential cumulative impacts both negative and positive which may indicate a site is problematic or prospective.

Sites to be evaluated through this process have already been screened for basic technical viability reducing some 43 possible sites to 9. As a consequence of this preliminary assessment the SSC being applied are focused predominantly on environmental impacts, socio economic impacts and indigenous interests. The technical criteria will be used to establish the relative advantages and disadvantages of sites when considered for use as single operator sites, multi operator sites or as a processing Hub.

The SSC will be applied within the overall framework of the Strategic Assessment report which in turn responds to the Terms of Reference endorsed by the Commonwealth Environment Minister and the State Environment Minister related to the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and *Environmental Protection Act 1986* (WA) respectively.

It is envisaged that most criteria will be both quantitatively and qualitatively assessed and the results compiled within the Strategic Assessment report or other referenced documents.

The use of the matrix as a decision making tool will be limited to demonstrating the potential of cumulative impacts across a wide range of criteria and to assist with ranking prospective sites and will be supported by the creation of a GIS platform of underpinning data.

It can be identified that some criteria are of greater significance than others and should be weighted more heavily when undertaking comparative analysis.

It is also recognised that not all impacts can be quantified through available data. To overcome this the environmental and other working groups have developed complex sub criteria and the use of High, Medium and Low as indicators of potential impact risk to reflect the uncertainty of knowledge implicit in areas of the State that are remote and not fully studied. This process might see some groupings of criteria being assessed holistically rather than individually.

The SSC are intended to be used by groups with differing representation undertaking independent assessment of the criteria using the same data but bringing their own subjective assessments to the process. These groups will include the proposed Independent Assessment Group (made up of representatives nominated from each of the NDT working groups), the NDT itself, industry interests and the Traditional Owner Taskforce leading to a comparison of the outcome of each group's assessment and the identification of both a shortlist and a ranking of sites.

The assessing groups will participate in a three day seminar program where each working group inclusive of the environmental experts and traditional owners will present information on each of the sites relative to the SSC.

The NDT proposes that each selection criteria will be evaluated subjectively for potential advantage or disadvantage based on the available technical data and non technical information provided by the experts and interested parties incorporated within the NDT stakeholder process.

A six point relative scale will be used with three scales for disadvantage, Minor, Major and Significant, Neutral and two scales for advantage, Minor and Major.

It is recognised that a significant environmental or heritage value or major technical constraint issue may constitute a fatal flaw for any one site and the application of a fatal flaw evaluation on a critical criterion could potentially eliminate the site from further consideration. The application of Fatal Flaw analysis would need to be determined on a quantitative basis where possible, or a risk assessment basis with the reasonable application of the precautionary principle, where there is incomplete information.

The SSC evaluation and resulting ranking will be incorporated into the Strategic Assessment report and subject to public release and comment.

ooo000ooo

ATTACHMENT B

TERMS OF REFERENCE FOR STRATEGIC ASSESSMENT OF A PLAN FOR A COMMON-USER LIQUEFIED NATURAL GAS HUB PRECINCT TO SERVICE THE BROWSE BASIN GAS FIELD

The following Terms of Reference (ToR) provide the basis for a report, referred to in clause 6.1 of the Agreement, assessing the environmental, heritage and socio-economic impacts of actions under a Plan for a Browse Basin Common-User Liquefied Natural Gas (LNG) Hub Precinct and its associated activities, as defined in the Agreement. It is intended that this assessment report will satisfy the requirements of both the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *WA Environmental Protection Act 1986* (WA EP Act). A process diagram outlining the respective assessment processes is attached to these ToR.

1. Project Purpose

The Report must include a general description of the purpose that a Common-User LNG Hub (the Precinct) will serve, including the resources the Precinct will need to function, the actions or classes of actions likely to be undertaken, the scope of related activities, the estimated life of the Precinct, and the regional context in which the Precinct will operate.

2. Description of the Plan

The Report must include a detailed description of the Plan to which the Agreement relates, including (but not limited to):

- how the plan has been developed and its legal standing;
- identifying the person(s) or authority responsible for its adoption or implementation, and their jurisdiction;
- the legal structure under which owners, managers and users of the Precinct will participate in the Precinct;
- the basis of land/asset tenure;
- a description of the management arrangements required to ensure the Plan is implemented successfully; and
- identifying the actions or classes of actions that are a subject of the Plan, including the short, medium and long term aspects of the actions or classes of actions at or associated with the Precinct. These could include relevant construction, operational and decommissioning aspects as well as a comprehensive description of each type of development or facility comprising the Precinct and its associated infrastructure.

3. Project Focus

The Report must provide the rationale for the need to develop the Precinct. The Report must include an analysis of the impacts as they relate to the bio-physical, social and economic aspects of the development proposal associated with the development of the Precinct.

4. Short-Listing Process

The Report must include a copy of the finalised Site Selection Criteria, and a comprehensive description of how the proposed site(s) for the Precinct were identified including (but not limited to) consideration of:

- EPBC Act matters of National Environmental Significance (NES) (both current and identified as prospective, including likely National Heritage values);
- land tenure;
- stakeholder and public consultation;
- how the Site Selection Criteria were used in the shortlisting
- the independent verification of feasibility and technical or engineering constraints as identified by the oil and gas industry;
- regional environmental and social context and other relevant socio-economic matters inclusive of site security issues;
- An analysis of technically and economically viable gas processing options outside the Kimberley, focussing on locations that already have substantial industrial infrastructure, inclusive of floating LNG; and
- cultural heritage and Indigenous knowledge, and Indigenous aspirations.

5. The Environment Likely to be Affected

The Report must provide a detailed description of the environment likely to be affected by the Plan, the actions or classes of actions taken under the Plan including any associated infrastructure and construction and operational activities. This description must identify the environmental assets and characteristics, including biophysical processes associated with the site(s) selected in the Plan and the terrestrial and marine environments likely to be directly or indirectly impacted, for example:

- a) components of biodiversity including maintenance of important ecological processes recognising the potential importance of large intact areas in protecting and maintaining ecological processes;
- b) listed threatened species, other protected and significant taxa (EPBC Act or WA listed), and new, unnamed species or taxa;
- c) a description of ecological communities, with reference to Threatened Ecological Communities (EPBC Act or WA listed) or other significant ecological communities;
- d) a description given about how uncertainties will be treated in relation to the environment that will be affected;
- e) potential National Heritage values;
- f) any physical environmental drivers influencing the environmental characteristics of the site or surrounds, or influencing the potential impacts on the site or surrounds, including tidal regime, cyclonic and other severe weather conditions and coastal processes;
- g) any other environmental factors required to be described in the environmental impact assessment scoping document developed for the assessment under the EP Act; and

- h) Indigenous environmental values and Indigenous cultural heritage (environmental) values, including all values held by Traditional Owners in the area likely to be affected and including broader biological communities, habitats and environments in which species with Indigenous environmental/conservation values might live*.

6. Environmental Impacts

The Report must include an assessment of the potential impacts of the Plan, the actions or classes of actions taken under the Plan including any associated infrastructure, construction and operational activities on the environment including matters of NES and effects of the environment on the Plan.

In particular, the assessment must include:

- a) a description of the potential impacts of the Plan on the environment (including to the extent possible, information on the degree of confidence with which impacts can be predicted and quantified and any indirect impacts as defined by Section 527E of the EPBC Act);
- b) an assessment of the nature and extent of the likely impacts on the environment, including whether the impacts will be short or long term, at the local and/or regional scale and cumulative impacts;
- c) an assessment of the extent to which impacts on the environment are likely to be unknown, unpredictable or irreversible;
- d) an analysis of the significance of potential impacts on known (or prospective) matters of NES – with reference to the EPBC Act Policy Statement 1.1 Significant Impact Guidelines and other relevant guidelines or policy advice; and
- e) reference to the technical data (including traditional/Indigenous knowledge) and other information relied upon in assessing the environmental impacts of the Plan, including information collected and compiled to be consistent with the expectations of the Western Australian Environmental Protection Authority (WA EPA), including, but not limited to, that outlined in relevant position and guidance statements.

7. Indigenous Impacts

The Report must include a comprehensive analysis of the potential impacts of the Plan on Indigenous people and culture (including matters of NES and those prescribed under the *WA Aboriginal Heritage Act 1972* and the WA EP Act) that are likely to be directly or indirectly affected by the Plan.

In particular, the analysis must include:

- a) a description of the potential impacts, including socio-economic impacts, of the Plan on Indigenous people (including to the extent possible, information on the degree of confidence with which impacts and indirect impacts can be predicted and quantified) *;
- b) an assessment of whether any impacts on Indigenous people (including Indigenous heritage) are likely to be unknown, unpredictable or irreversible;
- c) an analysis of the significance of potential impacts on known listed and unlisted Aboriginal heritage sites, objects or landscapes and values of cultural

* Certain Indigenous information and knowledge provided as part of the assessment and consideration of approval for a Common-User LNG Hub will not necessarily be made available to the public

significance with reference to the *Aboriginal Heritage Act 1972*-section 5,6 and Indigenous Heritage values under the EPBC Act.

- d) reference to the technical data and other information relied upon in assessing the Indigenous heritage impacts of the Plan; and
- e) whether the Traditional Owners have given informed consent, in a culturally appropriate manner to the implementation of the Plan.

8. Proposed Management Arrangements for the LNG Precinct and associated activities

The Report must include a description of legislation, policies, performance and mitigation measures that are relevant to the implementation of the Plan, the actions and classes of actions undertaken under the Plan, to avoid, minimise, manage and mitigate the associated environmental and Indigenous impacts.

The Report must include information on any other requirements for approval that apply, or are likely to apply, in relation to the Plan including details of any Local or State Government planning scheme, or plan or policy under any Local or State Government planning system, or State or Commonwealth legislation, such as:

- a) what environmental assessment of the proposed project has been, or is being, carried out under the scheme, plan or policy;
- b) how the scheme, plan or policy provides for the prevention, minimisation and management of any relevant impacts;
- c) explicit clarification as to who is responsible for the proposed management arrangements;
- d) how the scheme will ensure that obligations contained in the *Aboriginal Heritage Act 1972* (WA) are met; and
- e) how to provide effective protection for places that can be considered under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

The Report must set out specific management arrangements, including the possible role of Traditional Owners in those arrangements. It must describe arrangements that will be in place under or associated with the Plan that are intended to ensure that development and operation of the Precinct and associated actions and classes of actions are undertaken in a manner designed to avoid impacts on significant environments, minimise environmental impacts generally and enable areas beyond the hub and port precinct to be maintained in an environmentally and an ecologically sustainable manner.

The report must also provide a description of the likely effectiveness of these management arrangements and how and to what extent they will meet endorsement criteria at Attachment C.

9. Proposed Safeguards and Mitigation Measures

The Report must identify and describe the specific measures intended to prevent, minimise and compensate for the potential environmental impacts of the Plan, and any measures to rehabilitate or offset damage to the environment. The Report must recognise and detail the role that Traditional Owners will play in these matters.

The Report should include an analysis of the expected or predicted effectiveness of these measures. The assessment should identify the basis (e.g. statutory or policy) for implementation of each measure and the agency or authority responsible for ensuring

implementation. The assessment must also identify how the relevant agency or authority will ensure compliance with these measures, and what steps will be taken in the event that environmental performance is other than anticipated.

The Report must also provide a description of how and to what extent these proposed safeguards, mitigation and offset measures will meet the endorsement criteria at Attachment C.

The Report must identify and describe the specific measures intended to avoid, minimise and mitigate for the potential environmental and Indigenous impacts of the Plan, and any measures to rehabilitate damage to the environment or impacts on Indigenous peoples' live, values, or culture.

The Report must also identify any program that is proposed to be put in place under the Plan to monitor and report on the proposed safeguards, mitigation and offset measures in the short and long term.

10. Information Sources

For information used in the assessment, the Report must state:

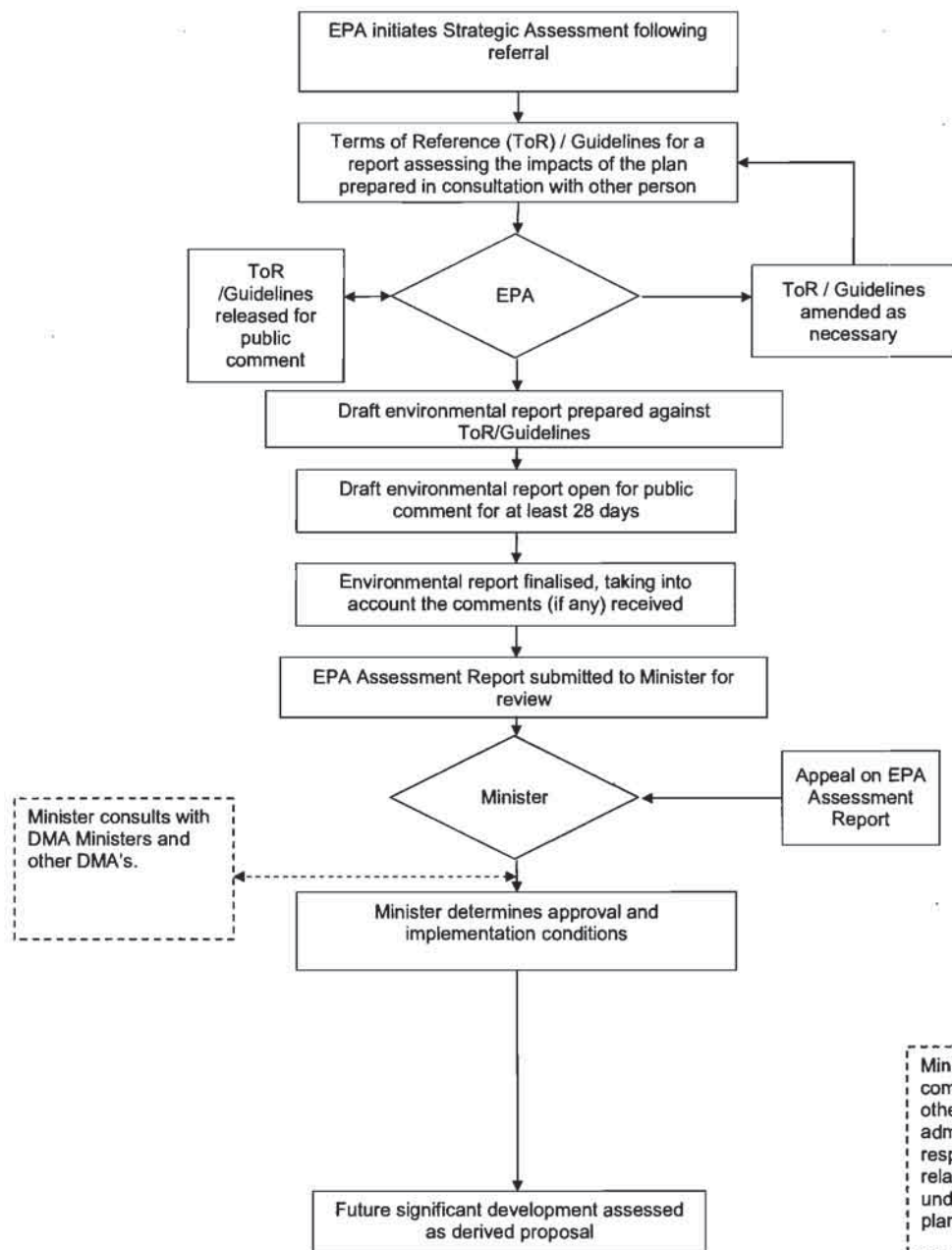
- a) the source of the information used in the assessment;
- b) how recent the information is;
- c) how the reliability of the information was tested; and
- d) what uncertainties (if any) are in the information.

11. Consultation

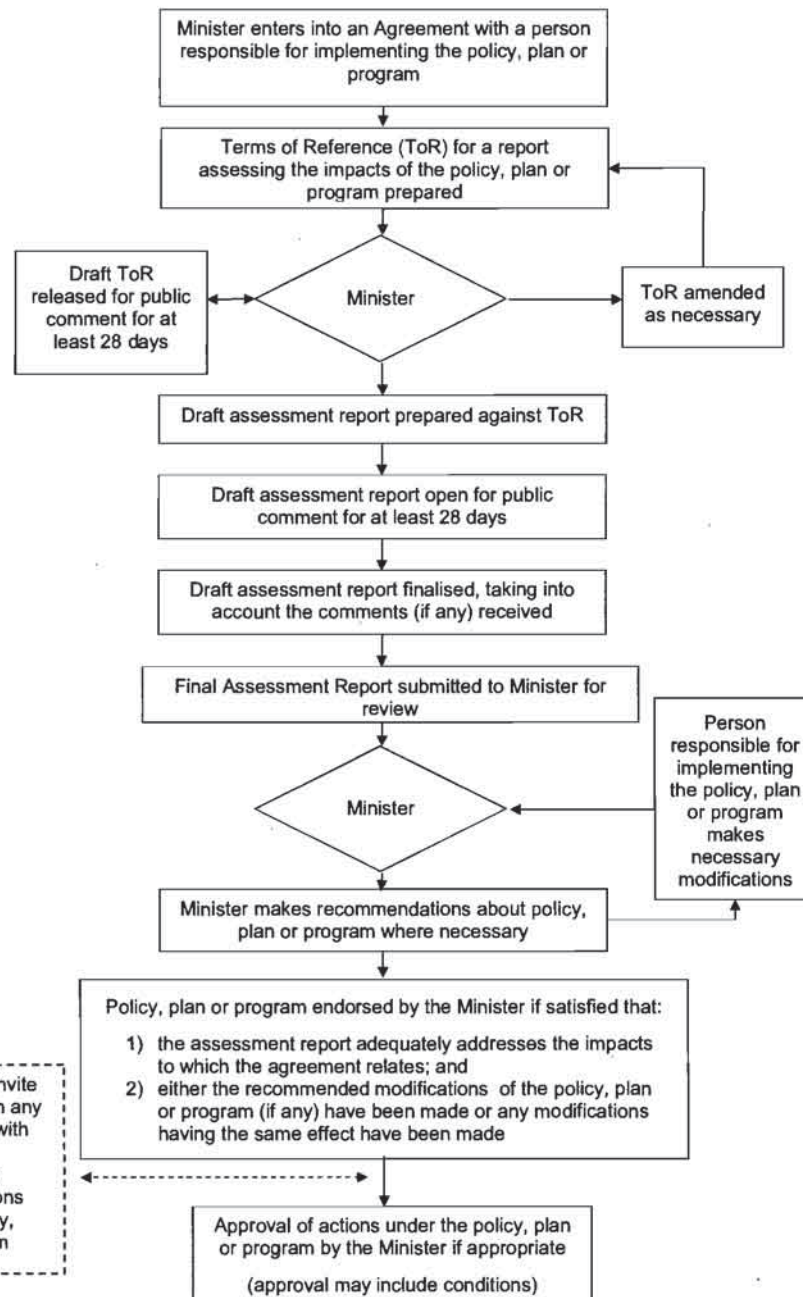
The Report must include any details of consultation, in addition to the statutory consultation, about the Plan, including:

- a) details of the consultation process for site selection including the public process and directed engagement with stakeholders, and the outcome of these consultations;
- b) any consultation that has already taken place, including with Indigenous communities;
- c) proposed consultation about relevant impacts of the action, including with Indigenous communities; and
- d) if there has been consultation about the proposed development, and if so, whether there is any documented response resulting from the consultation (including how the assessment and Report have addressed issues raised by the consultation).

EP Act – Flowchart of Strategic Assessment Process
For the Plan for the Browse Basin Common – User LNG Gas Hub Precinct



EPBC Act, Section 146 [Strategic Assessment (SA) Provisions]
Flowchart of SA Process for the Plan for the Browse Basin Common – User LNG Gas Hub Precinct



Attachment C

Strategic Assessment - Endorsement Criteria:

The EPBC Act permits the Australian Government Minister for the Environment, Heritage and the Arts to approve the taking of actions or classes of actions in accordance with an endorsed policy, plan or program (section 146B). The effect of such a decision is that the approved actions or classes of actions would not need further approval from the Minister under the EPBC Act.

When deciding whether to endorse a policy, plan, or program the Minister must be satisfied that the assessment report adequately addresses the impacts to which the agreement relates, and that any recommendations to modify the policy, plan or program have been responded to appropriately.

In determining whether or not to endorse the Plan the Minister will have regard to the extent to which the Plan meets the Objects of the EPBC Act. In particular, that it:

- protects the environment, especially matters of National Environmental Significance;
- promotes ecologically sustainable development;
- promotes the conservation of biodiversity; and
- provides for the protection and conservation of heritage.

Accordingly, the Plan should:

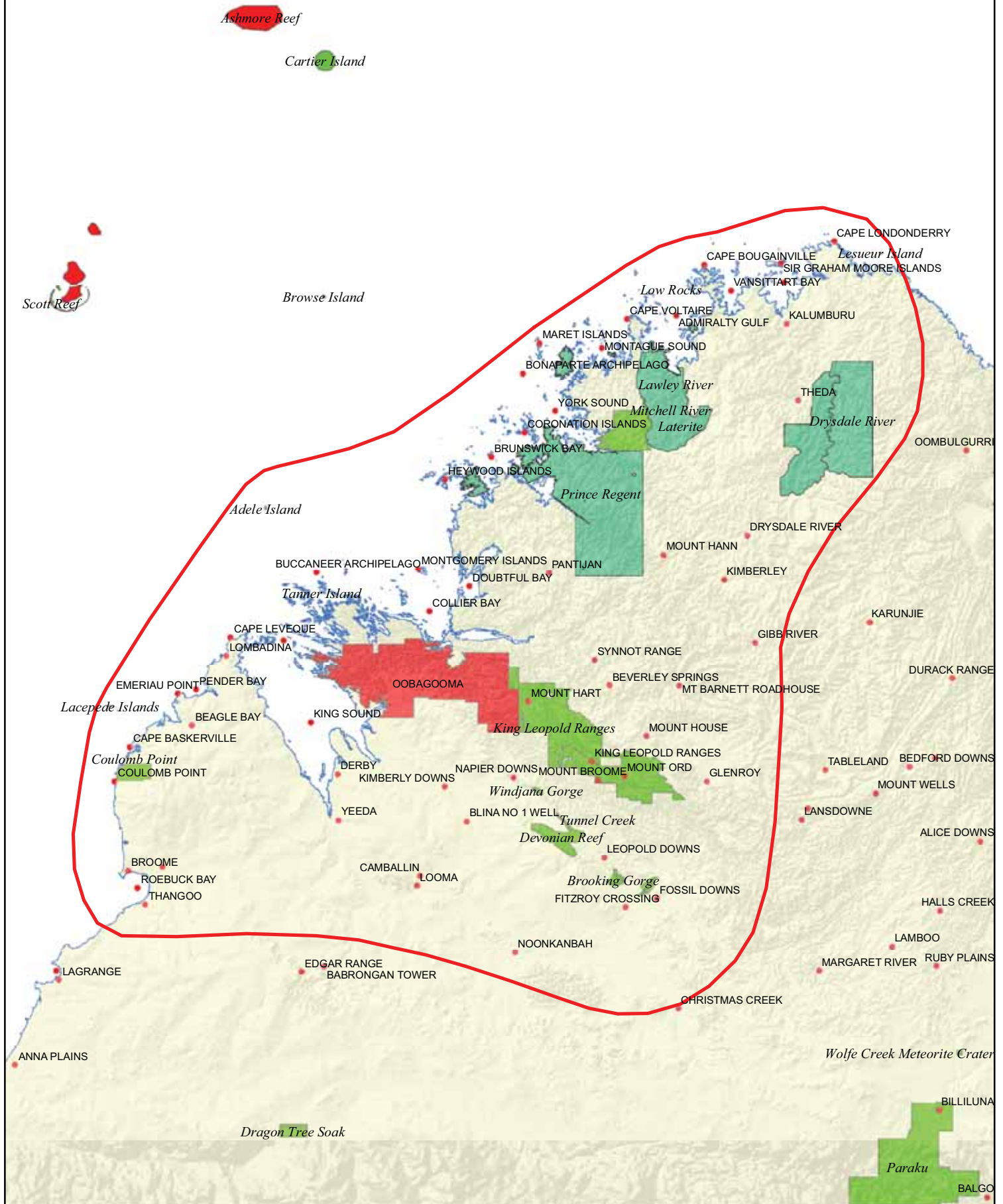
- prevent actions from being taken in any location that have an impact on matters of National Environmental Significance or of high biodiversity or heritage value); or
- where potential impacts can not be avoided, then the impacts should be less than significant; and
- provide for effective management, mitigation or offset of the likely impacts; and
- contain an effective system of adaptive management that is independently audited and publicly reported.

The extent to which the Plan adequately incorporates the precautionary principle and the other principles of ecologically sustainable development, in particular, intergenerational equity in relation to areas containing matters the Minister considers have a high likelihood of being potentially eligible for listing as matters of National Environment Significance, will also be considered.

In arriving at a decision to approve an action or a class of actions the Minister must act in accordance with his obligations, including giving consideration to:

- issues relevant to any matter protected by a provision of the EPBC Act; and
- social and economic matters.

Map 1: Kimberley National Heritage List Assessment

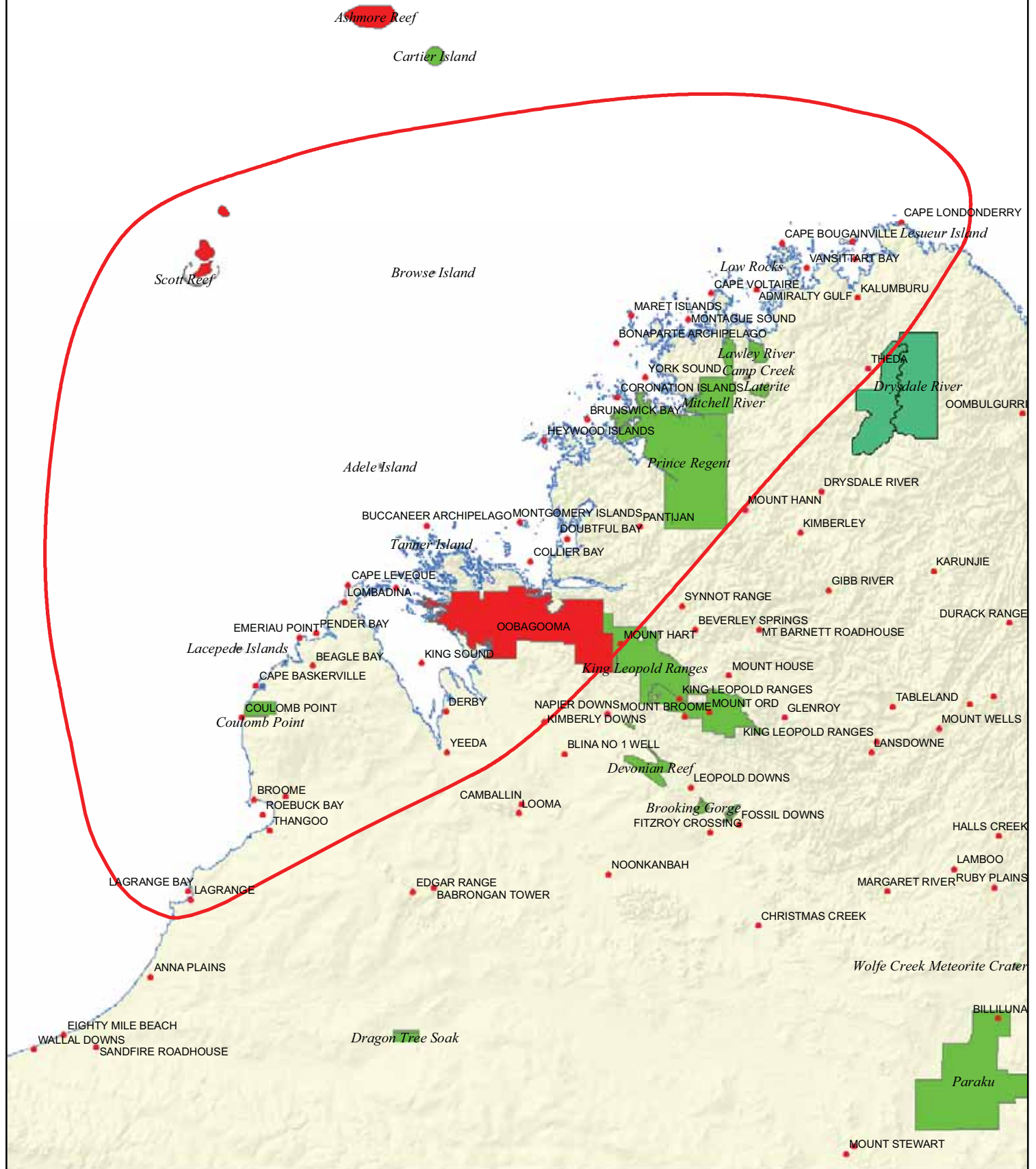


Australian Government
Department of the Environment,
Water, Heritage and the Arts

June 2008

	Kimberley NHL Assessment area
	Heritage listed place
	Heritage nominated place
	Protected Areas

Map 2: Kimberley Hub Regional Assessment



0 50 100 200 Kilometers

Appendix B :

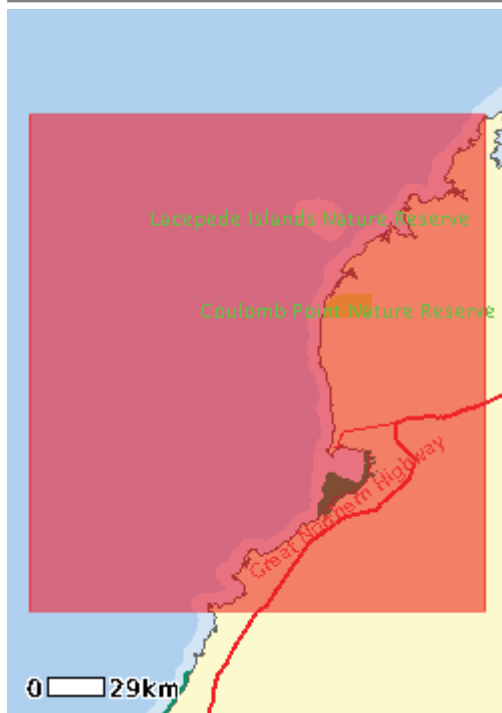
EPBC Act Protected Matters Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>



This map may contain data which are © Commonwealth of Australia (Geoscience Australia) © 2007 MapData Sciences Pty Ltd, PSMA



Search Type: Area
Buffer: 0 km
Coordinates: -16.387,120.771, -18.738,120.771, -18.738,122.931, -16.387,122.931



Report Contents: [Summary](#)
[Details](#)

- [Matters of NES](#)
- [Other matters protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgments](#)

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

World Heritage Properties:	None
National Heritage Places:	None
<u>Wetlands of International Significance:</u> (Ramsar Sites)	2
<u>Commonwealth Marine Areas:</u>	Relevant
Threatened Ecological Communities:	None
<u>Threatened Species:</u>	18
<u>Migratory Species:</u>	56

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>.

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits/index.html>.

<u>Commonwealth Lands:</u>	2
Commonwealth Heritage Places:	None
<u>Places on the RNE:</u>	22
<u>Listed Marine Species:</u>	97
<u>Whales and Other Cetaceans:</u>	26
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<u>State and Territory Reserves:</u>	4
Other Commonwealth Reserves:	None
Regional Forest Agreements:	None

Details

Matters of National Environmental Significance

Wetlands of International Significance [[Dataset Information](#)]
(Ramsar Sites)

[EIGHTY MILE BEACH](#)

Within same catchment as Ramsar site

[ROEBUCK BAY](#)

Commonwealth Marine Areas [[Dataset Information](#)]

Approval may be required for a proposed activity that is likely to have a significant impact on the environment in a Commonwealth Marine Area, when the action is outside the Commonwealth Marine Area, or the environment anywhere when the action is taken within the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

EEZ and Territorial Sea

Threatened Species [[Dataset Information](#)] Status Type of Presence

Birds

[Erythrotriorchis radiatus](#)

Red Goshawk

Vulnerable Species or species habitat likely to occur within area

[Erythrura gouldiae](#)

Gouldian Finch

Endangered Species or species habitat may occur within area

[Rostratula australis](#)

Australian Painted Snipe

Vulnerable Species or species habitat may occur within area

[Tyto novaehollandiae kimberli](#)

Masked Owl (northern)

Vulnerable Species or species habitat may occur within area

Mammals

[Balaenoptera musculus](#)

Blue Whale

Endangered Species or species habitat may occur within area

[Dasymercus cristicauda](#)

Mulgara

Vulnerable Species or species habitat likely to occur within area

[Macrotis lagotis](#)

Greater Bilby

Vulnerable Species or species habitat may occur within area

[Megaptera novaeangliae](#)

Humpback Whale

Vulnerable Breeding known to occur within area

Reptiles

[Caretta caretta](#)

Loggerhead Turtle

Endangered Species or species habitat may occur within area

[Chelonia mydas](#)

Vulnerable Breeding known to occur within

Green Turtle		area
<i>Ctenotus angusticeps</i> Airlie Island Ctenotus	Vulnerable	Species or species habitat likely to occur within area
<i>Dermochelys coriacea</i> Leathery Turtle, Leatherback Turtle	Endangered	Species or species habitat may occur within area
<i>Egernia kintorei</i> Great Desert Skink, Tjakura, Warrarna, Mulyamiji	Vulnerable	Species or species habitat may occur within area
<i>Eretmochelys imbricata</i> Hawksbill Turtle	Vulnerable	Species or species habitat may occur within area
<i>Natator depressus</i> Flatback Turtle	Vulnerable	Species or species habitat may occur within area

Sharks

<i>Pristis microdon</i> Freshwater Sawfish	Vulnerable	Species or species habitat likely to occur within area
<i>Pristis zijsron</i> Green Sawfish, Dindagubba, Narrowsnout Sawfish	Vulnerable	Species or species habitat may occur within area
<i>Rhincodon typus</i> Whale Shark	Vulnerable	Species or species habitat may occur within area

Migratory Species [Dataset Information]	Status	Type of Presence
---	--------	------------------

Migratory Terrestrial Species

Birds

<i>Erythrura gouldiae</i> Gouldian Finch	Migratory	Species or species habitat may occur within area
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	Migratory	Breeding known to occur within area
<i>Hirundo rustica</i> Barn Swallow	Migratory	Species or species habitat may occur within area
<i>Merops ornatus</i> Rainbow Bee-eater	Migratory	Species or species habitat may occur within area

Migratory Wetland Species

Birds

<i>Actitis hypoleucos</i> Common Sandpiper	Migratory	Species or species habitat likely to occur within area
<i>Ardea alba</i> Great Egret, White Egret	Migratory	Breeding likely to occur within area
<i>Ardea ibis</i> Cattle Egret	Migratory	Species or species habitat may occur within area
<i>Arenaria interpres</i>	Migratory	Species or species habitat likely to

Ruddy Turnstone		occur within area
<u>Calidris alba</u> Sanderling	Migratory	Species or species habitat likely to occur within area
<u>Calidris canutus</u> Red Knot, Knot	Migratory	Species or species habitat likely to occur within area
<u>Calidris ferruginea</u> Curlew Sandpiper	Migratory	Species or species habitat likely to occur within area
<u>Calidris ruficollis</u> Red-necked Stint	Migratory	Species or species habitat likely to occur within area
<u>Calidris tenuirostris</u> Great Knot	Migratory	Species or species habitat likely to occur within area
<u>Charadrius leschenaultii</u> Greater Sand Plover, Large Sand Plover	Migratory	Species or species habitat likely to occur within area
<u>Charadrius mongolus</u> Lesser Sand Plover, Mongolian Plover	Migratory	Species or species habitat likely to occur within area
<u>Charadrius veredus</u> Oriental Plover, Oriental Dotterel	Migratory	Species or species habitat may occur within area
<u>Glareola maldivarum</u> Oriental Pratincole	Migratory	Species or species habitat may occur within area
<u>Heteroscelus brevipes</u> Grey-tailed Tattler	Migratory	Species or species habitat likely to occur within area
<u>Limicola falcinellus</u> Broad-billed Sandpiper	Migratory	Species or species habitat likely to occur within area
<u>Limosa lapponica</u> Bar-tailed Godwit	Migratory	Species or species habitat likely to occur within area
<u>Limosa limosa</u> Black-tailed Godwit	Migratory	Species or species habitat likely to occur within area
<u>Numenius madagascariensis</u> Eastern Curlew	Migratory	Species or species habitat likely to occur within area
<u>Numenius minutus</u> Little Curlew, Little Whimbrel	Migratory	Species or species habitat may occur within area
<u>Numenius phaeopus</u> Whimbrel	Migratory	Species or species habitat likely to occur within area
<u>Pluvialis squatarola</u> Grey Plover	Migratory	Species or species habitat likely to occur within area
<u>Rostratula benghalensis s. lat.</u> Painted Snipe	Migratory	Species or species habitat may occur within area
<u>Tringa nebularia</u> Common Greenshank, Greenshank	Migratory	Species or species habitat likely to occur within area
<u>Xenus cinereus</u> Terek Sandpiper	Migratory	Species or species habitat likely to occur within area

Migratory Marine Birds

<u><i>Anous stolidus</i></u> Common Noddy	Migratory	Breeding known to occur within area
<u><i>Apus pacificus</i></u> Fork-tailed Swift	Migratory	Species or species habitat may occur within area
<u><i>Ardea alba</i></u> Great Egret, White Egret	Migratory	Breeding likely to occur within area
<u><i>Ardea ibis</i></u> Cattle Egret	Migratory	Species or species habitat may occur within area
<u><i>Calonectris leucomelas</i></u> Streaked Shearwater	Migratory	Species or species habitat may occur within area
<u><i>Fregata ariel</i></u> Lesser Frigatebird, Least Frigatebird	Migratory	Breeding known to occur within area
<u><i>Puffinus leucomelas</i></u> Streaked Shearwater	Migratory	Species or species habitat may occur within area
<u><i>Sterna albifrons</i></u> Little Tern	Migratory	Species or species habitat may occur within area
<u><i>Sterna anaethetus</i></u> Bridled Tern	Migratory	Breeding known to occur within area
<u><i>Sterna caspia</i></u> Caspian Tern	Migratory	Breeding known to occur within area
<u><i>Sula leucogaster</i></u> Brown Booby	Migratory	Breeding known to occur within area

Migratory Marine Species

Mammals

<u><i>Balaenoptera bonaerensis</i></u> Antarctic Minke Whale, Dark-shoulder Minke Whale	Migratory	Species or species habitat may occur within area
<u><i>Balaenoptera edeni</i></u> Bryde's Whale	Migratory	Species or species habitat may occur within area
<u><i>Balaenoptera musculus</i></u> Blue Whale	Migratory	Species or species habitat may occur within area
<u><i>Dugong dugon</i></u> Dugong	Migratory	Species or species habitat likely to occur within area
<u><i>Megaptera novaeangliae</i></u> Humpback Whale	Migratory	Breeding known to occur within area
<u><i>Orcaella brevirostris</i></u> Irrawaddy Dolphin	Migratory	Species or species habitat may occur within area
<u><i>Orcinus orca</i></u> Killer Whale, Orca	Migratory	Species or species habitat may occur within area
<u><i>Physeter macrocephalus</i></u>	Migratory	Species or species habitat may

Sperm Whale		occur within area
<i>Sousa chinensis</i> Indo-Pacific Humpback Dolphin	Migratory	Species or species habitat may occur within area
<i>Tursiops aduncus (Arafura/Timor Sea populations)</i> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations)	Migratory	Species or species habitat likely to occur within area
Reptiles		
<i>Caretta caretta</i> Loggerhead Turtle	Migratory	Species or species habitat may occur within area
<i>Chelonia mydas</i> Green Turtle	Migratory	Breeding known to occur within area
<i>Crocodylus porosus</i> Estuarine Crocodile, Salt-water Crocodile	Migratory	Species or species habitat likely to occur within area
<i>Dermochelys coriacea</i> Leathery Turtle, Leatherback Turtle	Migratory	Species or species habitat may occur within area
<i>Eretmochelys imbricata</i> Hawksbill Turtle	Migratory	Species or species habitat may occur within area
<i>Natator depressus</i> Flatback Turtle	Migratory	Species or species habitat may occur within area
Sharks		
<i>Rhincodon typus</i> Whale Shark	Migratory	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Dataset Information]	Status	Type of Presence
Birds		
<i>Actitis hypoleucos</i> Common Sandpiper	Listed	Species or species habitat likely to occur within area
<i>Anous stolidus</i> Common Noddy	Listed	Breeding known to occur within area
<i>Anseranas semipalmata</i> Magpie Goose	Listed - overfly marine area	Species or species habitat may occur within area
<i>Apus pacificus</i> Fork-tailed Swift	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea alba</i>	Listed -	Breeding likely to occur within area

Great Egret, White Egret	overfly marine area	
<u><i>Ardea ibis</i></u> Cattle Egret	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Arenaria interpres</i></u> Ruddy Turnstone	Listed	Species or species habitat likely to occur within area
<u><i>Calidris alba</i></u> Sanderling	Listed	Species or species habitat likely to occur within area
<u><i>Calidris canutus</i></u> Red Knot, Knot	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Calidris ferruginea</i></u> Curlew Sandpiper	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Calidris ruficollis</i></u> Red-necked Stint	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Calidris tenuirostris</i></u> Great Knot	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Calonectris leucomelas</i></u> Streaked Shearwater	Listed	Species or species habitat may occur within area
<u><i>Charadrius leschenaultii</i></u> Greater Sand Plover, Large Sand Plover	Listed	Species or species habitat likely to occur within area
<u><i>Charadrius mongolus</i></u> Lesser Sand Plover, Mongolian Plover	Listed	Species or species habitat likely to occur within area
<u><i>Charadrius veredus</i></u> Oriental Plover, Oriental Dotterel	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Fregata ariel</i></u> Lesser Frigatebird, Least Frigatebird	Listed	Breeding known to occur within area
<u><i>Glareola maldivarum</i></u> Oriental Pratincole	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Haliaeetus leucogaster</i></u>	Listed	Breeding known to occur within

White-bellied Sea-Eagle		area
<u><i>Heteroscelus brevipes</i></u> Grey-tailed Tattler	Listed	Species or species habitat likely to occur within area
<u><i>Hirundo rustica</i></u> Barn Swallow	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Larus novaehollandiae</i></u> Silver Gull	Listed	Breeding known to occur within area
<u><i>Limicola falcinellus</i></u> Broad-billed Sandpiper	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Limosa lapponica</i></u> Bar-tailed Godwit	Listed	Species or species habitat likely to occur within area
<u><i>Limosa limosa</i></u> Black-tailed Godwit	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Merops ornatus</i></u> Rainbow Bee-eater	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Numenius madagascariensis</i></u> Eastern Curlew	Listed	Species or species habitat likely to occur within area
<u><i>Numenius minutus</i></u> Little Curlew, Little Whimbrel	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Numenius phaeopus</i></u> Whimbrel	Listed	Species or species habitat likely to occur within area
<u><i>Pluvialis squatarola</i></u> Grey Plover	Listed - overfly marine area	Species or species habitat likely to occur within area
<u><i>Rostratula benghalensis s. lat.</i></u> Painted Snipe	Listed - overfly marine area	Species or species habitat may occur within area
<u><i>Sterna albifrons</i></u> Little Tern	Listed	Species or species habitat may occur within area
<u><i>Sterna anaethetus</i></u> Bridled Tern	Listed	Breeding known to occur within area

<i>Sterna bergii</i> Crested Tern	Listed	Breeding known to occur within area
<i>Sterna caspia</i> Caspian Tern	Listed	Breeding known to occur within area
<i>Sterna fuscata</i> Sooty Tern	Listed	Breeding known to occur within area
<i>Sterna nereis</i> Fairy Tern	Listed	Breeding known to occur within area
<i>Sula leucogaster</i> Brown Booby	Listed	Breeding known to occur within area
<i>Tringa nebularia</i> Common Greenshank, Greenshank	Listed - overfly marine area	Species or species habitat likely to occur within area
<i>Xenus cinereus</i> Terek Sandpiper	Listed - overfly marine area	Species or species habitat likely to occur within area

Mammals

<i>Dugong dugon</i> Dugong	Listed	Species or species habitat likely to occur within area
---	--------	--

Ray-finned fishes

<i>Bhanotia fasciolata</i> Corrugated Pipefish, Barbed Pipefish	Listed	Species or species habitat may occur within area
<i>Campichthys tricarinatus</i> Three-keel Pipefish	Listed	Species or species habitat may occur within area
<i>Choeroichthys brachysoma</i> Pacific Short-bodied Pipefish, Short-bodied Pipefish	Listed	Species or species habitat may occur within area
<i>Choeroichthys suillus</i> Pig-snouted Pipefish	Listed	Species or species habitat may occur within area
<i>Corythoichthys amplexus</i> Fijian Banded Pipefish, Brown-banded Pipefish	Listed	Species or species habitat may occur within area
<i>Corythoichthys flavofasciatus</i> Yellow-banded Pipefish, Network Pipefish	Listed	Species or species habitat may occur within area
<i>Corythoichthys intestinalis</i> Australian Messmate Pipefish, Banded Pipefish	Listed	Species or species habitat may occur within area
<i>Corythoichthys schultzi</i> Schultz's Pipefish	Listed	Species or species habitat may occur within area
<i>Cosmocampus banneri</i>	Listed	Species or species habitat may

Roughridge Pipefish		occur within area
<u><i>Doryrhamphus dactyliophorus</i></u> Ringed Pipefish	Listed	Species or species habitat may occur within area
<u><i>Doryrhamphus excisus</i></u> Indian Blue-stripe Pipefish, Blue-stripe Pipefish	Listed	Species or species habitat may occur within area
<u><i>Doryrhamphus janssi</i></u> Cleaner Pipefish, Janss' Pipefish	Listed	Species or species habitat may occur within area
<u><i>Filicampus tigris</i></u> Tiger Pipefish	Listed	Species or species habitat may occur within area
<u><i>Halicampus brocki</i></u> Brock's Pipefish	Listed	Species or species habitat may occur within area
<u><i>Halicampus dunckeri</i></u> Red-hair Pipefish, Duncker's Pipefish	Listed	Species or species habitat may occur within area
<u><i>Halicampus grayi</i></u> Mud Pipefish, Gray's Pipefish	Listed	Species or species habitat may occur within area
<u><i>Halicampus nitidus</i></u> Glittering Pipefish	Listed	Species or species habitat may occur within area
<u><i>Halicampus spinirostris</i></u> Spiny-snout Pipefish	Listed	Species or species habitat may occur within area
<u><i>Haliichthys taeniophorus</i></u> Ribbioned Seadragon, Ribbioned Pipefish	Listed	Species or species habitat may occur within area
<u><i>Hippichthys penicillus</i></u> Beady Pipefish, Steep-nosed Pipefish	Listed	Species or species habitat may occur within area
<u><i>Hippocampus angustus</i></u> Western Spiny Seahorse, Narrow-bellied Seahorse	Listed	Species or species habitat may occur within area
<u><i>Hippocampus histrix</i></u> Spiny Seahorse	Listed	Species or species habitat may occur within area
<u><i>Hippocampus kuda</i></u> Spotted Seahorse, Yellow Seahorse	Listed	Species or species habitat may occur within area
<u><i>Hippocampus planifrons</i></u> Flat-face Seahorse	Listed	Species or species habitat may occur within area
<u><i>Hippocampus spinosissimus</i></u> Hedgehog Seahorse	Listed	Species or species habitat may occur within area
<u><i>Micrognathus micronotopterus</i></u> Tidepool Pipefish	Listed	Species or species habitat may occur within area
<u><i>Solegnathus hardwickii</i></u> Pipehorse	Listed	Species or species habitat may occur within area
<u><i>Solegnathus lettiensis</i></u> Indonesian Pipefish, Gunther's Pipehorse	Listed	Species or species habitat may occur within area

<i>Solenostomus cyanopterus</i> Blue-finned Ghost Pipefish, Robust Ghost Pipefish	Listed	Species or species habitat may occur within area
<i>Syngnathoides biaculeatus</i> Double-ended Pipehorse, Alligator Pipefish	Listed	Species or species habitat may occur within area
<i>Trachyrhamphus bicoarctatus</i> Bend Stick Pipefish, Short-tailed Pipefish	Listed	Species or species habitat may occur within area
<i>Trachyrhamphus longirostris</i> Long-nosed Pipefish, Straight Stick Pipefish	Listed	Species or species habitat may occur within area
Reptiles		
<i>Acalyptophis peronii</i> Horned Seasnake	Listed	Species or species habitat may occur within area
<i>Aipysurus apraefrontalis</i> Short-nosed Seasnake	Listed	Species or species habitat may occur within area
<i>Aipysurus duboisii</i> Dubois' Seasnake	Listed	Species or species habitat may occur within area
<i>Aipysurus eydouxii</i> Spine-tailed Seasnake	Listed	Species or species habitat may occur within area
<i>Aipysurus laevis</i> Olive Seasnake	Listed	Species or species habitat may occur within area
<i>Aipysurus tenuis</i> Brown-lined Seasnake	Listed	Species or species habitat may occur within area
<i>Astrotia stokesii</i> Stokes' Seasnake	Listed	Species or species habitat may occur within area
<i>Caretta caretta</i> Loggerhead Turtle	Listed	Species or species habitat may occur within area
<i>Chelonia mydas</i> Green Turtle	Listed	Breeding known to occur within area
<i>Crocodylus johnstoni</i> Freshwater Crocodile	Listed	Species or species habitat may occur within area
<i>Crocodylus porosus</i> Estuarine Crocodile, Salt-water Crocodile	Listed	Species or species habitat likely to occur within area
<i>Dermochelys coriacea</i> Leathery Turtle, Leatherback Turtle	Listed	Species or species habitat may occur within area
<i>Disteira kingii</i> Spectacled Seasnake	Listed	Species or species habitat may occur within area
<i>Disteira major</i> Olive-headed Seasnake	Listed	Species or species habitat may occur within area
<i>Emydocephalus annulatus</i> Turtle-headed Seasnake	Listed	Species or species habitat may occur within area
<i>Ephalophis greyi</i>	Listed	Species or species habitat may

North-western Mangrove Seasnake		occur within area
<i>Eretmochelys imbricata</i> Hawksbill Turtle	Listed	Species or species habitat may occur within area
<i>Hydrelaps darwiniensis</i> Black-ringed Seasnake	Listed	Species or species habitat may occur within area
<i>Hydrophis elegans</i> Elegant Seasnake	Listed	Species or species habitat may occur within area
<i>Hydrophis mcdowelli</i>	Listed	Species or species habitat may occur within area
<i>Hydrophis ornatus</i> a seasnake	Listed	Species or species habitat may occur within area
<i>Lapemis hardwickii</i> Spine-bellied Seasnake	Listed	Species or species habitat may occur within area
<i>Natator depressus</i> Flatback Turtle	Listed	Species or species habitat may occur within area
<i>Pelamis platurus</i> Yellow-bellied Seasnake	Listed	Species or species habitat may occur within area
Whales and Other Cetaceans [Dataset Information]	Status	Type of Presence
<i>Balaenoptera bonaerensis</i> Antarctic Minke Whale, Dark-shoulder Minke Whale	Cetacean	Species or species habitat may occur within area
<i>Balaenoptera edeni</i> Bryde's Whale	Cetacean	Species or species habitat may occur within area
<i>Balaenoptera musculus</i> Blue Whale	Cetacean	Species or species habitat may occur within area
<i>Delphinus delphis</i> Common Dolphin, Short-beaked Common Dolphin	Cetacean	Species or species habitat may occur within area
<i>Feresa attenuata</i> Pygmy Killer Whale	Cetacean	Species or species habitat may occur within area
<i>Globicephala macrorhynchus</i> Short-finned Pilot Whale	Cetacean	Species or species habitat may occur within area
<i>Grampus griseus</i> Risso's Dolphin, Grampus	Cetacean	Species or species habitat may occur within area
<i>Kogia breviceps</i> Pygmy Sperm Whale	Cetacean	Species or species habitat may occur within area
<i>Kogia simus</i> Dwarf Sperm Whale	Cetacean	Species or species habitat may occur within area
<i>Lagenodelphis hosei</i> Fraser's Dolphin, Sarawak Dolphin	Cetacean	Species or species habitat may occur within area

<u><i>Megaptera novaeangliae</i></u> Humpback Whale	Cetacean	Breeding known to occur within area
<u><i>Mesoplodon densirostris</i></u> Blainville's Beaked Whale, Dense-beaked Whale	Cetacean	Species or species habitat may occur within area
<u><i>Orcaella brevirostris</i></u> Irrawaddy Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Orcinus orca</i></u> Killer Whale, Orca	Cetacean	Species or species habitat may occur within area
<u><i>Peponocephala electra</i></u> Melon-headed Whale	Cetacean	Species or species habitat may occur within area
<u><i>Physeter macrocephalus</i></u> Sperm Whale	Cetacean	Species or species habitat may occur within area
<u><i>Pseudorca crassidens</i></u> False Killer Whale	Cetacean	Species or species habitat may occur within area
<u><i>Sousa chinensis</i></u> Indo-Pacific Humpback Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Stenella attenuata</i></u> Spotted Dolphin, Pantropical Spotted Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Stenella coeruleoalba</i></u> Striped Dolphin, Euphrosyne Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Stenella longirostris</i></u> Long-snouted Spinner Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Steno bredanensis</i></u> Rough-toothed Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Tursiops aduncus</i> (Arafura/Timor Sea populations)</u> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations)	Cetacean	Species or species habitat likely to occur within area
<u><i>Tursiops aduncus</i></u> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin	Cetacean	Species or species habitat likely to occur within area
<u><i>Tursiops truncatus s. str.</i></u> Bottlenose Dolphin	Cetacean	Species or species habitat may occur within area
<u><i>Ziphius cavirostris</i></u> Cuvier's Beaked Whale, Goose-beaked Whale	Cetacean	Species or species habitat may occur within area

Commonwealth Lands [[Dataset Information](#)]

Defence

Unknown

Places on the RNE [[Dataset Information](#)]
Note that not all Indigenous sites may be listed.

Historic

[Ah Fats Cottage WA](#)

[Anglican Church of the Annunciation including Belfry WA](#)

[Broome Cemetery Japanese Section WA](#)

[Broome Courthouse WA](#)

[Broome Pioneer Cemetery WA](#)

[Chinatown Conservation Area WA](#)

[Customs House \(former\) WA](#)

[Dampier Memorial WA](#)

[J Kennedy Family Home WA](#)

[Male Family Residence WA](#)

[Maurice Lyons House WA](#)

[McAlpine House WA](#)

[McDaniel Homestead WA](#)

[Napier Terrace Cottages WA](#)

[Old Police Lockup WA](#)

[Pa Normans House WA](#)

[Roebuck Bay Hotel WA](#)

[Streeter and Male Group of Stores WA](#)

[Sun Pictures Gardens WA](#)

Natural

[Coulomb Point Nature Reserve WA](#)

[Lacepede Islands Middle and West WA](#)

[Roebuck Bay Area including Roebuck Plains and Lake Eda WA](#)

Extra Information

State and Territory Reserves [[Dataset Information](#)]

Coulomb Point Nature Reserve, WA

Lacepede Islands Nature Reserve, WA

Un-named (No. 37525) Miscellaneous Conservation Reserve, WA

Un-named (No. 41066) Miscellaneous Conservation Reserve, WA

Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as [extinct or considered as vagrants](#)
- some species and ecological communities that have only recently been listed
- [some terrestrial species](#) that overfly the Commonwealth marine area
- migratory species that are very [widespread, vagrant, or only occur in small numbers](#).

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites;

- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgments

This database has been compiled from a range of data sources. The Department acknowledges the following custodians who have contributed valuable data and advice:

- [New South Wales National Parks and Wildlife Service](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUcliM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Appendix C :

Activities and Related Environmental Aspects Matrix

Appendix D :

Environmental and Social Factors

Appendix D: Environmental and Social Factors

Environmental factors - Marine			
Marine ecosystem biodiversity (comments re intertidal)	Biological	Marine Fauna	Coral
			Reptiles
			Marine mammals
			Invertebrates (ex corals)
			Birds (sea and migration)
			Plankton
	Physical		Fish
			Mangroves
			Seagrass
		Marine Flora	Sediment micro algae
			Macroalgal communities
			Marine water quality
			Seabed features
			Tidal regimes, currents and hydrodynamics
			Marine sediment quality
	Ecosystem Integrity		Intactness
			Connectivity
			Resilience

Environmental factors - Terrestrial			
Terrestrial ecosystem biodiversity	Biological	Terrestrial Fauna	Birds (including shore and migration)
			Subterranean SRE
			Declared rare protected fauna
			Species of ethno-biological significance
			Surface SRE
			Other terrestrial fauna
		Terrestrial Flora	Declared rare flora
			Species of ethno-biological significance
			TECs
	Physical		Other flora
			Refuge value for terrestrial biota
			Surface water (rivers, wetlands, creeks)
			Groundwater
			Soils
			Geomorphology
Ecosystem Integrity		Air quality	
		Intactness	
		Connectivity	
		Resilience	

Environmental factors - Social		
Social	Cultural heritage	Palaeontology
		Environmental Heritage
		Aboriginal heritage
		Colonial Heritage
		Visual Amenity
	Industry	Mining
		Agriculture
		Fishing
		Aquaculture
		Tourism
	Leisure	Sports and recreation
		Recreational Fishing
	Community Infrastructure	Water supply
		Power
		Waste management
		Telecommunications
	Community Services	Transport
		Health
		Education
	Employment	Regional Employment
		Local Employment
	Cost of living	Indigenous
		Housing
		Regional Prices Index
	Native Title	Native Title
	Land Use	Land tenure
		Informal Land Use
		Terrestrial Conservation Areas
		Marine Conservation Areas

Appendix E :

List of Potential Impacts on Physical, Biological and Social Factors

Appendix E: Potential Impacts on Physical, Biological and Social Factors

Physical
Alteration of flow regimes
Altered flow volumes due to disposal of dewater product
Change in water infiltration and recharge rates
Changes in landform
Contamination of groundwater due to generation of acid sulphate soils (from g/water drawdown)
Contamination of subterranean habitats
Contamination of surface waters due to generation of acid sulphate soils (from g/water drawdown)
Contribution to climate change
Decrease in air quality
Disturbance and/or modification of natural drainage systems
Physical damage/disturbance to coral reefs
Erosion
Groundwater contamination
Habitat disturbance through collapse of strata
Nutrient loading of subterranean habitats
Reduction in stygofauna habitat suitability due to sealing of recharge areas
Generation of acid sulphate soils
Salinisation of groundwater
Sedimentation of aquifer leading to loss of subterranean fauna habitat
Sedimentation of natural drainage systems
Smothering or toxicity to habitat and/or fauna
Soil contamination
Surface water contamination
decline in water quality

Biological
Alteration of vegetation community composition
Change in fauna behaviour/movement
Decline in health of groundwater dependent vegetation (where groundwater drawdown)
Decline in vegetation health due to inundation
Decline in vegetation health due to reduction of surface water flows
Disturbance of conservation significant fauna individuals
Disturbance of conservation significant fauna population
Disturbance of conservation significant flora
Disturbance of conservation significant vegetation communities
Disturbance of fauna habitat
Disturbance of fauna individuals
Disturbance of fauna population
Disturbance of general flora species and vegetation communities
Effects on vegetated habitats and forage plants (making them unsuitable for consumption)
Physical damage/disturbance to coral reefs
Habitat fragmentation
Injury or death of conservation significant fauna
Injury or death of fauna
Introduction and/or spread of weeds
Loss of habitat
Loss of flora species and vegetation communities
Reduced plant growth
Reduction in stygofauna habitat suitability due to sealing of recharge areas
Retarded growth due to smothering of foliage
Sedimentation of aquifer leading to loss of subterranean fauna habitat
Smothering or toxicity to habitat and/or fauna

Social
Disturbance to heritage sites
Protection to heritage sites
Change to visual amenity
Disturbance to existing and future activities
Increased provision of services
Increase in job availability
Draws on existing job market?
Increase in cost of living
Demand exceeds capacity
Increasing consumer choice
Change to land tenure

Appendix F :

Risk Rating Table

Environmental Risk Table

				LIKELIHOOD OF IMPACT (not the event itself)						
				Historical:	"Unheard of in the industry"	"Has occurred once or twice in the industry"	"Has occurred many times in the industry, but not in the Company"	"Has occurred once or twice in the Company"	"Has occurred frequently in the Company"	"Has occurred frequently at the location"
				Frequency: (Continuous Operation)	Once every 10,000-100,000* years at location	Once every 1,000-10,000 years at location	Once every 100-1,000 years at location	Once every 10-100 years at location	Once every 1-10 years at location	More than once a year at location or continuously
				Probability: (Single activity)	1 in 100,000-1,000,000*	1 in 10,000-100,000	1 in 1,000-10,000	1 in 100-1,000	1 in 10-100	>1 in 10
Impacts					0	1	2	3	4	5
Environment		Social & Cultural			Remote	Highly Unlikely	Unlikely	Possible	Quite Likely	Likely
CONSEQUENCE (with existing barriers in place)	Permanent impact. Impact on highly valued ecosystems, species or habitat	Permanent long term impact to a community or social infrastructure or highly valued areas/items of international cultural significance		A	Catastrophic			SEVERE		
	Serious, long term (>10 yrs) impact. Impact on ecosystems, species or habitat	Serious, long term (>10 yrs) impact to the community, social infrastructure or highly valued areas/items of national cultural significance		B	Massive		HIGH			
	Major, long term (5-10yrs) impact. Impacts on ecosystems, species or habitat	Major long term (>10 yrs) impact to a community or social infrastructure or highly valued areas/items of cultural significance		C	Major	MEDIUM				
	Moderate, medium term (2 - 5 yrs) impacts but not effecting ecosystem function	Moderate, medium term (5 - 10 yrs) impact to a community or highly valued areas/items of cultural significance		D	Moderate					
	Minor, short term (1 - 2 yrs) impacts but not effecting ecosystem function	Minor, short term (<5 yrs) impact to a community or areas/items of cultural significance		E	Minor	LOW				
	Slight and temporary (<1 yr) localised effect to ecosystem, species or habitat	Minor, temporary impact to a community or areas/items of cultural significance		F	Slight					

Appendix G :

Impact Summary Table

Appendix G: Environmental Impacts Summary Table									
Environmental Aspect (Impactor)	Environmental Factor	Potential Impacts	Likelihood	Consequence	Inherent risk rating	Inherent Risk (no mitigation)			
						RATOWALE			
Noise and vibration						In a regional context, the Laccadive Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation of important nesting and inter-nesting habitat within the James Price Point coastal area is a priority. Current information suggests that the James Price Point coastal area is likely to be located further to the south of the James Price Point coastal area (Scoping Report Sect. 5.2.6.3), this is to be confirmed through further investigations. Important nesting turtle nesting beaches are unlikely to occur within the James Price Point coastal area however, noise and vibration generating activities such as dredging and reclamation construction may have the potential to impact marine turtle reproductive behavior.			
	Reptiles	Disturbance of conservation significant fauna individuals	3 Possible	E Minor	M	Conservation significant marine mammals species (Whales and Dolphins) are known to occur in the James Price Point coastal area. A significant portion of the humpback whale population migrates past this area in the months of May to November. Disturbance of marine mammals through noise and vibration generating activities may have the potential to impact marine mammal behavior.			
	Marine mammals	Disturbance of conservation significant fauna individuals	4 Quite Likely	E Minor	H	While it is possible that conservation significant sea and riparian bird species may periodically occur within the James Price Point coastal area current information suggests that the presence of specific seabird roosting or nesting habitat within the James Price Point coastal area is considered unlikely (Scoping Report Sect. 5.2.6.6). As a result it is unlikely that important habitat areas would be disturbed as a result of noise and vibration generating activities.			
	Birds (sea and migration)	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	L	Conservation significant fish species are known to occur off the coast of the Banggai Peninsula. No site specific fish fauna surveys are available for the James Price Point coastal area, so assumptions of species present are based on nearby or regional surveys and are also directly related to the physical environmental characteristics. At James Price Point important fish habitats such as mangroves and seagrasses are mostly located to the south of the James Price Point coastal area. Disturbance of important fish habitats through noise and as such fish fauna is expected to be temporarily present during the high tides to feed on invertebrates (Scoping Report Sect. 5.2.6.5). It is considered likely that noise impacts would be transient and temporary during construction.			
	Fish	Disturbance of conservation significant fauna individuals	2 Unlikely	F Slight	L	Current information suggests that potential habitat for coral communities within the James Price Point coastal area is relatively poor (Scoping Report Sect. 5.2.6.1). Sedimentation as a result of activities such as dredging may have the potential to disturb corals, should they occur.			
	Coral	Physical damage/disturbance to coral reefs	2 Unlikely	F Slight	L	While marine invertebrates known are known to occur in the James Price Point coastal area, impacts as a result of noise or vibration generating activities are considered unlikely.			
	Invertebrates (ex corals)	Disturbance of fauna individuals	2 Unlikely	F Slight	L	Marine construction activities such as piling and dredging may have the potential to impact fish species however it is unlikely that such impacts would affect commercial fishing off the James Price Point coastal area.			
Sediment Disposition and Turbidity	Commercial Fishing	Disturbance of fauna individuals	1 Highly Unlikely	F Slight	L	Current information suggests that potential habitat for coral communities within the James Price Point coastal area is relatively poor (Scoping Report Sect. 5.2.6.1). Sedimentation as a result of activities such as dredging may have the potential to disturb corals, should they occur.			
	Coral	Physical damage/disturbance to coral reefs	3 Possible	F Slight	M	In a regional context, the Laccadive Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within the James Price Point coastal area, however current information suggests that potential nesting areas are likely to be located further to the south of the James Price Point coastal area (Scoping Report Sect. 5.2.6.3). This is to be confirmed through further investigations. Important nesting turtle nesting beaches are unlikely to occur within the James Price Point coastal area however, noise and vibration generating activities such as dredging and reclamation construction may have the potential to impact marine turtle reproductive behavior.			
	Reptiles	Disturbance of conservation significant fauna individuals	3 Possible	E Minor	M	Conservation significant marine mammals species (Whales, dolphins and Dolphins) are known to occur in the James Price Point coastal area. A significant portion of the humpback whale population migrates past this area in the months of May to November. Disturbance of marine mammals through noise and vibration generating activities may have the potential to impact marine mammal behavior.			
	Marine mammals	Disturbance of conservation significant fauna individuals	3 Possible	E Minor	M	A wide range of invertebrates are found in the intertidal zones of the Kimberley region, associated with mangroves and seagrass. Disturbance of important habitat for invertebrates, fish and other fauna, mangroves do not appear to be widespread in the James Price Point coastal area (Scoping Report Sect. 5.2.5.5) and as a result it is considered unlikely that mangrove communities would be impacted as a result of sedimentation generating activities.			
	Mangroves	Loss of habitat	2 Unlikely	F Slight	L				

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Usefulness	Consequence	Inherent risk ranking	MITIGATION
Non-routine discharges (spills and leaks)	Seagrass	Loss of habitat	3 Possible	E Minor	M	Seagrass beds are known to occur in the James Price Point coastal area and provide a feeding habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within the Kimberley coast. Seagrass beds are known to have highly turbid waters (Scoping Report Sect. 5.2.3.2) and it is considered likely that this would also be the case at the James Price Point coastal area. There are some uncertainties re this claim of natural high turbidity which are to be investigated in field studies. Increased sedimentation as a result of dredging and nearshore construction may have the potential to impact habitat quality and it is considered likely that impacts would be localised and medium term.
	Fish	Disturbance of conservation significant fauna individuals	2 Unlikely	F Slight	L	Conservation significant fish species are known to occur off the coast of the Dampier Peninsula. No site specific fish fauna surveys are available for the James Price Point coastal area, so assumptions of species present are based on nearby or regional surveys and are also directly related to the physical environmental characteristics. Sandy beach flats which are relatively exposed compared to other locations are the most likely to be affected by increased sedimentation. Increased sedimentation may impact on the availability of invertebrates (Scoping Report Sect. 5.2.6.3). Marine waters of the Kimberley coast are known to have highly turbid waters (Scoping Report Sect. 5.2.3.2) and it is considered likely that this would also be the case at the James Price Point coastal area. There are some uncertainties re this claim of natural high turbidity which are to be investigated in field studies. Increased sedimentation as a result of dredging and nearshore construction may have the potential to impact habitat quality and it is considered likely that impacts would be localised and medium term.
	Macroalgal communities	Disturbance of fauna habitat	2 Unlikely	E Minor	M	While it is likely that macroalgal habitats would be disturbed as a result of dredging and nearshore construction works current information suggests that diversity and abundance of algal flora within the Kimberley is generally poor and is likely to be a result of the constant highly turbid waters (Scoping Report Sect. 5.2.3.4). This would be investigated further during field surveys.
	Marine Vertebrates	decline in water quality	4 Quite Likely	D Moderate	M	Conservation significant fish, marine mammal and reptile species are known to occur within the James Price Point coastal area. While the surrounding waters are generally free of pollutants, marine waters of the Kimberley coast are known to have highly turbid waters (Scoping Report Sect. 5.2.3.2) and it is considered likely that this would also be the case at the James Price Point coastal area. There are some uncertainties re this claim of natural high turbidity which are to be investigated in field studies. Increased sedimentation as a result of dredging and nearshore construction may have the potential to impact habitat quality and it is considered likely that impacts would be localised and medium term.
	Intertidal marine sediments	Loss of habitat	2 Unlikely	F Slight	L	Disturbance of marine sediments and subsequent habitats will occur as a result of dredging and trenching activities. Impacts as a result of sediment deposition may also occur however, there are naturally high turbidity levels and sediment flushing due to the high tidal flux.
	Physical	Alteration of flow regimes	3 Possible	F Slight	L	Alteration to marine bathymetry as a result of the dredging channel and nearshore construction works may alter localised marine water flows and sediment movements. This may in turn affect marine habitats.
	Reptiles	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	In a regional context, the Laccapède Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within the Kimberley coast. Reptiles are known to occur in the James Price Point coastal area and it is considered likely to be located further to the south of the James Price Point coastal area (Scoping Report Sect. 5.2.6.3). This is to be confirmed through further investigations. Should a non-routine event occur it is considered that it may impact marine water and habitat quality for marine reptile species. Management and control measures should be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Marine mammals	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	Conservation significant marine mammal species (Whales, Dolphins and Dugongs) are known to occur in the James Price Point coastal area while a significant portion of the humpback whale population migrates past the James Price Point coastal area. There are some uncertainties re this claim of natural high turbidity which are to be investigated in field studies. Increased sedimentation as a result of dredging and nearshore construction may have the potential to impact habitat quality and it is considered likely that impacts would be localised and medium term.
	Birds (sea and migration)	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	While it is possible that conservation significant sea and migration bird species may periodically occur within the James Price Point coastal area current information suggests that the presence of specific seabird roosting or nesting habitat within the James Price Point coastal area is likely to be of low significance (Scoping Report Sect. 5.2.6.6). Should a non-routine event occur it is considered that it may impact marine water and habitat quality for these species. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Fish	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	Conservation significant fish species are known to occur off the coast of the Dampier Peninsula. No site specific fish fauna surveys are available for the James Price Point coastal area, so assumptions of species present are based on nearby or regional surveys and are also directly related to the physical environmental characteristics. Sandy beach flats which are relatively exposed compared to other locations are the most likely to be affected by increased sedimentation. Increased sedimentation may impact on the availability of invertebrates (Scoping Report Sect. 5.2.6.3). Marine waters of the Kimberley coast are known to have highly turbid waters (Scoping Report Sect. 5.2.3.2) and it is considered likely that this would also be the case at the James Price Point coastal area. There are some uncertainties re this claim of natural high turbidity which are to be investigated in field studies. Increased sedimentation as a result of dredging and nearshore construction may have the potential to impact habitat quality and it is considered likely that impacts would be localised and medium term.
	Marine Vertebrates	Surface water contamination	2 Unlikely	E Minor	M	Marine waters of the James Price Point coastal area provide habitat for a variety of marine species and communities while also supporting indigenous and recreational activity. Commercial fisheries also occur within the James Price Point coastal area. Increased sedimentation as a result of dredging and nearshore construction may have the potential to impact habitat quality and it is considered likely that impacts would be localised and medium term.

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Use/hood	Consequence	Inherent risk rating	RATIONALE
Light emissions	Coral	Physical damage/disturbance to coral reefs	1 Highly Unlikely	E Minor	L	Current information suggests that potential habitat for coral communities within the James Price Point coastal area is unlikely to be impacted by light emissions. It is considered that if any impact marine water quality and coral communities, should they occur, management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Invertebrates (ex corals)	Disturbance of fauna habitat	2 Unlikely	E Minor	M	A wider range of invertebrates are found in the intertidal zones of the Kimberley region, associated with mangrove communities (tidal creeks and embayments, rocky shore/reef platform and pavement and sandy beach flats) (Scoping Report Sect. 5.2.6.2). Should a non-routine event occur it is considered that it may impact marine sediments and invertebrate habitats, should they occur. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Seagrass	Disturbance of fauna habitat	2 Unlikely	E Minor	M	Seagrass beds are known to occur in the James Price Point coastal area and provide feeding habitat for dugong and habitat for other marine fauna (Scoping Report Sect. 5.2.6.4 & 5.2.5.3). Should a non-routine event occur it is considered that it may impact seagrass beds and associated fauna. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Microphytobenthos	Disturbance of fauna habitat	2 Unlikely	E Minor	M	Much of the intertidal zone of the Kimberley coast, including the James Price Point coastal area, is unsuitable to support the growth of microphytobenthos. Microphytobenthos are not considered to be important habitat for invertebrates, fish and other fauna. They do not appear to be widespread in the James Price Point coastal area. Should a non-routine event occur it is considered that it may impact mangrove habitats and dependent marine fauna species. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Mangroves	Disturbance of fauna habitat	1 Highly Unlikely	F Slight	L	Should a non-routine event occur it is considered that it may reduce the probability of coastal waters within the James Price Point coastal area. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Plankton	Surface water contamination	2 Unlikely	E Minor	M	While it is likely that macroalgal habitats would be disturbed as a result of dredging and nearshore construction works current information suggests that diversity and abundance of digal flora within the James Price Point coastal area is unlikely to be impacted by light emissions. It is considered that a non-routine event may have the potential to affect macroalgal communities. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Macroalgal communities	Disturbance of fauna habitat	2 Unlikely	E Minor	M	A number of activities associated with the development have the potential to result in a non-routine event which could impact macroalgal communities. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Intertidal marine sediments	Soil contamination	2 Unlikely	E Minor	M	In a regional context, the Lacopote Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within this area (Scoping Report Sect. 5.2.6.3). While this assumption would be further investigated it is considered that a non-routine event may have the potential to affect macroalgal communities. Management and control measures would be implemented as part of Precinct design and operation which are likely to reduce the likelihood, and impact of a non-routine event.
	Reptiles	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	It is possible that conservation significant sea and migratory bird species may periodically occur within the James Price Point coastal area. Current information indicates that the presence of specific seabird roosting or nesting habitat within the James Price Point coastal area is considered unlikely (Scoping Report Sect. 5.2.6.6). There is some evidence that birds could potentially be impacted by light emissions and potential impacts on migrating birds will be considered.
	Birds (sea and migration)	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	Conservation significant marine mammal species (whales, dolphins and dugongs) are known to occur in the James Price Point coastal area (Scoping Report Sect. 5.2.6.4). While conservation significant species are known to occur it is considered unlikely that light emissions would disrupt feeding or movement patterns.
Marine mammals	Disturbance of conservation significant fauna individuals	2 Unlikely	F Slight	L	Conservation significant fish species are known to occur off the coast of the Kimberley Peninsula. No life specific fish fauna surveys are available for the James Price Point coastal area, so assumptions of species present are based on nearby or regional surveys and are also directly related to the physical environmental characteristics. At James Price Point important fish habitats such as mangroves and estuaries are mostly desert. Sandy shores with low vegetation are exposed compared to other locations where the presence of mangroves and estuaries is likely to be higher. Light emissions from the precinct may impact on the invertebrates (Scoping Report Sect. 5.2.6.5). Light has the potential to attract fish species or alter cycles however it is unlikely that light emissions would impact important habitats, particularly for conservation significant species.	
Fish	Disturbance of conservation significant fauna individuals	2 Unlikely	F Slight	L		

Environmental Aspect (Stressor)	Environmental factor	Potential Impacts	Use/hood	Consequence	Inherent risk rating	Inherent Risk (no mitigation)	RATIONALE
Site disturbance/ excavation	Coral	Physical damage/disturbance to coral reefs	1 Highly Unlikely	F Slight	L	L	Current information indicates that potential habitat for coral communities within the James Price Point area is unlikely to be significantly impacted by the proposed construction works. It is considered unlikely that coral would be adversely impacted as a result of light emissions during construction and operation.
	Coral	Physical damage/disturbance to coral reefs	2 Unlikely	F Slight	L	L	Current information suggests that potential habitat for coral communities within the James Price Point area is unlikely to be significantly impacted by the proposed construction works. It is considered unlikely that coral communities would be directly disturbed as a result.
	Marine mammals	Loss of habitat	2 Unlikely	D Moderate	M	M	Conservation significant marine mammal species (Whites, Dolphins and Dugongs) are known to occur in the James Price Point coastal area while a significant portion of the humpback whale population migrates past this area (Scoping Report Sect 5.2.6.4). Site disturbance as a result of dredging, pipeline installation and nearshore construction works may result in the removal of dredging foraging habitat. It is considered that this would result in moderate impacts, should sea turtles be disturbed as a result of marine excavation activities.
	Mangroves	Disturbance of fauna habitat	1 Highly Unlikely	F Slight	L	L	While mangroves are known to provide important habitat for invertebrates, fish and other fauna, mangroves do not appear to be widespread in the James Price Point coastal area (Scoping Report Sect. 5.2.5.3) and as a result it is considered unlikely that mangrove communities would also be disturbed as a result of this proposal.
	Seagrass	Loss of habitat	2 Unlikely	D Moderate	M	M	Seagrass beds are known to occur in the James Price Point coastal area and provide feeding habitat for Dugongs and habitat for other marine fauna (Scoping Report Sect 5.2.6.4 & 5.2.6.3). Site disturbance as a result of dredging, pipeline installation and nearshore construction works may result in the removal of dredging foraging habitat. It is considered that this would result in moderate impacts, should seagrasses be disturbed as a result of marine excavation activities.
	Macroalgal communities	Disturbance of fauna habitat	2 Unlikely	F Slight	L	L	While it is likely that macroalgal habitats would be disturbed as a result of dredging and nearshore construction works current information suggests that diversity and abundance of algal flora within the Kennedy is generally poor and is likely to be a result of the constant highly turbid water (Scoping Report Sect 5.2.6.3). It is considered that this would result in moderate impacts, should seagrasses be disturbed as a result of marine excavation activities.
	Macroalgal communities	Disturbance of fauna habitat	2 Unlikely	F Slight	L	L	In a regional context, the Lagoon Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within the James Price Point coastal area, however current information suggests that potential nesting areas are likely to be located further to the south of the James Price Point coastal area (Scoping Report Sect. 5.2.6.3). It is considered that this would result in moderate impacts, should seagrasses be disturbed as a result of marine excavation activities.
	Reptiles	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	M	A wide range of invertebrates are found in the intertidal zones of the Kimberley region, associated with mangrove communities, tidal creeks and embayments, rocky shore reef platform and pavement and sandy beach (Iatid Scoping Report Sect. 5.2.6.2). Excavation activities have the potential to disturb habitats where they occur however, the area of direct habitat is likely to be relatively small and habitats are unlikely to be limited to the disturbance area.
	Invertebrates (or corals)	Disturbance of fauna habitat	2 Unlikely	F Slight	L	L	Conservation significant fish species are known to occur off the coast of the Damper Peninsula. No size specific fish fauna surveys are available for the James Price Point coastal area, so assumptions of species present are based on nearby or regional surveys and are also directly related to the physical environmental characteristics. At James Price Point important fish habitats such as mangroves and seagrass are mostly located within the intertidal zone and are likely to be disturbed by excavation activities. It is considered that future and such fish fauna is expected to be temporarily present during the high tides to feed on invertebrates (Scoping Report Sect. 5.2.6.5). Nearshore activities such as dredging, pipeline installation works and nearshore construction may result in localised impacts to some habitats however the area of potential impact is likely to be relatively small.
	Fish	Disturbance of fauna habitat	2 Unlikely	F Slight	L	L	L
Vessel movements	Marine water quality	decline in water quality	2 Unlikely	F Slight	L	L	In a regional context, the Lagoon Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within the James Price Point coastal area, however current information suggests that potential nesting areas are likely to be located further to the south of the James Price Point coastal area (Scoping Report Sect. 5.2.6.3). It is considered that future and such fish fauna is expected to be temporarily present during the high tides to feed on invertebrates (Scoping Report Sect. 5.2.6.5). Nearshore activities such as dredging, pipeline installation works and nearshore construction may result in localised impacts to some habitats however the area of potential impact is likely to be relatively small.
	Reptiles	Injury or death of conservation significant fauna	2 Unlikely	E Minor	M	M	Conservation significant marine mammal species (Whites, Dolphins and Dugongs) are known to occur in the James Price Point coastal area while a significant portion of the humpback whale population migrates past this area (Scoping Report Sect 5.2.6.4). Constant vessel movements may have the potential to disturb feeding and movement patterns while ship strike is considered unlikely given that larger tankers would move at slow speeds when approaching and leaving the Port and likely speed limits for smaller vessels.
	Marine mammals	Injury or death of conservation significant fauna	2 Unlikely	E Minor	M	M	Conservation significant marine mammal species (Whites, Dolphins and Dugongs) are known to occur in the James Price Point coastal area while a significant portion of the humpback whale population migrates past this area (Scoping Report Sect 5.2.6.4). Constant vessel movements may have the potential to disturb feeding and movement patterns while ship strike is considered unlikely given that larger tankers would move at slow speeds when approaching and leaving the Port and likely speed limits for smaller vessels.
	Physical presence	Boats (including shore and intertidal)	Injury or death of conservation significant fauna	2 Unlikely	F Slight	L	L

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Usefulness	Consequence	Inherent risk rating	Inherent Risk (no mitigation)
Physical presence						
	Tidal regimes, currents and hydrodynamics	Alteration of flow regimes	3 Possible	E Minor	M	Heavy flow alterations will be a major and adverse impact that may have the potential to impact local scale marine hydrodynamic conditions. This may result in residual impacts on benthic habitats and assemblages.
Invasive Marine Species						
	Coral	Biological	2 Unlikely	C Major	H	The marine environment of the James Price Point coastal area is relatively undisturbed and it is considered unlikely that invasive marine species currently exist there. Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS during construction and operation. Should IMS be introduced they have the potential to outcompete and displace native fauna which may return affect the local marine ecosystem whilst also impacting local pearling and aquaculture industries.
	Invertebrates (ex corals)	Biological	2 Unlikely	C Major	H	The marine environment of the James Price Point coastal area is relatively undisturbed and it is considered unlikely that invasive marine species currently exist there. Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS during construction and operation. Should IMS be introduced they have the potential to outcompete and displace native fauna which may return affect the local marine ecosystem whilst also impacting local pearling and aquaculture industries.
	Fish	Biological	2 Unlikely	C Major	H	The marine environment of the James Price Point coastal area is relatively undisturbed and it is considered unlikely that invasive marine species currently exist there. Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS during construction and operation. Should IMS be introduced they have the potential to outcompete and displace native fauna which may return affect the local marine ecosystem whilst also impacting local pearling and aquaculture industries.
	Seagrass	Biological	2 Unlikely	C Major	H	The marine environment of the James Price Point coastal area is relatively undisturbed and it is considered unlikely that invasive marine species currently exist there. Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS during construction and operation. Should IMS be introduced they have the potential to outcompete and displace native fauna which may return affect the local marine ecosystem whilst also impacting local pearling and aquaculture industries.
	Ecosystem Integrity	Biological	2 Unlikely	C Major	H	The marine environment of the James Price Point coastal area is relatively undisturbed and it is considered unlikely that invasive marine species currently exist there. Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS during construction and operation. Should IMS be introduced they have the potential to outcompete and displace native fauna which may return affect the local marine ecosystem whilst also impacting local pearling and aquaculture industries.
	Macroalgal communities	Biological	2 Unlikely	C Major	H	The marine environment of the James Price Point coastal area is relatively undisturbed and it is considered unlikely that invasive marine species currently exist there. Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS during construction and operation. Should IMS be introduced they have the potential to outcompete and displace native fauna which may return affect the local marine ecosystem whilst also impacting local pearling and aquaculture industries.
Marine discharges						
	Reptiles	Disturbance of conservation significant fauna individuals	1 Highly Unlikely	E Minor	L	In a regional context, the Laysan Islands are known to be an important nesting and inter-nesting habitat for green turtles (Scoping Report Sect. 5.2.6.3). Conservation significant turtle species are known to occur within the James Price Point coastal area, however current information suggests that potential nesting areas are likely to be located further to the south of the James Price Point coastal area (Scoping Report Sect. 5.2.6.3). Management and control measures would be implemented as part of any routine marine discharges occurring. It is considered unlikely that marine water and habitat quality would be altered such that marine mammal species would be impacted.
	Marine mammals	Disturbance of conservation significant fauna individuals	1 Highly Unlikely	E Minor	L	Conservation significant marine mammals species (Whales and Dolphins) are known to occur in the James Price Point coastal area (Scoping Report Sect. 5.2.6.4). Management and control measures would be implemented as part of any routine marine discharges occurring. It is considered unlikely that marine water and habitat quality would be altered such that marine mammal species would be impacted.
	Birds (sea and migration)	Disturbance of conservation significant fauna individuals	1 Highly Unlikely	E Minor	L	While it is possible that conservation significant sea and migratory bird species may periodically occur within the James Price Point coastal area current information suggests that the presence of specific seabird roosting or nesting habitat within the James Price Point coastal area is considered unlikely (Scoping Report Sect. 5.2.6.5). Management and control measures would be implemented as part of any routine marine discharges occurring. It is considered unlikely that marine water and habitat quality would be altered such that sea and migratory bird species would be impacted.
	Fish	Disturbance of conservation significant fauna individuals	1 Highly Unlikely	E Minor	L	Conservation significant fish species are known to occur off the coast of the Dampier Peninsula. No site specific fish fauna surveys are available for the James Price Point coastal area, so assumptions of species present are based on nearby or regional surveys and are also directly related to the physical environmental characteristics. At James Price Point important fish habitats such as mangroves and estuaries are mostly located to the south of the James Price Point coastal area. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that marine water quality would be altered such that fish species would be impacted.
	Marine Waters	Surface water contamination	1 Highly Unlikely	E Minor	L	Marine waters of the James Price Point coastal area provides habitat for a variety of marine species and communities whilst also supporting indigenous and recreational activity. Commercial fisheries also occur nearby along with pearling reefs. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that marine water quality would be impacted such that marine species and fishing activity would be impacted.
	Coral	Physical damage/disturbance to coral reefs	1 Highly Unlikely	E Minor	L	Current information suggests that potential habitat for coral communities within the James Price Point coastal area is relatively sparse (Scoping Report Sect. 5.2.6.1). Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that coral communities would be impacted.

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Usefulness	Consequence	Inherent risk rating	MITIGATION
	Invertebrates (ex corals)	Disturbance of fauna habitat	1 Highly Unlikely	E Minor	L	A wide range of invertebrates are found in the intertidal zones of the Kimberley region, associated with mangroves and seagrass. For the other marine fauna (Scoping Report Sect 5.2.6.4 & 5.3.3), management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that invertebrate communities would be impacted.
	Seagrass	Disturbance of fauna habitat	1 Highly Unlikely	E Minor	L	Seagrass beds are known to occur in the James Price Point coastal area and provide feeding habitat for large marine animals. For the other marine fauna (Scoping Report Sect 5.2.6.4 & 5.3.3), management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that seagrass communities would be impacted.
						Exposed areas of the Kimberley coast, including the James Price Point coastal area, are not suitable for colonisation by mangroves (Scoping Report Sect 5.2.6.3) and while mangroves are known to provide important coastal area. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that mangrove communities would be impacted.
	Mangroves	Disturbance of fauna habitat	1 Highly Unlikely	F Slight	L	Management and control measures would be implemented as part of any routine marine discharges occurring and as such it is considered unlikely that the productivity of coastal waters within the James Price Point coastal area would be impacted.
	Plankton	Surface water contamination	2 Unlikely	E Minor	L	While it is likely that macroalgal habitats would be disturbed as a result of dredging and seabed construction works current information suggests that diversity and abundance of algal flora within the Kimberley is generally poor and is likely to be a result of the constant highly turbid waters (Scoping Report Sect 5.2.5.4). Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that macroalgal communities would be impacted.
	Macroalgal communities	Disturbance of fauna habitat	1 Highly Unlikely	E Minor	L	Management and control measures would be implemented as part of any routine marine discharges occurring and as such it is considered unlikely that the intertidal marine sediments would be impacted.
	Intertidal marine sediments	Soil contamination	1 Highly Unlikely	E Minor	L	
Vegetation/habitat clearing						While it is possible that conservation significant area and migratory bird species may periodically occur within the James Price Point coastal area, current information suggests that the presence of species and/or roosting sites within the James Price Point coastal area is unlikely. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that macroalgal communities would be impacted.
	Birds (sea and migration)	Loss of habitat	2 Unlikely	E Minor	M	Based on database search results conservation significant bird species are known to occur within the area (Scoping Report Sect. 5.3.2.1) and the James Price Point coastal area may provide habitat for some of these species. Vegetation and habitat clearing associated with onshore and nearshore construction activity is likely to result in the loss of habitat for some of these species. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of this habitat removal would be considered in relation to habitat availability within the James Price Point coastal area and the broader Dampier Peninsula.
	Birds	Loss of habitat	2 Unlikely	E Minor	M	Based on database search results conservation significant fauna species are known to occur within the area (Scoping Report Sect. 5.3.2.1) and the James Price Point coastal area may provide habitat for some of these species. Vegetation and habitat clearing associated with onshore and nearshore construction activity is likely to result in the loss of habitat for some of these species. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of this habitat removal would be considered in relation to habitat availability within the James Price Point coastal area and the broader Dampier Peninsula.
	Declared rare protected fauna	Loss of habitat	4 Quite Likely	E Minor	H	Culturally significant flora and fauna species are likely to occur within the James Price Point coastal area. For example indigenous food products (bush products) that are harvested for use by local indigenous people (Scoping Report Sect 5.3.4.2). Vegetation removal as a result of onshore construction has the potential to result in the loss of habitat for some of these species. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of this habitat removal would be considered in relation to habitat availability within the James Price Point coastal area and the broader Dampier Peninsula.
	Species of ethnic-biological significance	Loss of habitat	4 Quite Likely	E Minor	H	Short Range Endemic species such as land snails, earthworms and spiders are known to occur in vine thicket communities in the Kimberley, and are likely to occur within vine thicket communities within the James Price Point coastal area. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of any SRE habitat removal should this occur, would be considered in relation to the distribution of habitats within the James Price Point coastal area.
	SRE	Disturbance of fauna habitat	3 Possible	E Minor	M	Habitats for stygobionts are likely to occur where ground water systems such as mound springs are present however, there is currently little information on the availability of stygobionts and troglodyte habitats within the James Price Point coastal area and this would be clarified as initial geological and hydrological investigations are conducted. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of any SRE habitat removal should this occur, would be considered in accordance with the DEC guidance statement No 54.
	Subterranean SRE	Disturbance of fauna habitat	4 Possible	E Minor	M	No state or commonwealth declared rare flora species have been recorded within the James Price Point coastal area. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of any SRE habitat removal should this occur, would be considered in accordance with the DEC guidance statement No 54.
						Declared rare flora species are likely to occur within vine thicket communities within the James Price Point coastal area and this would be clarified as initial geological and hydrological investigations are conducted. Management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of any SRE habitat removal should this occur, would be considered in accordance with the DEC guidance statement No 54.
	Declared rare flora	Loss of flora species and vegetation communities	2 Unlikely	E Minor	M	Mossman Vine Thicket is known to occur along the James Price Point coastal area (Scoping Report Sect 5.3.4.2). The extent and condition of this community will be confirmed and it is likely that removal of this community would be avoided where possible. Should vine thicket be removed as a result of Project construction, management and control measures would be implemented as part of any routine marine discharges occurring and it is considered unlikely that the significance of this habitat removal would be considered in relation to habitat availability within the James Price Point coastal area and broader Dampier Peninsula.
	TECs	Loss of flora species and vegetation communities	4 Quite Likely	E Minor	H	

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Usefulness	Consequence	Inherent risk rating	ATTOVALE
						The James Price Point coastal area has not been subject to past clearing and habitat fragmentation and as a result is likely to provide important refuge value for terrestrial biota. Clearing as a result of Precinct construction has the potential to reduce habitat connectivity and fragment habitats for some species. While some historical vegetation has been cleared, the impact of clearing would be considered in relation to potential impacts on habitats within the James Price Point coastal area and broader Dampier Peninsula.
	Refuge value for terrestrial biota	Loss of habitat	4 Quite Likely	E: Minor		
	Terrestrial conservation areas	Disturbance of heritage sites	1 Highly Unlikely	E: Minor	L	Couminto nature reserve is located approximately 20 km north of the James Price Point coastal area. Vegetation and habitat clearing would not occur within this area.
Site disturbance / excavation	Watercourses (rivers, wetlands and creeks)	Disturbance and/or modification of natural drainage systems	1 Highly Unlikely	E: Minor	L	Existing information suggests that there are no major water courses within the James Price Point coastal area. There are some minor water courses to the North and South however these are unlikely to be directly disturbed.
	Terrestrial conservation areas	Degradation from visual qualities/character of the area	1 Highly Unlikely	E: Minor	L	Couminto nature reserve is located approximately 20km to the North of the James Price Point coastal area and is unlikely to be disturbed as a result of site disturbance and excavation activity.
	Subterranean SRE	Loss of habitat	2 Unlikely	E: Minor	M	There is little existing information on the presence and abundance of subterranean SREs within the James Price Point coastal area and site excavation activities have the potential to remove some potential habitat areas, should they occur.
	Groundwater	Groundwater contamination	3 Possible	C: Major		At present there is little information on the groundwater conditions at the James Price Point coastal area. There is the potential for saltwater intrusion to occur as a result of excavation activities and the compaction of soil used in site preparation. Heavy impacts will be further considered once groundwater conditions are further understood.
	Surface SRE	Loss of habitat	2 Unlikely	E: Minor	M	Short Range Endemic (SRE) species such as land snails, earthworms and spiders occur in vine thicket communities in the Kimberley, including those mapped within the James Price Point coastal area. It is possible that areas of habitat would be removed.
	Soils	Generation of acid sulphate soils	1 Highly Unlikely	E: Minor	L	It is considered unlikely that AS occur within the James Price Point coastal area however, this will be further considered during preliminary geotechnical investigations.
	Groundwater	Change in water infiltration and recharge rates	3 Possible	E: Minor	M	Site preparation will require compaction of soils within some construction areas and this is likely to affect water infiltration and recharge rates within these areas.
	Soils	Soil contamination	2 Unlikely	E: Minor	M	There is some potential for increased soil salinity as a result of site preparation activities and dust suppression.
	Geomorphology	Changes in landform	4 Quite Likely	E: Minor	H	While the James Price Point coastal area is relatively flat site contouring will be required and it is likely that coastal geomorphology will be altered as a result of nearshore construction and site preparation works.
Runoff						
	Soils and landforms	Erosion	1 Highly Unlikely	E: Minor	L	Site clearing and excavation is would disturb soils and alter landforms. There is the potential for increased runoff from the site and erosion of soils and high volume rainfall events however this is likely to result in only minor and temporary impacts.
	Watercourses (rivers, wetlands and creeks)	Erosion	1 Highly Unlikely	E: Minor	L	Water courses to not appear to be present within the James Price Point coastal area and erosion that may occur as a result of increased runoff is considered to represent a minor short-term impact.
						The James Price Point coastal area currently has high air quality conditions with the exception of some smoke as a result of bushfire and dust. The operation of the LNG Precinct will result in emissions that may influence local ambient conditions. The location of the Precinct has been selected to ensure no nearby sensitive receptors and the location of the Precinct is not in close proximity to any sensitive receptors. There is uncertainty in potential secondary reactions with existing conditions (e.g. interaction with seasonal bushfire smoke).
Atmospheric emissions	Air quality	Decrease in air quality resulting in health or amenity impacts	3 Possible	F: Slight	M	Potential for short-term releases of black smoke emissions during startup / upset conditions. Efficiency in flare tip design will be defined to minimise risk of black smoke emissions. Minor contribution of smoke emissions anticipated to arise from project, relative to existing haze / smoke conditions from seasonal fires in a regional context.
	Visual Amenity	Local amenity impacts from atmospheric emissions	4 Quite Likely	F: Slight	M	Potential for deposition of atmospheric emissions on native vegetation or SREs. Integration of low NOx controls in design and adherence with EPA Guidance Statement No. 15 will ensure stringent controls on atmospheric emissions. Localised short-term effects would be anticipated.
						There is uncertainty in potential secondary reactions with existing conditions (e.g. interaction with seasonal bushfire smoke).
	Terrestrial Flora	Potential deposition impacts from atmospheric emissions	1 Highly Unlikely	F: Slight	L	Known petrophysic rock art in vicinity of Precinct area.
Dust emissions						The James Price Point coastal area currently has high air quality conditions with the exception of some smoke as a result of bushfire and dust. There is potential for dust emissions during clearing and site excavations to reduce current air quality conditions.
	Air quality	Decrease in air quality resulting in health or amenity impacts	3 Possible	E: Minor	M	Potential effect of dust emissions on surrounding vegetation. Precinct operators are anticipated to implement dust control measures and progressive rehabilitation/abandonment of temporary zones during construction. Minimal dust emissions anticipated during operation, with paved areas around LTO plant areas that will minimise risk of fugitive dust.
	Terrestrial Flora	Potential deposition impacts from atmospheric emissions	2 Unlikely	E: Minor	M	
Greenhouse gas (GHG) emissions						Operation of facilities within the LNG Precinct would result in the release of greenhouse gases, however its contribution to global climate change is considered to be minor and is not expected to significantly influence the global issue of climate change.
	Air quality	Contribution to climate change			H	

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Usefulness	Consequence	Inherent risk rating	Inherent Risk (no mitigation)
Noise and vibration	Subterranean SRE	Disturbance of fauna individuals	2 Unlikely	F Slight	L	Uses and activities may have the potential to influence the activity or behaviour of subterranean SREs or other fauna species. The presence of these habitats within the James Price Point coastal area is uncertain, however it is anticipated that impacts would be restricted to the area in close proximity of the plant footprint area.
						The James Price Point coastal area is known to provide habitat for conservation significant fauna species. Noise and vibration as a result of onshore construction and plant operation has the potential to disturb fauna nesting and foraging habitats. It is likely that this would represent a minor disruption to a portion of the population.
	Terrestrial Fauna	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	While it is possible that conservation significant sea and migratory bird species may periodically occur within the James Price Point coastal area current information suggests that the presence of specific seabird roosting or nesting habitat within the James Price Point coastal area is considered unlikely (Scoping Report Sect 5.2.6.6). However, the presence of these habitats within the James Price Point coastal area is uncertain, however it is anticipated that impacts would be restricted to the area in close proximity of the plant footprint area. Noise and vibration generating activities may have the potential to disrupt foraging activity.
	Birds (including shore and migration)	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	Noise emissions from construction and operation has the potential to impact areas of known or likely tourism value in the vicinity of the precinct.
	Tourism	Noise impacts	4 Quite Likely	F Slight	M	Noise emissions from precinct construction and operation has the potential to impact areas of known or likely recreational use in the vicinity of the project. Recreational DMOing, camping, fishing and use of the coastal area by Traditional Owners are potential recreational uses to be considered.
Scrimmentation (eg Dredging, Trenching, Drilling)	Sports and recreation	Noise impacts	4 Quite Likely	F Slight	M	A dredging and other areas of potential Aboriginal significance are known to occur within the vicinity of the James Price Point coastal area. It is likely that noise and vibration from construction and operation will be restricted to the area in close proximity of the plant footprint area. Noise and vibration generating activities may have the potential to disrupt foraging activity.
	Aboriginal heritage	Noise impacts	4 Quite Likely	F Slight	M	While it is possible that conservation significant sea and migratory bird species may periodically occur within the James Price Point coastal area current information suggests that important nesting or foraging areas are unlikely to be impacted by construction and operation. It is likely that important habitat areas would be disturbed as a result of sedimentation generating activities.
	Birds (including shore and migration)	Loss of habitat	2 Unlikely	F Slight	L	Conservation significant fauna species are known to occur within the James Price Point coastal area and there is the potential for death and injury as a result of increased vehicle activity however this is unlikely to impact species at a population level.
	Declared rare protected fauna	Injury or death of conservation significant fauna	1 Highly Unlikely	E Minor	L	Conservation significant fauna species are known to occur within the James Price Point coastal area and there is the potential for death and injury as a result of increased vehicle activity however this is unlikely to impact species at a population level.
	Refuge value for terrestrial biota	Disturbance of fauna habitat	1 Highly Unlikely	F Slight	L	Conservation significant species (for example birds) may occur within the James Price Point coastal area. While it is anticipated that increased lighting will be required for the Precinct, it is likely that they would be restricted to an area surrounding the Precinct facilities.
Light emissions	Declared rare protected fauna	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	Potential for light from LNG Precinct to introduce additional source of light glow on the horizon.
	Visual Amenity	Change to visual amenity	4 Quite Likely	F Slight	M	Waste disposal would occur throughout the construction and operation of an LNG facility within the James Price Point coastal area. It is considered unlikely that the construction and operation of an LNG facility would affect the visual amenity of the area. There is some potential for increased lighting to be required for the Precinct, it is likely that they would be restricted to an area surrounding the Precinct facilities.
	Groundwater	Groundwater contamination	1 Highly Unlikely	E Minor	L	Waste disposal would occur throughout the construction and operation of an LNG facility within the James Price Point coastal area. It is considered unlikely that soil contamination would occur should appropriate waste management and disposal occur.
	Soils and landforms	Soil contamination	1 Highly Unlikely	E Minor	L	Groundwater abstraction is likely to occur to supply water during construction and operation. There is some potential for ongoing abstraction to result in groundwater drawdown and soil intrusion which would affect subterranean fauna habitat.
Groundwater abstraction	Subterranean fauna	Disturbance of fauna habitat	3 Possible	E Minor	M	Groundwater abstraction is likely to occur to supply water during construction and operation. There is some potential for ongoing abstraction to affect surrounding wetlands and creeks however the existing groundwater and hydrological conditions are unknown.
	Watercourses (rivers, wetlands and creeks)	Disturbance and/or modification of natural drainage systems	3 Possible	E Minor	M	Groundwater abstraction is likely to occur to supply water during construction and operation. There is some potential for ongoing abstraction to affect surrounding wetlands and creeks however the existing groundwater and hydrological conditions are unknown.
		Alteration of flow regimes	3 Possible	E Minor	M	Groundwater abstraction is likely to occur to supply water during construction and operation. There is some potential for ongoing abstraction to affect surrounding wetlands and creeks however the existing groundwater and hydrological conditions are unknown.
	Groundwater	Disturbance and/or modification of natural drainage systems	3 Possible	E Minor	M	Groundwater abstraction is likely to occur to supply water during construction and operation. There is some potential for ongoing abstraction to affect surrounding wetlands and creeks however the existing groundwater and hydrological conditions are unknown.
	Refuge value for terrestrial biota	Decline in health of groundwater dependent vegetation (where groundwater drawdown occurs)	3 Possible	E Minor	M	Groundwater abstraction is likely to occur to supply water during construction and operation. There is some potential for ongoing abstraction to affect surrounding wetlands and creeks however the existing groundwater and hydrological conditions are unknown.

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Use/hood	Consequence	Inherent risk rating	Inherent Risk (no mitigation)	RATIONALE
Physical presence	Refuge value for terrestrial biota	Habitat fragmentation	3 Possible	E Minor	M	Threatened fauna species are known to occur within the James Price Point coastal area and plant construction and operation may result in habitat fragmentation. Potential for habitat fragmentation however, there are likely to be large areas of surrounding habitat.	
	Introduced pests						Weed species are already known to occur on the Dampier Peninsula and James Price Point coastal area (Scoping Report Sect. 5.3.4.3) and have the potential to outcompete native flora species. It is considered likely that the introduction of new weeds to the coastal area may result in the loss of native flora. However, there is the potential for the introduction of new pests to the James Price Point coastal area as a result of Project construction and operation however there is also the potential for improved management of natural resources to occur.
		Refuge value for terrestrial biota	Disturbance of fauna habitat	2 Unlikely	F Slight	L	Weed species are already known to occur on the Dampier Peninsula and James Price Point coastal area (Scoping Report Sect. 5.3.4.3) and have the potential to outcompete native flora species. It is considered likely that the introduction of new weeds to the coastal area may result in the loss of native flora. However, there is the potential for the introduction of new pests to the James Price Point coastal area as a result of Project construction and operation however there is also the potential for improved management of natural resources to occur.
		Refuge value for terrestrial biota	Introduction and/or spread of weeds	2 Unlikely	F Slight	L	It is considered likely that introduced fauna species currently inhabit the Dampier Peninsula and James Price Point coastal area and are likely to be competing with native species. There is the potential for the introduction of new species to the coastal area as a result of Project construction and operation however there is also the potential for improved management of natural resources to occur.
		Terrestrial Fauna	Disturbance of fauna population	2 Unlikely	F Slight	L	Weed species are already known to occur on the Dampier Peninsula and James Price Point coastal area (Scoping Report Sect. 5.3.4.3) and have the potential to outcompete native flora species. It is considered likely that the introduction of new weeds to the coastal area may result in the loss of native flora. However, there is the potential for the introduction of new pests to the James Price Point coastal area as a result of Project construction and operation however there is also the potential for improved management of natural resources to occur.
	Terrestrial Flora	Disturbance of conservation significant vegetation communities	2 Unlikely	E Minor	M	Weed species are already known to occur on the Dampier Peninsula and James Price Point coastal area (Scoping Report Sect. 5.3.4.3) and have the potential to outcompete native flora species. It is considered likely that the introduction of new weeds to the coastal area may result in the loss of native flora. However, there is the potential for the introduction of new pests to the James Price Point coastal area as a result of Project construction and operation however there is also the potential for improved management of natural resources to occur.	
	Ecosystem Integrity	Introduction and/or spread of weeds	2 Unlikely	F Slight	L	Weed species are already known to occur on the Dampier Peninsula and James Price Point coastal area (Scoping Report Sect. 5.3.4.3) and have the potential to outcompete native flora species. It is considered likely that the introduction of new weeds to the coastal area may result in the loss of native flora. However, there is the potential for the introduction of new pests to the James Price Point coastal area as a result of Project construction and operation however there is also the potential for improved management of natural resources to occur.	
	Terrestrial discharges, including non-toxic discharges	Subterranean fauna	Contamination of subterranean habitats	2 Unlikely	E Minor	M	The James Price Point coastal area is known to provide habitat for flora, fauna and vegetation communities. While terrestrial discharges may have the potential to impact individual species or their habitats it is unlikely that such an event would compromise the refuge value of the James Price Point coastal area, as a whole.
		Refuge value for terrestrial biota	Disturbance of fauna habitat	1 Highly Unlikely	E Minor	L	There are no major waterways present within the James Price Point coastal area. Site drainage would be collected in storage ponds however there is the potential for site drainage including hydrocarbons and chemicals to enter local drainage systems, particularly under extreme rainfall events.
		Watercourses (rivers, wetlands and creeks)	Surface water contamination	2 Unlikely	E Minor	M	At present there is little information on the soil conditions at the James Price Point coastal area. It is considered that terrestrial discharges may have the potential to impact groundwater conditions.
Soils		Soil contamination	2 Unlikely	E Minor	M	At present there is little information on the groundwater conditions at the James Price Point coastal area. It is considered that terrestrial discharges may have the potential to impact groundwater conditions.	
Groundwater		Groundwater contamination	2 Unlikely	E Minor	M	The simplification of the vegetation due to a loss of fine scale fire-induced mosaic can have consequences for small fauna with limited home ranges. Changes in fire regimes are among the threatening processes which have the potential for impact on species (EPA May 2006).	
Altered fire regime		Refuge value for terrestrial biota	Loss of habitat	2 Unlikely	E Minor	M	The presence of LNG Project may result in changes to existing fire regimes with the introduction of ignition sources; however the development has potential to create opportunities to improve fire management planning to establish and maintain fire regimes in the Kimberley.
	Declared rare protected fauna	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	The simplification of the vegetation due to a loss of fine scale fire-induced mosaic can have consequences for small fauna with limited home ranges. Changes in fire regimes are among the threatening processes which have the potential for impact on species (EPA May 2006).	
	Surface SRE	Disturbance of conservation significant fauna individuals	2 Unlikely	E Minor	M	The presence of LNG Project may result in changes to existing fire regimes with the introduction of ignition sources; however the development has potential to create opportunities to improve fire management planning to establish and maintain fire regimes in the Kimberley.	

Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Unlikelihood	Consequence	Inherent risk rating	Inherent Risk (no mitigation)
	Declared rare flora	Disturbance of conservation significant flora	22 Unlikely	E Minor	M	Current fire risk of GSE Project is not present in the District and throughout the Dampier Peninsula. The presence of LNG Project may result in changes to existing fire regime with the introduction of galton sources, however the development has potential to create opportunities to improve fire management planning to establish and maintain are more sustainable fire regime in the Kimberley.
						Potential for loss of species of ethno-biological significance including the Gubinge which is known to be present in vine thickets and throughout the Dampier Peninsula. The presence of LNG Project may result in changes to existing fire regime with the introduction of galton sources, however the development has potential to create opportunities to improve fire management planning to establish and maintain are more sustainable fire regime in the Kimberley.
	Species of ethno-biological significance	Loss of flora species and vegetation communities	22 Unlikely	E Minor	M	TECs including vine thickets are at risk of impact from an altered fire regime. The presence of LNG Project may result in changes to existing fire regime with the introduction of galton sources, however the development has potential to create opportunities to improve fire management planning to establish and maintain are more sustainable fire regime in the Kimberley.
	TECs	Loss of flora species and vegetation communities	22 Unlikely	E Minor	M	Flora species are present in further and the vegetation where exposed soils under and fire regimes are not present. The presence of LNG Project may result in changes to existing fire regime with the introduction of galton sources, however the development has potential to create opportunities to improve fire management planning to establish and maintain are more sustainable fire regime in the Kimberley.
	Soils	Erosion	22 Unlikely	E Minor	M	Atmospheric emissions from bush fires contribute particulates as well as greenhouse gas. The presence of LNG Project may result in changes to existing fire regime with the introduction of galton sources, however the development has potential to create opportunities to improve fire management planning to establish and maintain are more sustainable fire regime in the Kimberley.
	Air quality	Decrease in air quality	22 Unlikely	E Minor	M	Altered fire regime has potential to lead to biodiversity loss with some plants, particularly fire-sensitive ones, unable to recover. Air quality may be degraded, however potential to build quality these losses. Future land degradation may occur due to erosion and the loss of vegetation. The presence of LNG Project may result in changes to existing fire regime with the introduction of galton sources, however the development has potential to create opportunities to improve fire management planning to establish and maintain are more sustainable fire regime in the Kimberley.
	Ecosystem Integrity	Alteration of vegetation community composition	22 Unlikely	E Minor	M	

Appendix H :
Social Impact Summary Table

Appendix H: Social Impacts Summary Table						
Environmental Aspect (Stressor)	Environmental Factor	Potential Impacts	Unlikelihood	Consequence	Inherent risk ranking	RATIONALE
MARINE Noise and vibration	Commercial Fishing	Disturbance to existing and future activities	1 Highly Unlikely	E Minor	L	A number of WA State managed and Commonwealth managed fisheries operate in the coastal waters of the JPP coastal area. Noise impacts are anticipated to be minor and limited to the LNG Precinct area and are not anticipated to result in significant disturbance to commercial fishing operations in the region.
	Aquaculture	Disturbance to existing and future activities	1 Highly Unlikely	E Minor	L	In a regional context, major aquaculture / pearling operations occur at Cygnet Bay, Beagle Bay and Depwater Point. Noise impacts are anticipated to be minor and limited to the LNG Precinct area, although well removed from the LNG Precinct area. Noise impact is associated with the LNG Precinct are expected to occur primarily during construction and installation phases. The nearshore infrastructure is anticipated to be located away from active aquaculture operations. Taking into account the short-term and temporary nature of nearshore noise-generating activities, it is not anticipated to result in significant disturbance to aquaculture operations in the region. The risk ranking will be reviewed in the event that marine blasting is a requirement for the construction phase.
	Tourism	Disturbance to existing and future activities	3 Possible	E Minor	M	In the vicinity of the site, marine noise and vibration could potentially affect amenity of the local areas with follow-on effects on local tourism uses. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct, from tourism and other users of the broader coastal area. Resultant impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area.
	Paleontology	Disturbance to heritage sites	1 Highly Unlikely	E Minor	L	Marine noise and vibration that may potentially arise from the Precinct construction and operation is considered highly unlikely to result in significant impacts on cultural heritage values.
	Colonial Heritage	Disturbance to heritage sites	1 Highly Unlikely	E Minor	L	Marine noise and vibration that may potentially arise from the Precinct construction and operation is considered highly unlikely to result in significant impacts on colonial heritage values.
	Recreational Fishing	Disturbance to existing and future activities	1 Highly Unlikely	E Minor	L	Marine construction activities such as piling and dredging may have the potential to affect fish species. However it is unlikely that such impacts would affect recreational fishing off the James Price Point. Noise impacts are anticipated to be minor and limited to the LNG Precinct area. Noise impacts associated with the LNG Precinct are expected to occur primarily during construction and installation phases. Taking into account the short-term and temporary nature of nearshore noise-generating activities, it is not anticipated to result in significant disturbance to recreational fishing activities in the region.
	Commercial Fishing	Disturbance to existing and future activities	2 Unlikely	E Minor	M	Dredging during construction and ongoing maintenance may potentially increase sedimentation and may have the potential to disturb commercial fishing activities. The marine waters of the JPP coastal area are used for commercial fishing activities. Noise impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. Taking into account the short-term nature of potential impacts, the natural high turbidity and low density of commercial fishing operations in the area, significant impacts are not anticipated.
	Aquaculture	Disturbance to existing and future activities	3 Possible	E Minor	M	In a regional context, major aquaculture / pearling operations occur at Cygnet Bay, Beagle Bay and Depwater Point (Support Report 1, 3.3.4). A few pearling leases are off-shore James Price Point, however, it is understood that naturally high turbid water conditions do occur already. The potential for sedimentation/turbid plumes arising from the LNG Precinct development zone to affect nearby aquaculture sites warrants further investigation.
Sediment Deposition and Turbidity	Aquaculture	Disturbance to existing and future activities	3 Possible	E Minor	M	Activities that may lead to local sedimentation/deposition effects could potentially affect amenity of the local coastal area with follow-on effects on local tourism uses. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct, from tourism and other users of the broader coastal area. Resultant impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. The short-term nature of the impacts and the natural high turbidity indicate minor consequence of effects, however potential impact to visual amenity warrants further investigation.
	Tourism	Disturbance to existing and future activities	3 Possible	E Minor	M	Activities that may lead to local sedimentation/deposition effects could potentially affect amenity of the local coastal area. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct, from tourism and other users of the broader coastal area. Resultant impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. Potential impacts to visual amenity in a local context warrants further investigation.
	Visual Amenity	Change to visual amenity	3 Possible	E Minor	M	In a regional context, areas along the Kimberley coast are known to have dispersed landscapes and a high level of visual amenity. The short-term nature of the potential impacts arising from sedimentation and turbidity, and the natural high turbidity in coastal waters, indicates that adverse impacts are unlikely, however potential impacts from higher sedimentation warrants further consideration.
	Paleontology	Disturbance to heritage sites	2 Unlikely	E Minor	M	

Marine discharges including non-routine events	Colonial Heritage	Disturbance to heritage sites	2 Unlikely	E Minor	M	Sedimentation/deposition that may potentially arise from the Precinct construction and operation is considered unlikely to result in significant impacts on colonial heritage values. The short term nature of potential impacts arising from sedimentation and turbidity, and the natural high turbidity in coastal waters, indicates that adverse impacts are unlikely, however potential impacts from higher sedimentation warrants further consideration.
	Environmental Heritage	Disturbance to heritage sites	2 Unlikely	E Minor	M	Sedimentation/deposition that may potentially arise from the Precinct construction and operation is considered unlikely to result in significant impacts on environmental heritage values. The short term nature of potential impacts arising from sedimentation and turbidity, and the natural high turbidity in coastal waters, indicates that adverse impacts are unlikely, however potential impacts from higher sedimentation warrants further consideration.
	Sports and recreation	Disturbance to existing and future activities	3 Possible	E Minor	M	Activities that may lead to local sedimentation/deposition effects could potentially affect amenity of the local coastal area. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LMG Precinct from recreational users of the broader coastal area. Resultant impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. Potential impacts to recreational fishing activities in a local context warrants further investigation.
	Recreational Fishing	Disturbance to existing and future activities	3 Possible	E Minor	M	Area of recreational fishing over a broad geographic area and are not limited to the James Price Point coastal area. Sedimentation/deposition impacts associated with the LMG Precinct are expected to occur primarily during construction and installation phases of infrastructure. Resultant impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. Potential impacts to recreational fishing activities in a local context warrants further investigation.
	Commercial Fishing	Disturbance to existing and future activities	2 Unlikely	E Minor	M	A non-routine event is considered to have low probability of occurrence. Commercial fisheries cover a broad geographic area along the Kimberley coast and are not limited to the James Price Point coastal area. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Aquaculture	Disturbance to existing and future activities	3 Possible	E Minor	M	A non-routine event is considered to have low probability of occurrence. A few peeling leaves are offshore James Price Point, although removed offshore from the LMG Precinct area. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Tourism	Disturbance to existing and future activities	3 Possible	E Minor	M	A non-routine event has potential to adversely affect the local amenity values of the surrounding area. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Visual Amenity	Change to visual amenity	3 Possible	E Minor	M	In a regional context, areas along the Kimberley coast are known to have dinosaur footprints (Soping Report 1.5.3.3, 10.2). The presence or absence of similar palaeontological evidence on the intertidal platform in the JPP coastal area is not currently known. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Paleontology	Disturbance to heritage sites	2 Unlikely	E Minor	M	A non-routine event is considered to have low probability of occurrence. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Environmental Heritage	Disturbance to heritage sites	2 Unlikely	E Minor	M	A non-routine event is considered to have low probability of occurrence. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
Light emissions	Sports and recreation	Disturbance to existing and future activities	2 Unlikely	E Minor	M	A non-routine event is considered to have low probability of occurrence. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Recreational Fishing	Disturbance to existing and future activities	2 Unlikely	E Minor	M	A non-routine event is considered to have low probability of occurrence. Should a non-routine event occur it is considered that it may have a temporary and localised impact, however this is dependent on the nature and fate of any release and warrants further consideration.
	Commercial Fishing	Disturbance to existing and future activities	2 Unlikely	E Minor	M	Light associated with marine facilities has potential to affect fishing operations. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LMG Precinct from other users of the broader coastal area. Resultant impacts are anticipated to be limited to the coastal zone in close proximity to the Precinct area. However potential impact from light on aquaculture farms in the local JPP coastal area warrants further investigation.
	Aquaculture	Disturbance to existing and future activities	2 Unlikely	E Minor	M	Light associated with marine facilities has potential to affect aquaculture operations. Resultant impacts are anticipated to be limited to the coastal zone in close proximity to the Precinct area. However potential impact from light on aquaculture farms in the local JPP coastal area warrants further investigation.
	Tourism	Disturbance to existing and future activities	3 Possible	C Major	M	Light associated with marine facilities has the potential to impact visual amenity of area in the vicinity of the development, which could affect tourism. Resultant impacts are anticipated to be limited to the coastal zone in close proximity to the Precinct area, however the geographical extent of potential light effects on amenity values warrants further investigation.

	Visual Amenity	Change to visual amenity	3 Possible	C Major	H	Light associated with marine facilities has the potential to impact visual amenity of area in the vicinity of the development. Residual impacts are anticipated to be limited to the coastal zone in close proximity to the Precinct area, however the geographical extent of potential light effects on nearby values warrants further investigation.
	Sports and recreation	Disturbance to existing and future activities	2 Unlikely	E Minor	M	Light associated with marine facilities has the potential to impact visual amenity of area in the vicinity of the development. Residual impacts are anticipated to be limited to the coastal zone in close proximity to the Precinct area. However potential impact from light on recreational users along the coastal area warrants further investigation.
	Recreational Fishing	Disturbance to existing and future activities	2 Unlikely	E Minor	M	Light associated with marine facilities has the potential to impact visual amenity of area in the vicinity of the development. However potential impact from light on recreational fishing activities along the coastal area warrants further investigation.
Site disturbance excavation	Commercial Fishing	Disturbance to existing and future activities	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure could lead to localised impacts on habitat. Disturbance will be limited to the minimum necessary for the development, and anticipated to represent a small proportion of the total fish habitat along the coastal zone. Short-term activities are considered unlikely to affect commercial fishing operations.
	Apiculture	Disturbance to existing and future activities	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure is anticipated to have limited impact to visual amenity and tourism in the local area.
	Tourism	Disturbance to existing and future activities	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure is anticipated to have limited impact to visual amenity and tourism in the local area.
	Visual Amenity	Change to visual amenity	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure could have localised impacts on archaeological heritage. In a regional context, areas along the Port Phillip coast are known for their archaeological heritage, and the installation of marine infrastructure could potentially have a potential effect on areas of heritage value warrants further consideration.
	Paleontology	Disturbance to heritage sites	3 Possible	C Major	H	Seabird disturbance associated with the installation of marine infrastructure is considered unlikely to have any impact on paleontological heritage. The installation of marine infrastructure is anticipated to have low.
	Environmental Heritage	Disturbance to heritage sites	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure could have localised impacts on archaeological heritage. In a regional context, areas along the Port Phillip coast are known for their archaeological heritage, and the installation of marine infrastructure could potentially have a potential effect on areas of heritage value warrants further consideration.
	Aboriginal heritage	Disturbance to heritage sites	3 Possible	C Major	M	Seabird disturbance associated with the installation of marine infrastructure could have localised impacts on archaeological heritage. In a regional context, areas along the Port Phillip coast are known for their archaeological heritage, and the installation of marine infrastructure could potentially have a potential effect on areas of heritage value warrants further consideration.
	Sports and recreation	Disturbance to existing and future activities	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure could lead to localised impacts on habitat. Disturbance will be limited to the minimum necessary for the development, and anticipated to represent a small proportion of the total fish habitat along the coastal zone. Short-term activities are considered unlikely to affect recreational fishing operations.
	Recreational Fishing	Disturbance to existing and future activities	2 Unlikely	F Slight	L	Seabird disturbance associated with the installation of marine infrastructure could lead to localised impacts on habitat. Disturbance will be limited to the minimum necessary for the development, and anticipated to represent a small proportion of the total fish habitat along the coastal zone. Short-term activities are considered unlikely to affect recreational fishing operations.
						Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb commercial fishing activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on commercial fishing operations, warrants further investigation.
Vessel movements	Commercial Fishing	Disturbance to existing and future activities	3 Possible	D Moderate	H	Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb aquaculture activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on commercial fishing operations, warrants further investigation.
	Aquaculture	Disturbance to existing and future activities	3 Possible	D Moderate	H	Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb tourism activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on tourism operations, warrants further investigation.
	Tourism	Disturbance to existing and future activities	3 Possible	D Moderate	H	Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb tourism activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on tourism operations, warrants further investigation.
	Transport	Disturbance to existing and future activities	3 Possible	D Moderate	H	Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb maritime transport activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on maritime transport, warrants further investigation.
	Visual Amenity	Change to visual amenity	3 Possible	D Moderate	H	Introduction of large vessels to the region has the potential to impact visual amenity in the vicinity of the Precinct development and associated vessel transit routes, and warrants further investigation.
	Sports and recreation	Disturbance to existing and future activities	3 Possible	D Moderate	H	Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on sport/recreation users, warrants further investigation.
	Recreational Fishing	Disturbance to existing and future activities	3 Possible	D Moderate	H	Exclusion areas to be established as part of the LNG Precinct, and the introduction of large vessels (LNG carriers, etc) to the region, has the potential to disturb recreational fishing activities in the vicinity of the development. The nature of exclusion zones, and the resultant effect on recreational fishing activities, warrants further investigation.

[illegible]

Site disturbance/excavation	Environmental Heritage	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	Clearing of areas of conservation significance are to be avoided, and the footprint of infrastructure will be optimised to minimise disturbance where practicable.
	Terrestrial Conservation Areas	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	The LNG Precinct area is located outside the boundaries of reserves, therefore potential impacts on areas of environmental heritage value are assessed to be unlikely. Clearing of areas of conservation significance to be avoided where practicable.
	Visual Amenity	Change to visual amenity	3: Possible	D: Moderate	H	Clearing will be limited to the development area and footprint will be minimised. The clearing of vegetation will nonetheless result in a change to the visual amenity of area. Resultant impacts are anticipated to be limited to the coastal zone comprising the Precinct development area. However potential visual amenity impacts warrant further investigation.
	Sports and recreation	Disturbance to existing and future activities	1: Highly Unlikely	E: Minor	L	Clearing will be limited to the development area. However the development of the LNG Precinct will require the clearing of vegetation within the coastal zone. An appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from recreational users of the broader coastal area.
	Mining	Disturbance to existing and future activities	1: Highly Unlikely	E: Minor	L	The Precinct development zone of the James Price Point area is not likely to be required for mining activities. Therefore the risk of site clearing/excavation activities associated with the LNG Precinct on existing or future mining activities is assessed to be low.
	Agriculture	Disturbance to existing and future activities	1: Highly Unlikely	E: Minor	L	The Precinct development zone of the James Price Point area is not for agricultural use. On the basis of the information available, the risk of site clearing/excavation activities associated with the LNG Precinct on existing or future agricultural practices, including the use of the coastal zone comprising the Precinct development area, is assessed to be low.
	Tourism	Disturbance to existing and future activities	3: Possible	D: Moderate	H	Clearing will be limited to the development area and footprint will be minimised. The clearing of vegetation will nonetheless result in a change to the visual amenity of area, thereby altering the visual amenity of the coastal zone. An appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from recreational users of the broader coastal area.
	Terrestrial Conservation Areas	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	The LNG Precinct area is located outside the boundaries of reserves, therefore potential impacts on areas of environmental heritage value are assessed to be unlikely. Clearing of areas of conservation significance to be avoided where practicable.
	Visual Amenity	Change to visual amenity	3: Possible	D: Moderate	H	Site disturbance will be limited to the development area and footprint will be minimised. Clearing / excavation works will nonetheless result in a change to the visual amenity of area. Resultant impacts are anticipated to be limited to the coastal zone comprising the Precinct development area. However potential visual amenity impacts warrant further investigation.
	Sports and recreation	Disturbance to existing and future activities	1: Highly Unlikely	E: Minor	L	Clearing will be limited to the development area. However the development of the LNG Precinct will require the clearing of vegetation within the coastal zone. An appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from recreational users of the broader coastal area.
	Recreational Fishing	Disturbance to existing and future activities	3: Possible	D: Moderate	H	Site disturbance to some areas of the shoreline will impact recreational fishing activities within the development area. Resultant impacts are anticipated to be limited to the coastal zone comprising the Precinct development area.
	Paleontology	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	Site disturbance will be limited to the development area and footprint will be minimised. Clearing / excavation works will nonetheless present a risk of disturbance to areas of archaeological heritage value. Heritage studies will be completed in collaboration with traditional owners, to ensure disturbance to areas of archaeological significance are to be avoided where practicable.
	Environmental Heritage	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	Site disturbance will be limited to the development area and footprint will be minimised. Clearing / excavation works will nonetheless present a risk of disturbance to areas of indigenous heritage value. Heritage studies will be completed in collaboration with traditional owners, to ensure disturbance to areas of aboriginal significance are to be avoided where practicable.
	Aboriginal heritage	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	Site disturbance will be limited to the development area and footprint will be minimised. Clearing / excavation works will nonetheless present a risk of disturbance to areas of colonial heritage value.
	Colonial Heritage	Disturbance to heritage sites	2: Unlikely	D: Moderate	M	Disturbance to areas of heritage significance are to be avoided where practicable.
Runoff	Agriculture	Disturbance to existing and future activities	2: Unlikely	E: Minor	M	Runoff from LNG Precinct development has potential to impact on groundwater resources if incorrectly managed. Runoff will be managed as a low risk activity, as it is not likely to impact on groundwater resources, therefore the risk of secondary impacts on agricultural activities is low.
	Tourism	Disturbance to existing and future activities	2: Unlikely	E: Minor	M	Runoff could potentially cause visual impacts which may impact tourism values. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from tourism and other users of the broader coastal area. Resultant impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. Potential impacts to tourism in a local tourist warrants further investigation.
	Visual Amenity	Change to visual amenity	2: Unlikely	E: Minor	M	Runoff could potentially cause visual impacts if incorrectly managed. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from other users of the broader coastal area. Resultant visual impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area. Potential visual impacts in a local tourist warrants further investigation.
			2: Unlikely	E: Minor	M	

Atmospheric emissions	Sports and recreation	Disturbance to existing and future activities	2 Unlikely	E Minor	M	Runoff could potentially cause visual impacts if incorrectly managed, and could affect recreational activities at adjacent areas. It is anticipated that an appropriate buffer zone will be defined to maintain the visual amenity of the area. Runoff from the development area will be contained within the Precinct area. Potential recreation impacts in a local context warrant further investigation.
	Paleontology	Disturbance to heritage sites	1 Highly Unlikely	E Minor	L	Runoff is considered unlikely to impact on heritage sites, as the selection and footprint of the development area gives consideration to the location of areas of heritage significance, so as to mitigate risk of disturbance where practicable.
	Environmental Heritage	Disturbance to heritage sites	1 Highly Unlikely	E Minor	L	Runoff is considered unlikely to impact on heritage sites, as the selection and footprint of the development area gives consideration to the location of areas of heritage significance, so as to mitigate risk of disturbance where practicable.
	Aboriginal heritage	Disturbance to heritage sites	4 Highly Unlikely	E Minor	L	Runoff is considered unlikely to impact on heritage sites, as the selection and footprint of the development area gives consideration to the location of areas of heritage significance, so as to mitigate risk of disturbance where practicable.
Dust emissions	Health	Decrease in air quality resulting in health or amenity impacts	Possible	F Slight	M	There is potential for atmospheric emissions to affect public health or amenity values. The LNG Precinct site has been selected to be located away from residential areas, and dispersion effects will be limited by the selection and footprint of the development area. Potential health or amenity impacts are anticipated to be minor and limited to the Precinct area. Potential recreation impacts in a local context warrant further investigation.
	Agriculture	Potential deposition impacts from atmospheric emissions	1 Highly Unlikely	E Minor	L	There is potential for local deposition effects of atmospheric emissions on vegetation. However this is considered to represent a low risk to agricultural activities which are well removed from the Precinct development area.
	Tourism	Disturbance to existing and future activities	2 Unlikely	E Minor	M	There is potential for visible emissions to arise from the construction and operation of the LNG Precinct facilities, which could impact amenity to tourism. Flare tip design and controls are anticipated to limit this scenario primarily to reduce adverse impacts.
	Visual Amenity	Local amenity impacts from atmospheric emissions	4 Quite Likely	F Slight	M	There is potential for visible emissions to arise from the construction and operation of the LNG Precinct facilities, which could impact visual amenity value of the local area.
	Sports and recreation	Disturbance to existing and future activities	1 Highly Unlikely	E Minor	L	There is potential for exposure from emissions (e.g. dust) to recreational users of the area. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from other users of the broader coastal area, therefore a low risk of impact to recreational users.
	Paleontology	Disturbance to heritage sites	2 Unlikely	E Minor	M	There is potential for local effects of atmospheric emissions on heritage sites. Current information indicates that areas of known archaeological value in the APP area are composed of artefact and fossiliferous deposits. It is anticipated that the development area will be well removed from areas of known archaeological value and that any dust that may be susceptible to erosion from atmospheric deposition is known to occur in the area.
	Health	Decrease in air quality resulting in health or amenity impacts	Possible	E Minor	M	There is potential for fugitive dust emissions to affect public health or amenity values. The LNG Precinct site has been selected to be located away from residential areas, and dispersion effects will likely result in dust concentrations outside the Precinct buffer zone to be reduced with minimal risk of adverse health or amenity impacts.
	Air quality	Contribution to climate change			M	Social impacts may be anticipated to arise from enhanced climate change, the extent of such impacts will be limited by the selection and footprint of the development area. Potential climate change impacts are anticipated to be minor and limited to the Precinct area. Potential recreation impacts in a local context warrant further investigation. This aspect is conservatively marked as high taking into account and recognising the global nature of the issue of climate change.
	Tourism	Noise impacts	4 Quite Likely	F Slight	M	There is potential for off-site noise impacts to disturb tourist operators and their customers. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from tourism and other users of the broader coastal area, however a moderate level of risk of off-site noise impacts on surrounding social receptors remains.
	Sports and recreation	Noise impacts	4 Quite Likely	F Slight	M	There is potential for off-site noise impacts to disturb areas of recreational value in proximity to the LNG Precinct. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation distance from the LNG Precinct from other users of the broader coastal area, however a moderate level of risk of off-site noise impacts on surrounding social receptors remains.
Vehicle movements	Aboriginal heritage	Noise impacts	4 Quite Likely	F Slight	M	There is potential for off-site noise impacts to disturb areas of known or potential aboriginal heritage value. A song line is known to exist down the coast of the Dampier Peninsula. Cultural practices in relation to maintaining the song line may be slightly affected by noise projected from the LNG Precinct therefore a moderate level of risk is assigned.
	Tourism	Disturbance to existing and future activities	4 Quite Likely	D Moderate	M	Increased traffic on the Dampier Peninsula may disturb existing tourist traffic. It is anticipated that tourist traffic will be regulated to maintain safety buffer zones and ensure public health and safety risks are minimised. Potential traffic impacts to tourism in a local context warrant further investigation.
	Aboriginal heritage	Disturbance to heritage sites	2 Unlikely	D Moderate	M	Increased traffic and roads may lead to greater access to areas of heritage significance and risk to disturbance of sites.

	Visual Amenity	Change to visual amenity					Increased traffic will likely result in a change of visual amenity. Existing unpaved roads/tracks may require upgrading and/or expansion to accommodate LNG Precinct-related traffic. Potential traffic impacts on visual amenity in a local context warrants further investigation.
	Sports and recreation	Disturbance to existing and future activities		4 Quite Likely	D Moderate	H	Increased traffic on the Dampier Peninsula may disturb existing recreational users. It is anticipated the recreational traffic will be required to maintain safety buffer zones and ensure public health and safety risks are minimised. Potential traffic impacts on sports / recreational users in a local context warrants further investigation.
	Transport	Disturbance to existing and future activities		4 Quite Likely	D Moderate	H	Increased traffic anticipated to arise from the LNG Precinct construction and operation will likely disturb existing traffic in the local area, between Broome and the development zone. Potential traffic impacts on existing road traffic in a local context warrants further investigation.
Light emissions	Visual Amenity	Change to visual amenity					There is potential for light from the LNG Precinct to introduce additional source of artificial light. Resultant impacts are anticipated to be limited to the coastal zone in close proximity to the Precinct area, however the geographic extent of potential light effects on visual amenity values warrants further investigation.
	Tourism	Disturbance to existing and future activities		2 Unlikely	E Minor	M	The construction and operation of facilities within the LNG Precinct will result in the generation of a range of solid, liquid and semi-liquid wastes requiring handling, storage and disposal. Waste re-use and recycling opportunities will be explored to minimise total volumes requiring disposal. Waste management infrastructure required to support the Precinct may have impacts on other land uses. Impacts, which may have flow-on effects on local tourism values. The potential impact is considered minimal.
	Visual Amenity	Change to visual amenity		2 Unlikely	E Minor	M	The construction and operation of facilities within the LNG Precinct will result in the generation of a range of solid, liquid and semi-liquid wastes requiring handling, storage and disposal. Waste re-use and recycling opportunities will be explored to minimise total volumes requiring disposal. Waste management infrastructure required to support the Precinct may have impacts on other land uses. Impacts, which may have flow-on effects on local tourism values. The potential impact is considered minimal.
Groundwater abstraction	Waste management	Disturbance to existing and future activities		3 Possible	E Minor	M	The construction and operation of facilities within the LNG Precinct will result in the generation of a range of solid, liquid and semi-liquid wastes requiring handling, storage and disposal. Waste re-use and recycling opportunities will be explored to minimise total volumes requiring disposal. Waste management infrastructure required to support the Precinct may have impacts on other land uses.
	Water supply	Disturbance to existing and future activities		3 Possible	C Major	H	Water abstraction may be required to supply water to facilities within the LNG Precinct. Water abstraction may also be required to support the Precinct's operations. It is possible that water abstraction may affect water supply and availability for other users in the local area, and warrants further investigation.
	Altered fire regime						
	Tourism	Disturbance to existing and future activities		2 Unlikely	E Minor	M	The presence of the LNG Precinct may result in a change in the existing fire regime of the local area on the Dampier Peninsula. Introduction of ignition sources and fire management may alter incidence of fire which could have impacts on local tourism activities. It is possible that a positive impact may be derived should the introduction of a controlled fire regime lead to lower frequency and severity of bushfires. The potential impact of an altered fire regime on local tourism values warrants further investigation.
	Environmental Heritage	Disturbance to heritage sites		2 Unlikely	E Minor	M	The presence of the LNG Precinct may result in a change in the existing fire regime of the local area on the Dampier Peninsula. Introduction of ignition sources and fire management may alter incidence of fire which could impact sensitive sites. It is possible that a positive impact may be derived should the introduction of a controlled fire regime lead to lower frequency and severity of bushfires. The potential impact of an altered fire regime on local environmental heritage values warrants further investigation.
	Aboriginal heritage	Disturbance to heritage sites		2 Unlikely	E Minor	M	The presence of the LNG Precinct may result in a change in the existing fire regime of the local area on the Dampier Peninsula. Introduction of ignition sources and fire management may alter incidence of fire which could impact sensitive sites. It is possible that a positive impact may be derived should the introduction of a controlled fire regime lead to lower frequency and severity of bushfires. The potential impact of an altered fire regime on local aboriginal heritage values warrants further investigation.
Colonial Heritage	Visual Amenity	Change to visual amenity		2 Unlikely	E Minor	M	The presence of the LNG Precinct may result in a change in the existing fire regime of the local area on the Dampier Peninsula. Introduction of ignition sources and fire management may alter incidence of fire which could impact sensitive sites. It is possible that a positive impact may be derived should the introduction of a controlled fire regime lead to lower frequency and severity of bushfires. The potential impact of an altered fire regime on local visual amenity warrants further investigation.
	Sports and recreation	Disturbance to existing and future activities		2 Unlikely	E Minor	M	The presence of the LNG Precinct may result in a change in the existing fire regime of the local area on the Dampier Peninsula. Introduction of ignition sources and fire management may alter incidence of fire which could impact sensitive sites. It is possible that a positive impact may be derived should the introduction of a controlled fire regime lead to lower frequency and severity of bushfires. The potential impact of an altered fire regime on local recreation activities warrants further investigation.
	Tourism	Disturbance to existing and future activities		3 Possible	E Minor	M	The development area not likely to be available for other land uses. The physical presence of the LNG Precinct facilities will affect amenity of the local area with flow-on effects on local tourism uses. It is anticipated that an appropriate buffer zone will be required to maintain suitable recreation distance and amenity values. Potential impacts on visual amenity values warrants further investigation. Impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area.

Introduced pests	Visual Amenity	Change to visual amenity		4 Quite Likely C Major		The physical presence of the LNG Precinct facilities will change visual amenity of the development area and surrounds. The extent of potential impact on visual amenity values of the local area will depend on the physical infrastructure characteristics, topography and proximity of local receptors. However a change in current visual amenity is inevitable. This aspect warrants further investigation.
	Sports and recreation	Disturbance to existing and future activities		3 Possible	E Minor	The development area is not likely to be available for other land uses and some limited access restricted areas will cause disturbance to existing recreational activities in the immediate development area. It is anticipated that an appropriate buffer zone will be defined to maintain suitable separation between the development area and surrounding land uses. Recreational activities will be limited. Recreational impacts are anticipated to be minor and limited to the coastal zone in close proximity to the Precinct area.
	Environmental Heritage	Disturbance to heritage sites		2 Unlikely	E Minor	The physical presence of the LNG Precinct facilities and in the increased traffic and number of people in the area has potential to impact environmental heritage values in the local area. Site disturbance will be limited to the development area and its immediate surrounds. Disturbances to areas of conservation significance are to be avoided where practicable.
	Aboriginal heritage	Disturbance to heritage sites		2 Unlikely	E Minor	The physical presence of the LNG Precinct facilities and in the increased traffic and number of people has the potential to impact Aboriginal heritage sites in the local area. Land disturbance will be limited to the development area and its immediate surrounds. Disturbances to areas of conservation significance are to be avoided where practicable, in agreement with Traditional Owners during the design/layout process.
	Land tenure	Change to land tenure		2 Unlikely	E Minor	The development area is not likely to be available for other land uses. James Price Point is currently an unallocated Crown land which has a native title claim over it by the Goolamabooo Jalar-Jalar Native Title Group. Any land title allocation includes a Land Use Agreement to ensure land tenure issues are fully addressed.
	Agriculture	Disturbance to existing and future activities		2 Unlikely	D Moderate	Introduced species (weeds, pests etc) have potential to be introduced to the area from the import and transport of materials, equipment and personnel, and expansion/upgrade of road access. Should pest species be established in the area, there is potential for indirect secondary impacts on other land uses in the area. Potential pest effects on local crocodylians and other native animals are not expected in the southern portion of the Dampier Peninsula, however potential pest effects on local traditional agricultural practices warrants further investigation.
	Tourism	Disturbance to existing and future activities		2 Unlikely	D Moderate	Introduced species (weeds, pests etc) have potential to change the nature of the landscape which could consequently impact tourism values.
	Visual Amenity	Change to visual amenity		2 Unlikely	D Moderate	Introduced species (weeds, pests etc) have potential to change the nature of the landscape which could consequently impact local amenity values.
	Sports and recreation	Disturbance to existing and future activities		2 Unlikely	D Moderate	Introduced species (weeds, pests etc) have potential to be introduced to the area from the import and transport of materials, equipment and personnel, and expansion/upgrade of road access. Should pest species be established in the area, there is potential for indirect secondary impacts on other land uses in the area. Potential pest effects on local crocodylians and other native animals are not expected in the southern portion of the Dampier Peninsula, however potential pest effects on local traditional agricultural practices warrants further investigation.
Terrestrial wastes and discharges	Tourism	Disturbance to existing and future activities		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Should a non-routine event occur it is considered that it may have a temporary and localized impact, however this is dependent on the nature and rate of any release. Terrestrial discharges are unlikely to cause visual impacts or alter condition, therefore no significant impact on tourism is anticipated.
	Visual Amenity	Change to visual amenity		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Should a non-routine event occur it is considered that it may have a temporary and localized impact, however this is dependent on the nature and rate of any release. Terrestrial discharges are unlikely to cause visual impacts or alter condition, therefore no significant impact on visual amenity is anticipated.
	Paleontology	Disturbance to heritage sites		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Terrestrial discharges are considered unlikely to impact on heritage sites as the selection and layout of the development area gives consideration to the location of these.
	Environmental Heritage	Disturbance to heritage sites		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Terrestrial discharges are considered unlikely to impact on heritage sites as the selection and layout of the development area gives consideration to the location of these.
	Aboriginal heritage	Disturbance to heritage sites		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Terrestrial discharges are considered unlikely to impact on heritage sites as the selection and layout of the development area gives consideration to the location of these.
	Sports and recreation	Disturbance to existing and future activities		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Should it occur, terrestrial discharge is unlikely to impact areas outside of the development area of the LNG Precinct. Therefore potential impact on sports/recreation values is assessed to be low.
	Recreational Fishing	Disturbance to existing and future activities		1 Highly Unlikely	E Minor	A non-routine event is considered to have low probability of occurrence. Should it occur, terrestrial discharge is unlikely to impact areas outside of the development area of the LNG Precinct. Therefore potential impact on sports/recreation values is assessed to be low.
	Waste management	Disturbance to existing and future activities		3 Possible	E Minor	Contaminated soils would likely need to be sent to appropriate waste facilities and could put pressure on existing waste management infrastructure in the region. Potential direct and indirect impacts on waste management infrastructure warrants further investigation.

Local population increases (temporary/permanent)	Agriculture	Disturbance to existing and future activities	2. Unlikely	E. Minor	M	A non-routine event is considered to have low probability of occurrence. Threshold discharges have the potential to impact on groundwater resources, with consequent effects on other agricultural land users in the region. The Kimberley LNG Precinct is located in the region, and the potential for impacts on groundwater resources is being investigated. Damper Peninsula, however potential effects on local traditional agricultural practices warrants further investigation.
	General Population	Increased demand for goods and services	3. Possible	B. Major	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in an increase in the indigenous population of the region due to people being attracted by significant employment opportunities and indirect opportunities associated with the development and lead to increased demand for goods and services in the region.
	Indigenous Population	Increased demand for goods and services	3. Possible	B. Major	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct may result in an increase in the indigenous population of the region due to people being attracted by significant employment opportunities and indirect opportunities associated with the development and lead to increased demand for goods and services in the region.
	Local Employment	Increased demand for labour	3. Possible	B. Major	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in an increase in the indigenous population of the region due to people being attracted by significant employment opportunities and indirect opportunities associated with the development and lead to increased demand for labour.
	Indigenous Employment	Increased demand for labour	3. Possible	B. Major	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in an increase in the indigenous population of the region due to people being attracted by significant employment opportunities and indirect opportunities associated with the development and lead to increased demand for labour.
	Cost of Living	Increase in cost of living	3. Possible	B. Major	H	Due to an increase in population associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, should direct and indirectly employed workers choose to reside in Boorne, there will be upward pressure exerted on housing prices.
	Housing Prices	Increase in housing prices	3. Possible	B. Major	H	Due to an increase in population associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, should direct and indirectly employed workers choose to reside in Boorne, there will be upward pressure exerted on housing prices.
	Regional Prices Index	Increase in the regional cost of living	3. Possible	B. Major	M	Due to an increase in population associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, should direct and indirectly employed workers choose to reside in Boorne, there will be additional demand for competing use of supply.
	Sports and Recreation	Disturbance to existing and future activities	3. Possible	C. Moderate	M	Due to an increase in population associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, should direct and indirectly employed workers choose to reside in Boorne, there will be additional demand for competing use of sporting and recreation activities/facilities.
	Recreational Fishing	Disturbance to existing and future activities	3. Possible	C. Moderate	H	Due to an increase in population associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, should direct and indirectly employed workers choose to reside in Boorne, there will be additional demand for competing use of recreational fishing spots and associated infrastructure.
Use of infrastructure and services	Local Employment	Increased demand for labour	3. Possible	C. Moderate	H	Additional use of local infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Indigenous Employment	Increased demand for labour	3. Possible	C. Moderate	H	Additional use of local infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Housing Prices	Increase in housing prices	3. Possible	C. Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Regional Prices Index	Increase in cost of living	3. Possible	C. Moderate	M	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Tourism	Disturbance to existing and future activities	3. Quite likely	C. Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Commercial Fishing	Disturbance to existing and future activities	3. Possible	C. Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Aquaculture	Disturbance to existing and future activities	3. Possible	C. Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Mining	Disturbance to existing and future activities	2. Unlikely	C. Moderate	M	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.
	Agriculture	Disturbance to existing and future activities	3. Possible	C. Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, may increase the demand for supply constrained labour in the infrastructure and services sectors in the region and lead to wage increases in order for other industries to compete for labour.

Restricted areas	Sports and Recreation	Disturbance to existing and future activities	1 Highly Unlikely	D Minor	L	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct is highly unlikely to cause negative impacts on sport and recreation activities.
	Recreational Fishing	Disturbance to existing and future activities	3 Possible	D Minor	M	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may result in increased demand for power and put additional pressure on ground water resources in the region.
	Water Supply	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Power	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	M	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Waste Management	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Telecommunications	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Transport	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Health	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	M	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Education	Increased demand for infrastructure and services	4 Quite Likely	C Moderate	H	Additional use of infrastructure and services associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct, is quite likely to increase demand for power and put additional pressure on ground water resources in the region.
	Tourism	Disturbance to existing and future activities	3 Possible	C Moderate	M	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the access of tourists in and around James Price Point.
	Commercial Fishing	Disturbance to existing and future activities	3 Possible	C Moderate	M	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the activities of commercial fishers in and around James Price Point.
	Aquaculture	Disturbance to existing and future activities	3 Possible	C Moderate	M	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the activities of aquaculture leases in and around James Price Point.
	Mining	Disturbance to existing and future activities	2 Unlikely	C Moderate	M	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the activities of mining companies looking to explore for and/or develop mineral deposits. Whilst the general area may be prospective for mineral deposits, there is not a significant level of interest in the area at present in terms of the applications.
	Agriculture	Disturbance to existing and future activities	3 Possible	C Moderate	H	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the activities of people undertaking sport and recreation activities in the James Price Point area.
Increase demand for labour	Sports and Recreation	Disturbance to existing and future activities	3 Possible	C Moderate	H	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the access of people undertaking sport and recreation activities in the James Price Point area.
	Recreational Fishing	Disturbance to existing and future activities	3 Possible	C Moderate	H	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the access of people undertaking sport and recreation activities in the James Price Point area.
	Aboriginal Heritage	Restricted access to and/or disturbance of Aboriginal heritage sites and cultural practices	3 Possible	C Moderate	H	Marine and terrestrial restricted areas associated with the construction and operation of multiple LNG projects within the Kimberley LNG Precinct may constrain the access of Traditional Owners to custodians to visit and maintain Aboriginal sites and undertake cultural practices.
	Tourism	Increased competition for labour resulting in wage increases	4 Quite Likely	C Moderate	M	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like tourism, to compete for labour.
	Commercial Fishing	Increased competition for labour resulting in wage increases	3 Quite Likely	C Moderate	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like commercial fishing, to compete for labour.
	Aquaculture	Increased competition for labour resulting in wage increases	4 Quite Likely	C Moderate	M	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like aquaculture, to compete for labour.

	Mining	Increased competition for labour resulting in wage increases	Possible	C: Moderate	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like mining, to compete for labour.
	Agriculture	Increased competition for labour resulting in wage increases	Possible	C: Moderate	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like pastoralism/agriculture, to compete for labour.
	Health	Increased competition for labour resulting in wage increases	Possible	C: Moderate	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like the health sector, to compete for labour.
	Education	Increased competition for labour resulting in wage increases	Possible	C: Moderate	H	The construction and operation of multiple LNG projects within the Kimberley LNG Precinct is likely to result in increased competition for labour in the region and lead to wage increases in order for other industries, like the education sector, to compete for labour.

Appendix I :
Kimberley LNG Precinct SEA Studies Program

**Appendix I - Kimberley LNG Precinct Strategic Assessment
Environmental and Social Studies List**

Study Ref	Study Title	Description
DFS1	Wet and Dry Season Flora & Vegetation Surveys	<p>Meet the requirements of the EPA's Guidance Statement 51 'Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia',</p> <ul style="list-style-type: none"> Undertake surveys to record and map the presence of flora species and vegetation associations; Identify the presence of any significant flora species (Priority or Declared Rare), significant vegetation associations (Threatened Ecological Communities or locally significant associations) and introduced weed species; Describe the condition of flora and vegetation associations with particular reference to any historical disturbance; Describe the conservation significance of flora and vegetation identified within the sites in a local and regional context; Identify any significant flora and vegetation aspects for consideration in the facility design/ layout and in the environmental approval documentation.
DFS2	Wet and Dry Season Fauna Surveys	<p>Meet the requirements of the EPA's Guidance Statement 56 'Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia', and Guidance Statement No. 54 'Consideration of Subterranean Fauna in Groundwater and in Caves during Environmental Impact Assessment in Western Australia'.</p> <ul style="list-style-type: none"> Identify and map fauna habitats occurring within the James Price Point coastal area; Undertake targeted surveys for significant species (including land snails and other shortrange endemics) within the James Price Point coastal area to record the presence of any species; Identify the presence of any significant fauna species (Schedule 1, vulnerable, threatened or endangered, CAMBA, JAMBA, ROKAMBA); <p>Describe the condition of fauna habitats with particular reference to any historical disturbance;</p> <ul style="list-style-type: none"> Describe the conservation significance of fauna habitats and fauna species identified within the James Price Point coastal area in a local and regional context; and Identify any significant fauna aspects for consideration in facility design layout and in the environmental approval documentation.
DFS3	Ethnobiological surveys	Undertake assessments of indigenous significance of flora / fauna, and describe the significance of species and habitats within the James Price Point coastal area.
DFS4	Stygofauna and GDE Study	<p>Assess the habitat potential and presence of stygofauna and groundwater dependant ecosystems within the James Price Point coastal area.</p> <p>Meet the requirements of EPA Guidance Statement No. 54 'Consideration of Subterranean Fauna in Groundwater and in Caves during Environmental Impact Assessment in Western Australia'.</p>
DFS5	Remote Sensing (Terrestrial and Marine)	<p>Identify terrestrial and marine habitat types at a range of spatial scales (local to regional)</p> <p>Correlate physical and biological parameters with species distribution</p>
DFS7	Ambient Meteorological and Air Quality Monitoring Station	<p>Obtain baseline air quality and meteorological data for the James Price Point area.</p> <p>Provide inputs into airshed, hydrological and climate modelling and environmental assessment.</p>
DFS8	Migratory Bird Survey	<p>Understand the distribution and abundance of migratory bird species within the James Price Point coastal area.</p> <p>Determine the habitat usage and importance of the site for migratory bird species; particularly those protected under international agreements (ie CAMBA, JAMBA, ROKAMBA) and the EPBC Act.</p>
DFS9	Marine Turtle Surveys	<p>Understand the distribution and importance of turtle nesting beaches within the James Price Point coastal area and the broader region.</p> <p>Understand the seasonality of turtle nesting within the James Price Point coastal area and the broader region.</p> <p>Determine important habitat and patterns of utilisation (eg feeding or inter-nesting) within the James Price Point coastal area.</p>
DFS10	Flora and fauna of the Intertidal zone	<p>Understand the distribution and abundance of intertidal flora (eg. macroalgae, seagrass) within the James Price Point coastal area to meet the requirements of EPA Guidance Statement 29.</p> <p>Understand the distribution and abundance of invertebrate fauna within the intertidal zone of the James Price Point coastal area.</p> <p>Detect the presence of IMS.</p> <p>Use these data to feed into habitat mapping study (DSF14)</p>
DFS11	Nearshore marine Water Quality Study	<p>Collect baseline water quality data for the nearshore marine waters of the James Price Point coastal area. Data to be used as input to the prediction and assessment of potential impacts associated with dredging or other physical disturbances during construction or operation of proposed facilities. Data will be collected for water quality indicators including turbidity, suspended sedimentation concentrations, light attenuation and sediment deposition rates. In addition, possible contaminants such as heavy metals, hydrocarbons and other contaminants relevant to prediction and management of the impacts of construction (e.g. dredging and spoil disposal, breakwater construction) and operational activities (e.g. waste discharges) will be collected.</p> <p>Use a combination of remote sensing (if appropriate) and field survey techniques to understand turbidity at a range of spatial scales in the waters off James Price Point coastal area.</p>
DFS12	Marine Sediment Quality Study	<p>Collect baseline marine sediment quality data for the James Price Point coastal area for input into impact assessments and modelling studies. Data will be collected for sediment quality indicators including physical characteristics, such as particle size distributions, as well as heavy metals, hydrocarbons and other contaminants relevant to prediction and management of the impacts of construction (e.g. dredging and spoil disposal, breakwater construction) and operational activities (e.g. waste discharges).</p>
DFS13	Spoil Ground Investigation	Identify preferred dredge spoil disposal location by undertaking bathymetric and biological surveys.
DFS14	Nearshore Benthic Habitat Assessment & Mapping	<p>Assess and map benthic (intertidal and subtidal) communities (e.g. benthic invertebrate communities, seagrasses, algae and coral) including benthic primary producer habitat offshore of the James Price Point coastal area. This information will provide a basis for predicting environmental impacts of proposed marine development activities and to address the requirements of EPA Guidance Statement 29 and other formal guidance as published at the time of assessment.</p> <p>LADs survey to be undertaken, and data interrogated based on information available at the time of assessment to determine and map the distribution and extent of the different habitat and substrate types within the area of interest.</p>
DFS15	Nearshore Marine Biodiversity	Marine biodiversity assessment of the James Price Point coastal area. Surveys will be undertaken to record species distribution and abundance. Taxa will include important invertebrate groups and EPBC-listed fishes.
DFS16	Nearshore Pipeline Corridor Assessment	<p>Assess and map the different benthic communities, including benthic primary producer habitat along and adjacent to (i.e. within the predicted zone of effect) the proposed pipeline corridor to inform impact prediction and meet the requirements of EPA Guidance Statement 29.</p> <p>Surveys will be undertaken to record species distribution and abundance to inform marine biodiversity assessment within the nearshore pipeline corridor. Taxa will include important invertebrate groups and EPBC-listed fishes.</p>
DFS17	Megafauna Surveys - Aerial (Cetacean)	Determine the seasonal distribution and abundance of marine mammals and timing of the northward and southward migrations along the west Kimberley coast.
DFS18	Humpback Whale Tagging	Quantify the behaviour and residence time of a small number of humpbacks in the Dampier Peninsula region (resting, milling and migrating) during the south migration.
DFS19	Cetacean Noise Loggers	<p>Understand the seasonality and occurrence of different cetacean species in the James Price Point coastal area.</p> <p>Measure and describe ambient sea noise including analysis of fish choruses and vessel activity.</p>
DFS20	Megafauna Surveys - Vessels	<p>Quantify the behaviour and residence time of humpback whales along the Dampier Peninsula (resting, milling and migrating) and identify how this varies over the migration season.</p> <p>Determine the seasonal abundance and distribution of cetaceans along the West Kimberley coast.</p> <p>During vessel surveys the behaviour, distribution and abundance of other megafauna will be recorded (eg. turtles, sharks and rays, dugongs, crocodiles, sea snakes).</p>
DFS21	Megafauna Surveys - Aerial (Dugong)	<p>Determine the seasonal abundance and distribution of dugongs along the West Kimberley coast.</p> <p>Understand the spatial and temporal availability of dugong feeding habitat in the James Price Point coastal area</p> <p>During dugong surveys the distribution and abundance of other megafauna will be recorded (eg. turtles, sharks and rays, cetaceans, crocodiles, sea snakes).</p>
DFS22	Dugong Tagging Program	Quantify the behaviour and preferred habitat (seagrass foraging areas) of a small number of dugongs in the Dampier Peninsula region.
DFS23	Invasive Marine Species Survey and Assessment.	<p>Understand baseline IMS conditions for the James Price Point coastal area and understand likely risks and impact of invasive marine species on the James Price Point coastal area.</p> <p>This study would include initial surveys to detect species presence and would also include, and form the basis of ongoing monitoring surveys.</p> <p>Study is to align with national approaches to address IMS.</p>

DIS1	Baseline Marine Noise Study	Characterise existing ambient noise levels within and surrounding the nearshore areas of the LNG precinct development zone, including nearest identified sensitive receptors. Understand impact of noise and vibration on important receptors.
DIS2	Desktop Study for noise/vibration impacts	Determine if the identified environmental factors have the potential to, or are likely to be impacted by noise and vibration and determine likely extent of impacts. Identify relevant noise criteria that will apply to the construction and operational phases of the project; Identify the nearby sensitive receptors; Determine potential impacts of noise and vibrations on any nearby sensitive receptors;
DIS3	Marine Noise Impact Assessment	<ul style="list-style-type: none"> Identify proposed activities or equipment that may generate noise; Identify any significant issues for consideration in the facility design, and Determine noise emissions during operation utilising an acoustic model.
DIS4	Metocean Study	Deploy and maintain metocean data collection instruments (current meters, and wave rider buoys etc) to obtain specific metocean data off the James Price Point coastal area, and other reference sites as appropriate, to assist design of jetty and product export facilities, and provide input data for the implementation of hydrodynamic, sediment transport, dredging and coastal process models, which will in turn be used to inform environmental impact prediction studies.
DIS5	Modelling of Pressures Associated with Sediment and Turbidity Generating Activities	A model will be implemented to simulate dredging and spoil disposal scenarios and predict the sediment-related pressure fields associated with these activities. The model will predict the resultant accumulation of material on the seabed, concentrations of suspended particulate in the water column associated with the each of the modelled scenarios. The model outputs will be in forms (or able to be reliably converted to these forms) that are compatible with tolerance/sensitivity criteria for key components of the ecosystem to enable quantitative assessment and spatial definition of predicted impacts of turbidity and sediment deposition on adjacent and nearby receptors to be made. This may be an iterative process.
DIS6	Dredge alternative study	Consider alternative dredging methods and locations in order to identify the most environmentally sound and cost effective approach.
DIS7	Coastal Processes Sediment Transport Study	Understand existing sediment movement patterns and the key physical drivers of those patterns. Implement appropriate and validated modelling, which makes use of the understanding above to predict the potential impacts of proposed marine infrastructure on the current natural coastal processes. This will also be used to help design minimum impact structures.
DIS8	Sedimentation Study	Desktop study to understand how dredging may impact marine ecology given the likely distribution of fine grain sediments.
DIS9	Geotechnical Study (PSD)	Understand underlying geological conditions, including marine geotechnical conditions.
DIS10	Particle Generation Study	Understand physical characteristics, including particle size distribution cohesiveness, flocculation and light attenuation characteristics of particles likely to be generated by different types of dredgers, under the various geotechnical conditions at the site and the likely modes of operation. Information from this study will inform particle size input data to the dredge modelling task in DIS5.
DIS12	Desktop Study for Species Presence and Habitat Preferences	Determine likely marine species presence within the James Price Point coastal area based on existing reports and studies with emphasis on identifying state and Commonwealth listed species and/or patterns of their utilisation of, or dependence on, local habitats.
DIS13	Non-routine Discharge Modelling	Model potential non-routine discharge events to identify potential impacts on marine species and habitats.
DIS 14	Baseline Light Study	Determine baseline light conditions at and surrounding the LNG Precinct location.
DIS15	Desktop Study for Lighting Impacts	Determine if the identified environmental factors have the potential to, or are likely to be impacted by lighting and determine likely extent of impacts.
DIS16	Light Dispersion Modelling	Identify light sources, types, and intensity and dispersion characteristics for the nearshore and onshore facilities during construction and operation and model light dispersion from plant construction and operation for input into impact assessment.
DIS17	Desktop assessment of groundwater resources and stygofauna habitat assessment	Assess extent of, and hydrological conditions, of groundwater systems and assess habitat potential for stygofauna.
DIS18	Hydrological and Hydrogeological Assessment and Modelling	Obtain an understanding of surface and ground water flows and interactions with nearby water systems Identify any significant issues for consideration in the facility design/ layout and in the environmental approval documentation.
DIS19	Soils and geotechnical investigation	Understand existing soil and geological conditions for input into site layout, design and impact assessment.
DIS24	Desktop Spill Risk Assessment	Identify potential sources of contaminants and assess the contamination risk to surrounding terrestrial environments (including watercourses) as a result of plant construction and operations
DIS25	Air Emissions Assessment and Modelling	<p>Identification of key environmental sensitivities (eg vegetation/ listed flora species) and social receptors (public/ industry) within the vicinity of the James Price Point coastal area</p> <ul style="list-style-type: none"> Assess the ambient air quality through desk top review Determine sources and levels of emissions for NO_x, SO_x, H₂S, BTEX, particulates, smoke, dust and odour. Atmospheric modelling will address key pollutants including NO₂, ozone, particulates (PM₁₀), SO₂ and air toxics including BTEX. Comparison of modelling outputs against relevant Australian Standards or in their absence other appropriate and justifiable standards.
DIS26	Terrestrial Baseline Noise Study	Characterise existing ambient noise levels at terrestrial areas within and surrounding the LNG precinct development zone, including nearest identified sensitive receptors. Understand impact of noise and vibration on important receptors.
DIS27	Terrestrial Noise Impact Assessment	<ul style="list-style-type: none"> Identify relevant noise criteria that will apply to the construction and operational phases of the project; Identify the nearby sensitive receptors; Identify proposed activities or equipment that may generate noise; Include potential cumulative impacts from known and existing proposed noise sources; Determine potential impacts of noise on any nearby sensitive receptors; and Identify any significant issues for consideration in the facility design / layout.
DIS28	Solid Waste Assessment	Characterise and assess solid wastes generated and determine likely disposal routes
DIS29	Desktop review of existing Marine Traffic	Desktop literature review to characterise existing marine vessel movements in and surrounding the James Price Point coastal area. Review to include existing marine traffic in Broome Port and other regional ports.
DIS30	Marine Traffic Impact Assessment	Assess the likely impacts of marine traffic on marine species. Determine the risk of boat strike, disruption of migration, feeding or breeding patterns of marine megafauna species as a result of a construction or operation activity in the James Price Point coastal area.
DIS31	Greenhouse Gas Assessment	<ul style="list-style-type: none"> Identify the greenhouse gases that are relevant to this proposal; Undertake greenhouse gas estimates in accordance with current Department of Climate Change Factors and Methodologies (National Greenhouse Accounts (NGA) Factors, November 2008); Undertake an evaluation of the proposed emissions against national and international standards.
DIS32	Routine Marine Discharge Modelling	Model routine marine discharges to understand how this might interact with marine species and ambient environmental conditions.
SOCIAL STUDIES		
SIA1	Cultural heritage Study	Obtain a complete understanding of indigenous cultural heritage issues within the project scope area.
SIA2	Archaeological field survey	Obtain complete understanding of indigenous archaeological artefacts etc existing within the project scope area.
SIA3	Ethnobiological field survey (interfaces with Study DFS3)	Provide an understanding of indigenous relationship, value and connection with local flora and fauna
SIA4	Indigenous Socio-cultural and economic profiling Study	Provide an overview of indigenous demographics, population trends, livelihoods, health status, access to services and infrastructure that will provide understanding of socio-economic baseline conditions
SIA5	Land use, tenure and access Study	Provide an understanding of indigenous land ownership, rights and agreements within and surrounding the area of the LNG Precinct, including key social factors: Land Tenure including Native Title Informal Land Use Terrestrial Conservation Areas Marine Conservation Areas
SIA6	Socio-cultural and economic profiling Study	Provide an overview of demographics, population trends, health status and that will provide understanding of social baseline conditions
SIA7	Community Infrastructure and Services Capacity Study	Characterise available local and regional community infrastructure and services as relevant to the LNG Precinct- including key social factors: - Education

		<ul style="list-style-type: none"> - Health facilities - Emergency services (police and fire services) - Water supply - Power supply - Waste management and sanitation services - Telecommunications
SIA8	Housing Impact Assessment Study	Undertake an analysis of the current housing situation (temporary and permanent), the annual fluctuations and the predicted requirements during the lifetime of the LNG Precinct, to determine potential effects on regional housing and cost of living
SIA9	Workforce / Employment Impact Assessment Study	Analysis of the workforce including assessing of local skills, project worker requirements (skilled and unskilled), training needs, recruitment, and management
SIA10	Transportation Impact Assessment Study (interfaces with: - DIS29 - Desktop Review of Existing Marine Traffic; and - DIS30 - Marine Traffic Impact Assessment)	Characterise the transportation requirements (including air, land and sea) for the LNG Precinct, to assess the potential impacts on existing transportation networks and infrastructure
SIA11	Fisheries, Pearling and Aquaculture Impact Assessment	Overview of current local occupations and livelihoods including fishing (commercial), pearling and aquaculture, to determine potential effects arising from the LNG Precinct.
SIA12	Tourism Impact Assessment	Provide an overview of existing tourism activities and trends at a local and regional context, to inform an assessment of potential effects anticipated to arise from the LNG Precinct and supporting infrastructure.
SIA13	Landscape and Visual Amenity Impact Assessment	Understand the existing landscape character, value and sensitivity of the study area, and both the visual and cognitive relationship with surrounding communities, to provide a basis of assessing potential impacts from the presence of the LNG Precinct.
SIA14	Recreation and Lifestyle Study	Overview of the primary recreational activities such as fishing, sports, camping, 4WDing, and associated values, linkages and networks. Understand the potential impacts on existing recreational and lifestyle values surrounding the study area.
SIA15	Colonial and Environmental Heritage Study	A complete list detailing all listed heritage places and all registered commonwealth and state places as well as maritime heritage (ship wrecks, WWII artefacts etc).
SIA16	Safety and Security Impact Assessment Study	Assessment of the potential security and safety issues associated with the development of an LNG facility of this nature. Issues will include potential for off-site safety risk, increased smuggling of humans, drugs etc.

Appendix J :

Applicable Standards, Policies, Guidelines and other Obligations

Appendix J - Applicable Standards, Policies, Guidelines and other Obligations

There are a number of standards, policies, guidelines and other obligations that have been developed to guide proponents in meeting suitable standards of environmental assessment and management. Those which will be used in the studies and investigations include:

EPA Position Statements

- Position Statement 2: Environmental Protection of Native Vegetation in Western Australia
- Position Statement 6: Towards Sustainability
- Position Statement 7: Principles of Environmental Protection
- Position Statement 9: Environmental Offsets

EPA Guidance Statements

- Guidance Statement 1: Protection of Tropical Arid Zone Mangroves along the Pilbara Coastline
- Guidance Statement 2: Risk Assessment and Management: Offsite Individual Risk from Hazardous Industrial Plant
- Guidance Statement 3: Separation Distances between Industrial and Sensitive Land Uses
- Guidance Statement 4: Deep and Shallow Well Injection for Disposal of Industrial Waste
- Guidance Statement 12: Minimising Greenhouse Gases
- Guidance Statement 15: Emissions of Oxides of Nitrogen from Gas Turbines
- Guidance Statement 18: Prevention of Air Quality Impacts from Land Development Sites
- Guidance Statement 29: Benthic Primary Producer Habitat Protection for Western Australia's Marine Environment
- Guidance Statement 40: Management of Mosquitoes by Land Developers
- Guidance Statement 41: Assessment of Aboriginal Heritage
- Guidance Statement 47: Assessment of Odour Impacts
- Guidance Statement 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia
- Guidance Statement 55: Implementing best practice in proposals submitted to the environment impact assessment process
- Guidance Statement 56: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia

DEWHA EPBC Policies and Guidance

- EPBC Act Policy Statement 1.1 - Significant Impact Guidelines
- EPBC Act Policy Statement 1.2 - Significant Impact Guidelines Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies
- EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales
- Environment Protection (Sea Dumping) Act 1981
- National Assessment Guidelines for Sea Dumping
- Draft Policy Statement: Use of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999. August 2007.

Community Consultation

- Department of Environment (2003). Interim Industry Guideline to Community Involvement.

Environmental Values and Environmental Quality Criteria

- Pilbara Coastal Waters: Have Your Say (2004).
- Revised Environmental Quality Criteria Reference Document (Cockburn Sound) (November 2002) (this currently provides a template for management of marine water elsewhere in the State and is based upon Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000).

International Agreements

- United Nations Convention on the Law of the Sea 1982 (UNCLOS);
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979;
- International Convention on Liability for Oil Pollution Damage (CLC 92);
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78);
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND 92);
- International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC 90);
- Framework Convention on Climate Change (FCCC) 1992;
- Kyoto Protocol 1997;
- Convention on Biological Diversity 1992;
- The Agreement between the Government of Australia and the Government of the Peoples Republic of China for the Protection of Migratory Birds and their Environment (CAMBA);
- The Agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA);
- Republic of Korea - Australia Migratory Bird Agreement (ROKAMBA).

Codes of Practice

- APPEA Code of Environmental Practice (2008)
- APPEA Decommissioning Code of Practice (2003)

Appendix K :

Stakeholder List

Appendix K - Stakeholder List

Aboriginal Environmental Health
Australian Quarantine and Inspection Service
ArafuraTimor Sea Research Facility
Australian Research Council Centre of Excellence in Coral Reef Studies
Arrow Pearls
Australia-China Business Club/NAATI
Australian Conservation Foundation
Australian Coral Reef Society
Australian Customs Service
Australian Fisheries Management Authority
Department of Agriculture, Fisheries and Forestry
Australian Institute of Marine Science
Australian Marine Conservation Society
Australian Maritime Safety Authority
Australian Social Inclusion Board
Australian Southern Bluefin Tuna Industry Association
Broome Botanical Society
Broome Chamber of Commerce
Broome Fishing Club
Broome International Airport
Broome Multicultural Society
Broome Port Authority
Broome Visitor Centre
Broome Youth Accommodation Service
Centre for Whale Research (WA) Inc.
Chamber of Commerce & Industry (WA)
Chamber of Minerals & Energy (WA)
Charter Boat Owners & Operators Association
Chelonia Wildlife Rehabilitation & Release
Clipper Pearls
Commonwealth Fisheries Association
Community Housing Coalition of WA
Community Arts Network WA
Conservation Council of Western Australia Inc
CSIRO
Centre for Marine Science and Technology
Dampier Port Authority
Department for Communities
Department of Community Development
Department of Conservation and Land Management
Department of Education and Training
Department of Employment and Workplace Relations

Department of Environment & Conservation
Department of Environment, Water, Heritage & the Arts
Department of Fisheries
Department of Foreign Affairs and Trade
Department of Health
Department of Housing and Works
Department of Indigenous Affairs
Department of State Development
Department of Mines & Petroleum
Department of Land Administration
Department of Local Government and Regional Development
Department of Planning & Infrastructure
Department of Premier & Cabinet
Department of Resources, Energy & Tourism
Department of the Environment & Heritage
Department of the Environment, Water, Heritage & the Arts
Department of Treasury & Finance
Department of Water
Djaringo Registered Training Organisation
Environmental Protection Authority
Environs Kimberley
Fire & Emergency Services Authority
Foundation Housing Ltd
Indigenous Business Australia
Indigenous Coordination Centre
Indigenous Land Council
Department of Infrastructure, Transport, Regional Development and Local Government
Department of Agriculture, Fisheries and Forestry
Kimberley Tourism Association
Kimberley Aboriginal Law & Culture Centre
Kimberley Aged and Community Services
Kimberley Area Consultative Committee
Kimberley Development Commission
Kimberley Land Council
Kimberley Marine Tourism Association
Save the Kimberley
Kimberley Offshore Fishing
Kimberley Professional Fishermens Association
Kullarri Regional CDEP Inc
LandCorp
Lioness Club of Broome
Mabunji Aboriginal Resource Center

Marine and Coastal Community Network
Merceded Cove Aboriginal Corporation
MG Kailis
National Trust
Native Title Tribunal and Reconciliation
Nirrumbuk Aboriginal Corporation
North Demersal Scale Fish Fishing
North West Tourism
Northern Fishing Companies Association
Northern Fishing Companies Association
Nor-west Pearls Pty Ltd
Office of Development Approvals Coordination
Office of Native Title
Paspaley Pearls
Pearl Producers Association
Western Australian Police (Broome)
Western Australian Police (Karratha)
Recfishwest
Reef Biosearch
Ripple Effect Community Enterprise Development
Salvation Army
Save the Kimberley
Shire of Broome
Shire of Derby/West Kimberley
Shire of Wyndham/East Kimberley
Small Business Centre West Kimberley
The Lingiari Foundation Inc
TunaWest
Western Australian Museum
WA Northern Trawl Owners Association
Water Corporation
Whale and Dolphin Conservation Society Australasia
West Australian Fishing Industry Council
Western Australian Council of Social Service Inc
Western Australian Fishing Industry Council
Western Australian Local Government Association
Western Australian Marine Science Institution
Western Australian Tourism Commission
Wilderness Society (WA) Inc
WWF Australia
Yaandina Family Support Centre