Australia Pacific LNG Project

Volume 5: Attachments

Attachment 2: ToR Cross-Reference Table

Contents

1. ToR cross-reference table

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
ES	**Executive summary**	ES
GT	**Glossary of terms**	Vol 5: Attachment 4
1.0	**Introduction**	
1.1	**Project proponent**	Vol 1: Ch 1: Sec 1.2
1.2	**Project description**	Vol 1: Ch 1: Sec 1.3
1.3	**Project rationale**	Vol 1: Ch 1: Sec 1.4, 1.5
1.4	**Relationship to other projects**	Vol 1: Ch 1: Sec 1.6
1.5	**Alternatives to the project**	Vol 1: Ch 1: Sec 1.7
1.6	**Co-location opportunities**	Vol 1: Ch 1: Sec 1.8 Vol 3: Ch 3: Sec 3.2.2
1.7	**The environmental impact assessment process**	
1.7.1	**Methodology of the EIS**	Vol 1: Ch 1: Sec 1.9.1
1.7.2	**Objectives of the EIS**	Vol 1: Ch 1: Sec 1.10
1.7.3	**Submissions**	Vol 1: Ch 1: Sec 1.11
1.8	**Public consultation process**	Vol 2: Ch 2 Vol 3: Ch 2 Vol 4: Ch 2
1.9	**Project approvals**	
1.9.1	**Relevant legislation and policy requirements**	Vol 1: Ch 2: Sec 2.1, 2.2, 2.3
1.9.2	**Planning processes and standards**	
	This section should discuss the project's consistency with existing land uses or long-term policy framework for the area (e.g. as reflected in local and regional plans) and with legislation, standards, codes or guidelines available to monitor and control operations on site. This section should refer to all relevant Queensland and regional planning policies.	Vol 1: Ch 2: Sec 2.4 For further details, refer 'Legislative Framework' sub-section of each section (X.1.3)
	Relevant planning schemes for the Gladstone State Development Area and Callide Infrastructure Corridor State Development Area the *Gladstone Port Western Basin Master Plan, Curtis Coast Regional Coastal Management Plan, Central Queensland Regional Growth Management Framework and Maranoa-Balonne Regional Plan* should be discussed.	Vol 2: Ch 6: Sec 6.1.3 Vol 3: Ch 6: Sec 6.2 Vol 4: Ch 6: Sec 6.1.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
1.9.3	**Accredited process for controlled actions under Australian Government legislation**	
	On the 3 August 2009 all project components were declared to be controlled actions under the Australian Government's EPBC Act.	Vol 1: Ch 2: Sec 2.1.1
	The EIS should address potential impacts on the matters of national environmental significance (MNES) that were identified when the project was determined to be a controlled action.	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
2.0	**Description of the project**	
2.1	**Overview of project**	Vol 1: Ch 1
2.1.1	**Gas fields**	
	This section should provide a description of the proposed development of the gas fields and the layout of key components: • Gas resources and the expected life of the resources	Vol 1: Ch 1: Sec 1.2
	• Indicative well layouts, gas plants, water treatment facilities, and water transfer ponds	Vol 2: Ch 3: Sec 3.3
	• Waste generation and disposal	Vol 2: Ch 3: Sec 3.2.8 3.5.5, 3.5.7, 3.5.8, 3.7.5, 3.7.7
	• Gas gathering and water gathering pipeline systems, including in-field high pressure lines	Vol 2: Ch 3: Sec 3.5.2, 3.6.2
	• Gas compression stations	Vol 2: Ch 3: Sec 3.5.5, 3.6.4
	• Management of associated water	Vol 2: Ch 3: Sec 3.5.5, 3.5.6, 3.6.5 Vol 2: Ch 12
	• Infrastructure services	Vol 2: Ch 3: Sec 3.3.4, 3.5.7
	• Workforce and accommodation strategy	Vol 2: Ch 3: Sec 3.5.8, 3.6.6
2.1.2	**Gas transmission pipeline**	
	This section should provide a description of the proposed development of the high pressure gas transmission pipeline linking the gas fields with the LNG plant and the layout and location of key components including: • The pipeline route selection and design process followed to select the preferred pipeline alignment	Vol 3: Ch 3: Sec 3.2.1

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	• A detailed description of pipeline construction and operation	Vol 3: Ch 3: Sec 3.4, 3.12
	• A detailed description of pipeline materials, sources and transport to the pipeline easement	Vol 3: Ch 3: Sec 3.3, 3.10.4
	• Disposal of wastes including hydrostatic test water	Vol 3: Ch 3: Sec 3.5, 3.6
	• Infrastructure services	Vol 3: Ch 3: Sec 3.10.2
	• Indicative locations of construction camps and pipeline lay down areas	Vol 3: Ch 3: Sec 3.1, 3.10.2, Figures 3.2-3.5
	• Workforce and accommodation strategy.	Vol 3: Ch 3: Sec 3.10, 3.4
2.1.3	**LNG plant and terminal facilities**	
	This section should provide a description of the LNG plant and terminal facilities and provide the layout of key components including:	Vol 4: Ch 3: Sec 3.2.1
	• The site selection process and the attributes of the preferred site	
	• Details of the construction and operation of the plant	Vol 4: Ch 3: Sec 3.4, 3.5
	• Plans indicating the layout of the plant and associated facilities	Vol 4: Ch 3: Sec 3.3
	• An outline of plant processes, water balances, and waste generation	Vol 4: Ch3: Sec 3.5
	• Jetty and wharf facilities including ship loading and unloading equipment	Vol 4: Ch 3: Sec 3.3.2
	• Berths for tugs and other non-bulk carrier vessels	Vol 4: Ch 3: Sec 3.5.5
	• Ferry terminal	Vol 4: Ch 3: Sec 3.3
	• Marine offloading facility	Vol 4: Ch 3: Sec 3.3.2
	• Details of area to be dredged and dredged spoil disposal areas for berth pockets, turning basins and/or access channels, as required	Vol 4: Ch 3: Sec 3.3.5 Fig 3.12
	• Details of capital and maintenance dredging equipment and methods	Vol 4: Ch 3: Sec 3.3.5
	• Power lines, workshops, offices and warehouses	Vol 4: Ch 3: Sec 3.6
	• Fuel and chemical storage facilities	Vol 4: Ch 3: Sec 3.5.1, 3.6.10
	• LPG storage and transportation	Vol 4: Ch 3: Sec 3.5.4
	• Internal access roads	Vol 4: Ch 3; Sec 3.3
	• Water desalination treatment facility	Vol 4: Ch 3: Sec 3.6.3
	• Workforce and accommodation strategy	Vol 4: Ch 3: Sec 3.3.3
2.1.4	**Government infrastructure**	Vol 4: Ch 3: Sec 3.3.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
2.2	**Location**	
2.2.1	**Regional Context**	Vol 2: Ch 3: Sec 3.1, Fig 3.1 Vol 3: Ch 3: Sec 3.1, Fig 3.1 Vol 4: Ch 3: Sec 3.2.2
2.2.2	**Local context**	Vol 2: Ch 3: Sec 3.1 Vol 2: Ch 3: Sec 3.1, 3.2.3 Vol 4: Ch 3: Sec 3.2.2
2.2.3	**Route selection process for proposed transmission pipeline route**	Vol 3: Ch 3: Sec 3.2
2.2.4	**Gas transmission pipeline co-location opportunities**	Vol 3: Ch 3: Sec 3.2.2
2.3	**Construction**	Vol 2: Ch 3: Sec 3.5 Vol 3: Ch 3: Sec 3.4 Vol 4: Ch 3: Sec 3.4
2.3.1	**Gas fields**	Vol 2: Ch 3: Sec 3.5
2.3.2	**Gas transmission pipeline**	Vol 3: Ch 3: Sec 3.4
2.3.2.1	**Pre-Construction activities**	Vol 3: Ch 3: Sec 3.4
2.3.2.2	**Gas transmission pipeline parameters**	
	This section should provide a detailed description of the proposed gas transmission pipeline(s) including ancillary infrastructure. The pipeline should be described with reference to the following: • Maps of the preferred route location which also identify State Development Area boundaries	Vol 3: Ch 3: Sec 3.2, Fig 3.2-3.5
	• Potential location and/or frequency of cathodic protection points, compressor stations, block valves (isolation points), including a description and layout of proposed facilities	Vol 3: Ch 3: Sec 3.11.7
	• Expected pipeline design and installation specifications (e.g. pipe grade, design life, wall thickness, depth of cover, and other information as deemed relevant)	Vol 3: Ch 3: Sec 3.3
	• Criteria for design and location of any temporary or permanent access crossings	Vol 3: Ch 3: Sec 3.4.1
	• Corridor widths and access requirements along the route, including the long-term cleared corridor width as well as the width required for construction and location of new corridor access tracks.	Vol 3: Ch 3: Sec 3.2.1, 3.2.2, 3.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	Corridor widths should be designed to minimise impacts on natural resources including potential loss of vegetation and Good Quality Agricultural Land (GQAL)	
	• Where the pipeline is located in a common user corridor, how construction will be managed given the potential proximity of other high pressure gas pipelines	Vol 3: Ch 3: Sec 3.2.2
	• Pipeline pressure testing activities and the treatment and disposal of test water	Vol 3: Ch 3: Sec 3.4.7, 3.5
	• Proposed locations of temporary and permanent above-ground infrastructure	Vol 3: Ch 3: Sec 3.1, 3.10.2
2.3.2.3	**Gas transmission pipeline coastal/marine works**	Vol 3: Ch 3: Sec 3.8
2.3.3	**LNG plant and terminal facilities**	Vol 4: Ch 3: Sec 3.4
2.3.3.1	**On-shore construction**	Vol 4: Ch 3: Sec 3.4.3
2.3.3.2	**Coastal/marine construction**	Vol 4: Ch 3: Sec 3.4.4
2.3.3.3	**Dredging and dredged material disposal**	Vol 4: Ch 3: Sec 3.3.5
2.4	**Operations**	Vol 2: Ch 3: Sec 3.6 Vol 3: Ch 3: Sec 3.12 Vol 4: Ch 3: Sec 3.5
2.4.1	**Gas fields**	
2.4.1.1	**Associated water**	Vol 2: Ch 3: Sec 3.5.5, 3.5.6, 3.6.5 Vol 2: Ch 12
2.4.1.2	**Gas treatment**	Vol 2: Ch 3: Sec 3.6
2.4.2	**Gas transmission pipeline**	Vol 3: Ch 3: Sec 3.12
2.4.3	**LNG plant and terminal facilities**	
2.4.3.1	**LNG plant**	Vol 4: Ch 3: Sec 3.5.2
2.4.3.2	**Terminal facilities**	Vol 4: Ch 3: Sec 3.5.5
2.5	**Associated infrastructure**	
2.5.1	**Workforce and accommodation**	Vol 2: Ch 3: Sec 3.5.8, Sec 3.6.6 Vol 3: Ch 3: Sec 3.10 Vol 4: Ch 3: Sec 3.6.1
2.5.2	**Transport**	Vol 2: Ch 3: Sec 3.3.4, 3.5.8

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		Vol 3: Ch 3: Sec 3.10.4
		Vol 4: Ch 3: Sec 3.6.2
2.5.3	**Water supply and storage**	Vol 2: Ch 3: Sec 3.3.4
		Vol 3: Ch 3: Sec 3.5
		Vol 4: Ch 3: Sec 3.6.3
2.5.4	**Stormwater drainage**	Vol 2: Ch 3: Sec 3.2.8
		Vol 2: Ch 11
		Vol 3: Ch 3: Sec 3.11
		Vol 3: Ch 11
		Vol 4: Ch 3: Sec 3.6.4
		Vol 4: Ch 11
2.5.5	**Sewerage**	Vol 2: Ch 3: Sec 3.5.7, 3.5.8
		Vol 3: Ch 3: Sec 3.10.2
		Vol 4: Ch 3: Sec 3.6.5
2.5.6	**Energy**	Vol 2: Ch 3: Sec 3.1.3, 3.5.2, 3.8
		Vol 3: Ch 3: Sec 3.10.2
		Vol 4: Ch 3: Sec 3.6.7
2.5.7	**Telecommunications**	Vol 2: Ch 3: Sec 3.3.4
		Vol 3: Ch 3: Sec 3.11.8, 3.12.1
		Vol 4: Ch 3: Sec 3.6.8
2.6	**Decommissioning and rehabilitation**	
2.6.1	**Gas fields**	Vol 2: Ch 3: Sec 3.7
2.6.2	**Gas transmission pipeline**	Vol 3: Ch 3: Sec 3.13
2.6.3	**LNG plant and terminal facilities**	Vol 4: Ch 3: Sec 3.7
3	**Environmental values and management of impacts**	
3.1	**Climate and climate change adaptation**	
3.1.1	**Climate**	
	Describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and	Vol 2: Ch 4: Sec 4.2

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	speed) and any other special factors (e.g. temperature inversions) that may affect management of the project. Historic weather patterns in the project area and seasonal conditions (e.g. cyclones, thunderstorms, floods and storms) that may influence timing and/or construction methods should be discussed, including how this would be managed. Extremes of climate (e.g. droughts, floods, etc) should be discussed with particular reference to water management at the project site.	Vol 2: Ch 10: Sec 10.3.1 Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 4: Sec 4.2 Vol 4: Ch 4: Sec 4.2
	The potential impacts due to climatic factors should be addressed in the relevant sections of the EIS.	Vol 2: Ch 4: Sec 4.2.8, 4.4 Vol 3: Ch 4: Sec 4.3, 4.4 Vol 4: Ch 4: Sec 4.2.8, Table 4.13
	The impacts of rainfall on soil erosion should be addressed in section 3.2.	Refer to 3.2 in ToR cross reference table.
	The impacts of storm events on the capacity of waste containment systems (e.g. site bunding / stormwater management and tailings dams) should be addressed in section 3.4 with regard to contamination of waterways and in section 3.8 with regard to the design of the waste containment systems.	Refer to 3.4 and 3.8 in ToR cross reference table.
	The impacts of winds, rain, humidity and temperature inversions on air quality should be addressed in section 3.6.	Refer to section 3.6 in ToR cross reference table.
3.1.2	**Climate change adaptation**	
	Risk assessment showing how viability and environmental management of the project could be impacted by changes in rainfall, hydrology, temperature, extreme weather and sea level patterns.	Vol 2: Ch 4: Sec 4.3 Vol 3: Ch 4: Sec 4.3 Vol 4: Ch 4: Sec 4.3
	Preferred and alternative adaptation strategies	Vol 2: Ch 4: Sec 4.3.3 Vol 3: Ch 4: Sec 4.3.3 Vol 4: Ch 4: Sec 4.3.3
	Commitments to undertaking a co-operative approach to climate change	Vol 2: Ch 4: Sec 4.3.4, 4.5 Vol 3: Ch 4: Sec 4.3.4, 4.5 Vol 4: Ch 4: Sec 4.3.4, 4.4
3.2	**Land**	
3.2.1	**Topography, geomorphology and geology**	

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
3.2.1.1	**Description of environmental values**	Vol 2: Ch 5: Sec 5.3 Vol 3: Ch 5: Sec 5.3 Vol 4: Ch 5: Sec 5.3
3.2.1.2	**Potential impacts and mitigation measures**	Impacts - Vol 2: Ch 5: Sec 5.4 Mitigation – Vol 2: Ch 5: Sec 5.5 Impacts - Vol 3: Ch 5: Sec 5.4 Mitigation – Vol 3: Ch 5: Sec 5.5 Impacts – Vol 4: Ch 5: Sec 5.4 Mitigation – Vol 4: Ch 5: Sec 5.5
3.2.2	**Soils**	
3.2.2.1	**Description of environmental values**	Vol 2: Ch 5: Sec 5.2, Sec 5.3.3, Vol 3: Ch 5: Sec 5.2, 5.3.3 Vol 4: Ch 5: Sec 5.2, 5.3.3
3.2.2.2	**Potential impacts and mitigation measures**	Impact - Vol 2: Ch 5: Sec 5.4.2,: 5.4.3 Mitigation – Vol 2: Ch 5: Sec 5.5.2, 5.5.3 Impacts - Vol 3: Ch 5: Sec 5.4.2, 5.4.3 Mitigation –Vol 3: Ch 5: Sec 5.5.2, 5.5.3 Ch 11: Sec 11.4.2 Impacts – Vol 4: Ch 5: Sec 5.4.3, 5.4.4 Mitigation – Vol 4: Ch 5: Sec 5.5.2, 5.5.3
3.2.3	**Land use and tenure**	

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
3.2.3.1	**Description of environmental values**	
	The EIS should identify the following, with the aid of maps:	Vol 2: Ch 6: Sec 6.3.2, Fig 6.22 - 6.35 Vol 3: Ch 6: Sec 6.4.2, Fig 6.23-6.29 Vol 3: Ch 10: Sec 10.2.2 Vol 4: Ch 6: Sec 6.3.2
	• Land tenure (including reserves, tenure of special interest such as protected areas and forest reserves, roads, railways, and stock routes)	
	• Land use (urban, residential, industrial, agricultural, GQAL, forestry, recreational, mining exploration tenures, mining leases, mining claims, mineral development licences, extractive industry permits, petroleum authorities).	Vol 2: Ch 6: Sec 6.1.3, 6.3.1, 6.3.4 (*Mineral Resources),* 6.3.5 (P*etroleum Resources),* 6.3.6 (*Extractive Industry Resources*) Fig 6.1-6.14, Fig 6.37-6.57 Vol 3: Ch 6: Sec 6.1.3, 6.4.1, 6.4.4 (*Mineral Resources*), 6.5 5 (*Petroleum Resources*), 6.4.6 (*Extractive Industry Resources*) Fig 6.1-6.7, Fig 6.9-6.22, Fig 6.30-6.64 Vol 3: Ch 10: Sec 10.2.10 Vol 4: Ch 6: Sec 6.3.1
	• Areas covered by applications for native title determination, with a description of Native Title Representative Bodies (NTRB) boundaries	Vol 2: Ch 6: Sec 6.3.3, Fig 6.36 Vol 3: Ch 6: Sec 6.4.3, Fig 6.39 Vol 4: Ch 6: Sec 6.3.3
	• Information on any known occurrences of economic mineralisation and extractive resources, petroleum and gas deposits within the project area and the potential impact of the project on these operations and associated tenements (e.g. Stuart Shale Oil)	Vol 2: Ch 6: Sec 6.3.4 (*Mineral Resources*), 6.3 5 (*Petroleum Resources*), 6.3.6 (*Extractive Industry Resources*) Figures 6.37 to 6.57 Vol 3: Ch 6: Sec 6.4.4 (*Mineral Resources*), 6.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		5 *(Petroleum Resources)*, 6.4.6 (*Extractive Industry Resources*) Figures 6.40 to 6.50, 6.58 to 6.64 Vol 4: Ch 6: Sec 6.3.1, 6.3.4
	• Location of gas and major water pipelines, power lines, telecommunication cables, roads, railways, bridges, airports, airstrips, helipads and any other infrastructure	Vol 2: Ch 6: Sec 6.3.2 (*Land Tenure*) Sec 6.3.7 (*Infrastructure*) Fig 6.22 to 6.28, Fig 6.58 to 6.64 Vol 3: Ch 6: Sec 6.4.7 Vol 4: Ch 6: Sec 6.3.6
	• The distance of the project component from residential and recreational facilities, or other potentially non-compatible land uses	Vol 2: Ch 6: Sec 6.3.1 Fig 6.8 to 6.21 Vol 3: Ch 6: Sec 6.4.1 Vol 4: Ch 6: Sec 6.3.1
	• Port uses need to be placed into context of the *GPC Land Use Plan (1995)*, and any subsequent version	Vol 3: Ch 6: Sec 6.2 Vol 4: Ch 6: Sec 6.1.3
	Recreational and commercial fishing activities and values undertaken in proximity to the site and offshore area should be described	Vol 3: Ch 6: Sec 6.4.1 Vol 3: Ch 10: Sec 10.2.10 Vol 4: Ch 6: Sec 6.3.1
	• Location of existing dwellings and the zoning of all affected lands according to any existing town or strategic plan, planning schemes, port land use plan and State Development Area development scheme.	Vol 2: Ch 6: Sec 6.1.3 Fig 6.8 to 6.21 Vol 3: Ch 6: Sec 6.4.1, Fig 6.8 Vol 4: Ch 6: Sec 6.3.2, Fig 6.2, 6.3
	In particular, the EIS should indicate if the land affected by the proposal is, or is likely, to become part of the protected area estate, or is subject to any treaty. The following should be identified and mapped - national parks, marine parks (State and Commonwealth), conservation parks, declared fish habitat areas, wilderness areas, areas of state significance (scenic coastal landscapes), areas of state significance (natural resources), coastal wetlands, aquatic reserves, heritage/historic areas or	Vol 2: Ch 6: Sec 6.3.2 Fig 6.22 to 6.35 Vol 2: Ch 23 Vol 3: Ch 6: Sec 6.4.1 Vol 3: Ch 23

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	items, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar, JAMBA, CAMBA), areas of cultural significance and scientific reserves. MNES under the Commonwealth's EPBC Act should be described in Section 8 and mapped where possible.	Vol 4: Ch 6: Sec 6.2.3 Vol 4: Ch 23
3.2.3.2	**Potential impacts and mitigation measures**	
	In particular, the discussion should: • Assess the compatibility of the proposal with surrounding land uses (e.g. mining, residences, agriculture)	Vol 2: Ch 6: Sec 6.4.3 (*Impacts on existing land uses*) Vol 3: Ch 6: Sec 6.5.3 Vol 4: Ch 6: Sec 6.4
	• Identify possible impacts on, or sterilisation of, identified mineral or energy resources	Vol 2: Ch 6: Sec 6.4.4, 6.4.5 Vol 3: Ch 6: Sec 6.5.4 Vol 4: Ch 6: Sec 6.4
	• Identify possible impacts on regional extractive resources (e.g. quarry materials)	Vol 2: Ch 6: Sec 6.4.2 (*State Planning Policies*), 6.4.6 (I*mpact on extractive industry resources*) Vol 3: Ch 6: Sec 6.5.6 Vol 4: Ch 6: Sec 6.4
	• Describe possible impacts on surrounding land uses and human activities, including impacts to agricultural land/GQAL and forestry and tidal lands (addressing loss of access to land and waterways and tidal lands)	Vol 2: Ch 6: Sec 6.4.2 (*Compliance with State Planning Policies – SPP 1/92*), 6.4.3 (*Impacts on existing land uses – forestry operations and millable timber*) Vol 3: Ch 6: Sec 6.5.3 Vol 4: Ch 6: Sec 6.4
	• Fragmentation of sites, increase of fire risk, impacts on on-farm infrastructure (e.g. for irrigation) and loss of productive land for those purposes) as well as residential and industrial uses	Vol 2: Ch 6: Sec 6.4.2 (*Compliance with State Planning Policies – SPP 1/03*), 6.4.3 *(Impacts on existing land uses*) Sec 6.5.2

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		Vol 3: Ch 6: Sec 6.5.3 Vol 4: Ch 6: Sec 6.4
	• Indicate measures to be taken to minimise the project's footprint and impact on GQAL	Vol 2: Ch 6: Sec 6.5.1, Sec 6.5.2 Vol 3: Ch 6: Sec 6.6.1
	• Describe strategy and progress in relation to making of Native Title agreements, including NTRBs, consultant selection, traditional owner involvement and related statutory processes	Vol 2: Ch 6: Sec 6.3.3 Vol 3: Ch 6: Sec 6.4.3 Vol 4: Ch 6: Sec 6.3.3
	• Comment on the suitability for co-location of other publicly published infrastructure services, and/or the separation requirements	Vol 1: Ch 1: Sec 1.8 Vol 3: Ch 6: Sec 6.6.6 Vol 4: Ch 6: Sec 6.4
	• Outline the potential issues involved in proximity of the project to electric power transmission lines and electrified rail lines, both at crossing points, where lines run parallel, and where construction and maintenance machinery is used in the vicinity of other infrastructure corridors	Vol 2: Ch 6 Sec 6.4.7, Sec 6.5.7 Vol 3: Ch 6: Sec 6.5.7 Vol 4: Ch 6: Sec 6.4
	• Identify if millable timber or quarry resources exist on the CSG fields, pipeline route and LNG plant site and conduct an assessment of the commercial value of these resources	Vol 2: Ch 6: Sec 6.4.6, Sec 6.5.5, Sec 6.5.6 Vol 3: Ch 6: Sec 6.5.7 Vol 4: Ch 6: Sec 6.4
	Identify affected stock routes and measures to mitigate adverse impacts of the project on the State's stock route network.	Vol 2: Ch 6: Sec 6.3.2 (*Land Tenure – Stock routes*), Sec 6.4.3, 6.5.3 Fig 6.22 to 6.28 Vol 3: Ch 6: Sec 6.6.3 Vol 4: Ch 6: Sec 6.4
3.2.4	**Landscape character and visual amenity**	
3.2.4.1	**Description of environmental values**	
	This section should describe the existing character of the landscape that will be affected by the project. Information should be presented in the form of maps, sections, elevations and photographs, and should include:	Vol 2: Ch 7: Sec 7.3 Vol 3: Ch 7: Sec 7.3 Vol 4: Ch 7: Sec 7.1, 7.5
	• Image and townscape objectives identified in any town planning scheme or strategic plan relevant to the project area;	
	• Major views, existing viewing outlooks, ridgelines and other	Vol 2: Ch 7: Sec 7.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	features contributing to the amenity of the area;	Vol 3: Ch 7: Sec 7.3 Vol 4: Ch 7: Sec 7.5
	• Focal points, landmarks (built form or topography), gateways associated with project site and immediate surrounding areas, waterways, and other features contributing to the visual quality of the area and the project site;	Vol 2: Ch 7: Sec 7.3 Vol 3: Ch 7: Sec 7.3 Vol 4: Ch 7: Sec 7.5, 7.6
	• Character of the local and surrounding areas including character of built form (scale, form, materials and colours) and vegetation (natural and cultural vegetation) directional signage and land use; • Identification of the areas that have the capacity to absorb land use changes without detriment to the existing visual quality and landscape character; and • The value of existing vegetation as a visual screen.	Vol 2: Ch 7: Sec 7.3 Vol 3: Ch 7: Sec 7.3 Vol 4: Ch 7: Sec 7.6, 7.7
3.2.4.2	**Potential impacts and mitigation measures**	Vol 2: Ch 7: Sec 7.4, 7.5 Vol 3: Ch 7: Sec 7.4, 7.5 Vol 4: Ch 7: Sec 7.8, 7.9
3.2.5	**Land contamination**	
3.2.5.1	**Description of environmental values**	Vol 2: Ch 5: Sec 5.2, 5.3.4 Vol 3: Ch 5: Sec 5.2, 5.3.4, Vol 4: Ch 5: Sec 5.2, 5.3.4
3.2.5.2	**Potential impacts and mitigation measures**	Impacts - Vol 2: Ch 5: Sec 5.4.4 Mitigation – Vol 2: Ch 5: Sec 5.5.4 Impacts – Vol 3: Ch 5: Sec 5.4.4 Mitigation – Vol 3: Ch 5: Sec 5.5.4 Impacts – Vol 4: Ch 5: Sec 5.4.5 Mitigation – Vol 4: Ch 5: Sec 5.5.4
3.2.6	**Land disturbance**	

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
3.2.6.1	**Potential impacts and mitigation measures**	Vol 2: Ch 5: Sec 5.5.3, Table 5-8 Vol 3: Ch 5: Sec 5.5.3, Table 5-8 Vol 4: Ch 5: Sec 5.5.3, 5.10
3.3	**Nature conservation**	
3.3.1	**Sensitive environmental areas**	
3.3.1.1	**Description of environmental values**	
	The EIS should identify areas that are environmentally sensitive in proximity to the project. Environmentally sensitive areas should also include areas classified as having international, national, state, regional or local biodiversity significance, or flagged as important for their integrated biodiversity values. Consideration should be given to national parks, conservation parks, declared fish habitat areas, wilderness areas, aquatic reserves, nature refuges, heritage/historic areas or items relating to biodiversity, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar, Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement), areas of cultural significance relating to biodiversity and scientific reserves.	Vol 2: Ch 8: Sec 8.3.1 Vol 3: Ch 8: Sec 8.3.2 Vol 4: Ch 8: Sec 8.3.2 Vol 4: Ch 9: Sec 9.4.1
	MNES identified above are to be discussed in section 8.	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
	DERM has produced a number of Biodiversity Planning Assessments that determine the biodiversity significance of terrestrial locations and these should also be considered during identification of sensitive environmental areas and the identified values described.	Vol 2: Ch 8: Sec 8.3.2, Fig 8.2 Vol 3: Ch 8: Sec 8.3.18 Vol 4: Ch 8: Sec 8.3.2,
	The proximity of the project to any environmentally sensitive areas should be shown on a map of suitable scale.	Vol 2: Ch 8: Sec 8: Fig 8.1 Vol 3: Ch 8, Fig 8.2 Vol 4: Ch 8: Fig 8.4
	As well as the above characteristics, areas that would be regarded as sensitive with respect to flora and fauna have one or more of the following features: • Important habitats of species listed under the Nature Conservation Act 1992 and/or the EPBC Act as 'presumed extinct', 'critically	Vol 2: Ch 8: Sec 8.3 Vol 3: Ch 8: Sec 8.3.2 Vol 4: Ch 8: Sec 8.3.2, 8.3.4, Fig 8.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	endangered', 'endangered', 'vulnerable' or 'rare'	
	• Regional ecosystems recognised by the EPA as 'endangered' or 'of concern' or 'not of concern' but where permits are no longer granted due to being at threshold levels, and/or ecosystems listed as 'presumed extinct', 'critically endangered', 'endangered' or 'vulnerable' under the EPBC Act	Vol 2: Ch 8: Sec 8.3.3 Vol 3: Ch 8: Sec 8.3.4 Vol 4: Ch 8, Sec 8.3.3, Fig 8.5, Table 8.1
	• Ecosystems that provide important ecological functions, such as riparian vegetation, important buffer to a protected area, refuge or important habitat corridor between areas	Vol 2: Ch 8: Sec 8.3.3, 8.3.4, 8.3.5 Vol 3: Ch 8: Sec, 8.3.19, 8.3.20 Vol 4: Ch 8: Sec 8.3.2. 8.3.3
	• Protected areas which have been proclaimed under the *Nature Conservation Act 1992* or are under consideration for proclamation.	Vol 2: Ch 8, Fig 8.1 Vol 2: Ch 6: Fig 6.29-6.35 Vol 3: Ch 6: Fig 6.30 – 6.38 Vol 4: Ch 8, Sec 8.3.2, Fig 8.4 Vol 4: Ch 6: Fig 6.5-6.6
3.3.1.2	Potential impacts and mitigation measurers	
	This section should discuss the following:	Vol 2: Ch 8: Sec 8.4
	• The impact of the project on species, communities and habitats of local, regional, national or international significance	Vol 3: Ch 8: Sec 8.4 Vol 4: Ch 8: Sec 8.4.1, 8.4.2
	• Proposals to mitigate impacts (e.g. timing of works, minimise width of disturbance, proposed rehabilitation of in-stream and floodplain disturbances)	Vol 2: Ch 8: Sec 8.5 Vol 3: Ch 8: Sec 8.5 Vol 3: Ch 9: Sec 9.5.1 Vol 4: Ch 8: Sec 8.5
	• Planned rehabilitation of vegetation communities and any relevant previous experience/experiments rehabilitating these communities	Vol 2: Ch 8: Sec 8.5.2 Vol 3: Ch 8: Sec 8.5.2, 8.5.3 Vol 4: Ch 8: Sec 8.5
	• Offsets relating to residual impacts with regard to the Queensland Government Environmental Offsets Policy (QGEOP) 2008 as well	Vol 2: Ch 8: Sec 8.5.3 Vol 3: Ch 8: Sec 8.5.7

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	as the draft policy statement on the use of environmental offsets under the EPBC Act. The Queensland Government offsets policy provides for specific-issue offset policies, as follows: Policy for Vegetation Management Offsets (NRW, 2007) Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss (DPI&F, 2002) draft Policy for Biodiversity Offsets (consultation draft, EPA, 2008)	Vol 4: Ch 8: Sec 8.6
	Any departure from no net loss of ecological values should be described.	Vol 2: Ch 8: Sec 8.5.3, 8.6 Vol 3: Ch 8: Sec 8.6 Vol 4: Ch 8: Sec 8.8.1
3.3.2	**Terrestrial flora**	
3.3.2.1	**Description of environmental values**	
	The terrestrial vegetation communities within the affected project areas should be described at an appropriate scale with mapping produced from aerial photographs and ground truthing, showing the following: • Location and extent of vegetation types including recognised regional ecosystem type descriptions and any areas of national, state or regional significance • Location of vegetation types of conservation significance • Vegetation map unit descriptions, including their relationship to regional ecosystems. Sensitive or important vegetation types should be highlighted and their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types discussed • The current extent (bioregional and catchment) of protected vegetation types of conservation significance within protected areas (e.g. national parks, conservation parks, resource reserves, nature refuges) • Any plant communities of cultural, commercial or recreational significance • The distribution and abundance of significant exotic and weed species. The description should contain a review of published information regarding the assessment of the significance of the vegetation to conservation, recreation, scientific, educational and historical interests. The assessment should also include a description of vegetation (including re-growth and restored areas in addition to remnant	Vol 2: Ch 8: Sec 8.2.1, 8.3.3, Vol 2: Ch 10: Sec 8.3 Vol 3: Ch 8: Sec 8.2.1, 8.3 Vol 4: Ch 8: Sec 8.3.3, Fig 8.5

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	vegetation) to indicate any areas of state, regional or local significance.	
	The description should also include, where relevant, MNES identified within the EPBC Act. MNES identified above should be fully discussed in section 8.	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
	For each significant natural vegetation community likely to be impacted by the project, vegetation surveys should be undertaken at an appropriate number of sites, allowing for seasonal factors, as follows: • All data should be collected in accordance with the requirements of the Queensland Herbarium CORVEG database • Appropriate minimum site sizes should be selected, observing recognised sampling approaches and to provide an adequate sample of surveyed communities • A list of species present at each site should be recorded • The relative abundance and community structure of plant species present should be recorded • Any plant species of conservation, cultural, commercial or recreational significance should be identified • Vegetation mapping and data should be submitted to the Queensland Herbarium to assist the updating of the CORVEG database • Specimens of species listed as 'protected plants' under the Nature Conservation (Wildlife) Regulation 1994, other than common species, are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database.	Vol 2: Ch 8: Sec 8.2 Vol 3: Ch 8: Sec 8.2 Vol 4: Ch 8: Sec 8.2
	The existence of rare or threatened species should be specifically addressed under sensitive areas. Any special landscape values of natural vegetation communities should be described. Existing information on plant species may be used instead of new survey work provided that the data are derived from surveys consistent with the above methodology and describe existing conditions. Methodology used for flora surveys should be specified in the appendices to the report. Any existing information should be revised and comments provided on whether the areas are degraded, cleared or affected in ways that would affect their environmental value. The occurrence of pest plants (weeds), particularly declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* should be shown on a map at an appropriate scale. A weed management strategy should be provided. The use of Biosecurity Queensland's Annual Pest Distribution Survey	Vol 2: Ch 8: Sec 8.3.3 Vol 3: Ch 8: Sec 8.3.7 Vol 4: Ch 8: Sec 8.3.3, 8.3.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	data and predictive pest maps available on the DEEDI website should be utilised in conjunction with Queensland Herbarium naturalised flora data to source the occurrence of pest plants in the project area	
3.3.2.2	**Potential impacts and mitigation measures**	
	• This section should discuss all foreseen direct and indirect effects on terrestrial flora and the potential level of environmental impact identified. Action plans for protecting rare or threatened species and vegetation types identified as having high conservation value should be described and any obligations imposed by Queensland or Australian government biodiversity protection legislation or policy should be discussed.	Vol 2: Ch 8: Sec 8.4.1, 8.4.2 Vol 3: Ch 8: Sec 8.4 Vol 4: Ch 8: Sec 8.4.1, 8.7
	• Project construction and operational activities involving clearing, salvaging or removal of vegetation should be described, and indirect impacts on vegetation not cleared should be assessed.	
	• The number of hectares of remnant vegetation proposed to be cleared (by conservation status and regional ecosystem type) for each project component should be identified. The proposed clearing should examine the effects of the proposed clearing on the long-term sustainability of these ecosystems at a regional level. This should also include a process for the identification of potential offset areas, in consultation with DERM, consistent with Queensland offsets policies to compensate for any loss of vegetation.	
	With regard to the project areas, this section should include:	Vol 2: Ch 8: Sec 8.4
	• The significance of impacts at a local, catchment, bioregional, state, national or international level	Vol 3: Ch 8: Sec 8.4 Vol 4: Ch 8: Sec 8.4
	• Impact on any plants of potential or recognised environmental or economic significance	Vol 2: Ch 8: Sec 8.4.2 Vol 3: Ch 8: Sec 8.4 Vol 4: Ch 8: Sec 8.4.1
	• A discussion of the ability of identified stands of vegetation to withstand any increased pressure resulting from the project and measures proposed to mitigate impacts	Vol 2: Ch 8: Sec 8.5 Vol 3: Ch 8: Sec 8.4 Vol 4: Ch 8: Sec 8.4.1, 8.5
	• A description of the methods proposed to ensure rapid rehabilitation of disturbed areas. This description should include the species chosen for revegetation which should be consistent with the surrounding vegetation associations. Details of any post construction monitoring programs and the benchmarks to be used for review of monitoring results should be included. Consideration	Vol 2: Ch 8: Sec 8.5.2 Vol 3: Ch 8: Sec 8.5.2, 8.5.4, 8.5.5 Vol 4: Ch 8: Sec 8.5

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	should be given to the establishment of reference sites (at least two for each ecosystem type being rehabilitated) to provide benchmarking for rehabilitation activities	
	• An assessment of high biosecurity risk species including a discussion on the potential for the introduction and/or spread of weeds or plant disease, including: Identification of the origin of construction materials, machinery and equipment Vehicle inspection regime, which addresses the need for vehicle and machinery wash-down and any other hygiene protocols, including the requirement that all vehicles and equipment must be cleaned before starting the job and that these wash down areas contain water/soil away from creeks and gullies Staff/operator education programs Determination of the potential for the introduction of, or facilitation of, exotic, non-indigenous and noxious plants • A biosecurity management plan in an EMP format covering plant biosecurity mitigation measures. This plan should be developed and finalised in consultation with Biosecurity Officers from DEEDI and local government environmental officers, to cover construction, rehabilitation and operation periods.	Vol 2: Ch 8: Sec 8.5.2 Vol 3: Ch 8: Sec 8.3.16, 8.5.4 Vol 4: Ch 8: Sec 8.4.1, 8.5
	The above assessment should include, where relevant, MNES identified under the EPBC Act. MNES identified above are to be discussed in section 8.	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
3.3.3	**Terrestrial fauna**	
3.3.3.1	**Description of environmental values**	
	The terrestrial, and riparian fauna occurring in the areas affected by the project should be described, noting the broad distribution patterns in relation to vegetation, topography and substrate. Wildlife corridors and refuges should be identified and mapped. The description of the fauna present or likely to be present in the area should include: • Species diversity (i.e. a species list) and indicative abundance of animals, including amphibians, birds, reptiles, and mammals (including bats) • Any species that are poorly known but suspected of being rare or potentially threatened • Habitat requirements and sensitivity to changes, including	Vol 2: Ch 8: Sec 8.3.4 Vol 3: Ch 8: Sec 8.3.11 – 8.3.20 Vol 4: Ch 8: Sec 8.2, 8.3.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	movement corridors and barriers to movement • Existence of any rare, threatened or otherwise noteworthy species/communities in the project areas, including a discussion of the range, habitat, breeding, recruitment, feeding and movement requirements, and the current level of protection (e.g. any requirements of protected area management plans) • Use of the area by migratory and nomadic birds, in particular areas for breeding or significant congregations • The existence of feral or exotic animals, including maps of major pest infestations The EIS should contain results from surveys for species listed as threatened or migratory under the EPBC Act. Surveys should be sufficient to identify , or adequately extrapolate, the faunal values over the range of seasons. MNES identified here are to be discussed in section 8.	
	The methodology used for fauna surveys should be specified in the appendices to the report. The EIS should indicate how well any affected significant communities and species are represented and protected elsewhere in the region where the project occurs. Relevant site data should be provided to the DERM in a format compatible with the DERM *WildNet* database for listed threatened species.	Vol 2: Ch 8: Sec 8.2 Vol 3: Ch 8: Sec 8.2.4, 8.3.12. Vol 4: Ch 8: Sec 8.2, 8.3.4
	The use of Biosecurity Queensland's Annual Pest Distribution Survey data and predictive pest maps available on the DEEDI website, together with local government area pest management plans, should be utilised to source the occurrence of pest animals in the project area.	Vol 2: Ch 8: Sec 8.3.4 Vol 3: Ch 8: Sec 8.3.16 Vol 4: Ch 8: Sec 8.3.4
3.3.3.2	**Potential impacts and mitigation measures**	
	This section should discuss all foreseen direct and indirect effects on terrestrial fauna. Strategies for protecting rare or threatened species should be described and any obligations imposed by Queensland threatened species legislation or policy should be discussed. Australian government threatened species legislation should be discussed in section 8.	Vol 2: Ch 8: Sec 8.4 Vol 3: Ch 8: Sec 8.4.8-8.4.14 Vol 4: Ch 8: Sec 8.4.2
	Any recovery plans for potentially affected threatened species should be outlined, and strategies for complying with the objectives and management practices of relevant recovery plans should be described. Measures to mitigate the impact on habitat or the inhibition of normal movement, breeding or feeding patterns, and change to food chains should be described. Any provision for buffer zones and movement corridors, or special provisions for migratory or nomadic animals should be discussed.	Vol 2: Ch 8: Sec 8.4.2 Vol 3: Ch 8: Sec 8.4.8, 8.5.6 Vol 4: Ch 8: Sec 8.5
	With regard to terrestrial and riparian fauna, the assessment of potential	Vol 2: Ch 8: Sec 8.4,

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	impacts should consider:	Table 8.9
	• Impacts the project may have on terrestrial fauna, relevant wildlife habitat and other fauna conservation values, including:	Vol 3: Ch 8: Sec 8.4.8 – 8.4.14
	Direct and indirect impacts due to loss of range/habitat, food supply, nest sites, breeding/recruiting potential or movement corridors	Vol 4: Ch 8: Sec 8.4.2
	Impacts on rare and threatened or otherwise noteworthy animal species	
	Identification of the conservation importance of identified populations at the regional, state and national levels	
	cumulative effects of direct and indirect impacts	Vol 2: Ch 25: Sec 25.2.4 Vol3 : Ch 25: Sec 25.2.4 Vol 4: Ch 8, Sec 8.7 Vol 4: Ch 25: Sec 25.2.4
	• Measures to minimise wildlife capture and mortality during construction and operation • Details of the methodologies that would be used to avoid injuries to livestock and native fauna as a result of the project's construction and operational works and if accidental injuries should occur, the methodologies to assess and handle the injuries • An assessment of high biosecurity risk species including methods for minimising the introduction of feral animals, and other exotic fauna such as declared pest ant species (fire ants and yellow crazy ants) • A review of control measures to prevent increases in local populations and spread of biting insect species of pest and health significance associated with construction activities and disposal of construction wastes • A biosecurity management plan in an EMP format covering animal biosecurity mitigation measures. This plan should be developed and finalised in consultation with Biosecurity Officers from DEEDI and local government environmental officers, to cover construction, rehabilitation and operation periods	Vol 2: Ch 8: Sec 8.5.2 Vol 3: Ch 8: Sec 8.5.6, Table 8.15 Vol 4: Ch 8: Sec 8.5
	The above assessment would also include, where relevant, MNES identified under the EPBC Act. The MNES are to be discussed in section 8.	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
3.3.4	**Freshwater aquatic flora and fauna**	

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
3.3.4.1	**Description of environmental values**	
	The aquatic flora and fauna occurring in the areas affected by the project should be described, noting the patterns and distribution in the waterways. A description of the habitat requirements and the sensitivity of aquatic flora and fauna species to changes in flow regime, water levels and water quality in the project areas should be provided. Consideration should also be given to groundwater dependent ecosystems in the project area. The discussion of the fauna and flora present or likely to be present in the area should include: • Aquatic (waterway) macrophytes including native and exotic/weed species • Wetlands listed by DERM as areas of national, state or regional significance, and their values and importance Aquatic substrate and stream type	Vol 2: Ch 9: Sec 9.3 Vol 3: Ch 9: Sec 9.3 Vol 4: Ch 9: Sec 9.4
	• Fish species, mammals, reptiles, amphibians and aquatic invertebrates occurring in the waterways within the project area, including any feral and exotic fauna species	Vol 2: Ch 9: Sec 9.3 Vol 2: Ch 8: Sec 8.3.4 Vol 3: Ch 9: Sec 9.3 Vol 3: Ch 8: Sec 8.3 Vol 4: Ch 9: Sec 9.4
	• A description of terrestrial species that are ecologically associated with wetlands or waterways and are likely to be affected by the project	Vol 2: Ch 8: Sec 8.3 Vol 3: Ch 8: Sec 8.3 Vol 4: Ch 8: Sec 8.3
	• Environmental outcomes, objectives and assets identified under the Great Artesian Basin (GAB) Water Resource Plan and the GAB Resource Operations Plan.	Vol 2: Ch 9: Sec 9.1, 9.3 Vol 2: Ch 10: Sec 10.3.3 Vol 3: Ch 9: Sec 9.1, 9.3 Vol 3: Ch 10: Sec 10.3.3
	• Identification of all types of groundwater dependant ecosystems occurring in the project area or potentially impacted by project activities.	Vol 2: Ch 9: Sec 9.3 Vol 2: Ch 10: Sec 10.3 Vol 3: Ch 9: Sec 9.3
	These would also include, where relevant, MNES identified under the EPBC Act. The MNES are to be discussed in section 8.	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
3.3.4.2	**Potential impacts and mitigation measures**	Vol 2: Ch 9: Sec 9.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	This section should discuss all foreseen direct and indirect effects on aquatic flora and fauna, including strategies for protecting rare or threatened species and any obligations, legislation or policies imposed by the Queensland and Australian governments. The discussion should include: • Measures to minimise wildlife injury and mortality during construction and operation • Details of the methodologies that would be used to avoid injuries to native fauna as a result of the project's construction and operational works, and if accidental injuries should occur the methodologies to assess and handle injuries	Vol 2: Ch 9: Sec 9.5 Vol 2: Ch 8: Sec 8.5 Impacts - Vol 3: Ch 9: Sec 9.4 Mitigation - Vol 3: Ch 9: Sec 9.5 Vol 2: Ch 8: Sec 8.5 Impacts - Vol 4: Ch 9: Sec 9.5 Mitigation - Vol 4: Ch 9: Sec 9.6
	• Details of measures to be used to maintain fish passage in creeks that would be affected • Potential impacts on groundwater dependant ecosystems, with options to avoid or mitigate these impacts, and details of proposed monitoring for each identified groundwater dependant ecosystems • Review of control measures to prevent increases in local populations and spread of biting insect species of pest and health significance associated with construction activities and disposal of construction wastes • Description of mitigation measures to prevent the creation of new mosquito and biting midge breeding sites, particularly during construction • Description of the potential for and mitigation measures to prevent the introduction, transfer or facilitation of exotic, non-indigenous and noxious plants and water borne insect pests.	Impacts - Vol 2: Ch 9: Sec 9.4 Mitigation - Vol 2: Ch 9: Sec 9.5 Impacts - Vol 3: Ch 9: Sec 9.4 Mitigation - Vol 3: Ch 9: Sec 9.5 Impacts - Vol 4: Ch 9: Sec 9.5 Mitigation - Vol 4: Ch 9: Sec 9.6
3.3.5	**Marine flora and fauna**	
3.3.5.1	**Description of environmental values**	Vol 3: Ch 10: Sec 10.2 Vol 4: Ch 10: Sec 10.2
3.3.5.2	**Potential impacts and mitigation measures**	
	The potential impacts of the project on benthic habitat and marine fauna and flora, including sea grass beds, marine plants, other fish habitats and other rare or threatened species should be assessed. The EIS should also discuss the potential for damage to these ecosystems (including dependent faunal species). Mitigation methods to reduce impacts on identified environmental values should be outlined. Restoration of the disturbed area (especially where marine plants have been removed) should also be outlined.	Vol 3: Ch 10: Sec 10.3 Vol 4: Ch 10: Sec 10.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	Vectors for an introduction of a marine pest, possible impacts of a marine pest incursion and proposed mitigation measures should be discussed together with on-going monitoring for marine pests in the port and proposed response arrangements if a marine pest incursion occurs.	Vol 4: Ch 10: Sec 10.3
	Assessments should include, where relevant, MNES identified under the EPBC Act. The MNES are to be discussed in section 8.	Vol 3: Ch 23 Vol 4: Ch 23
3.4	**Water resources**	
3.4.1	**Surface water and watercourses**	
3.4.1.1	**Description of environmental values**	
	The EIS should describe the environmental values of the surface waterways of the affected area in terms of: • Values identified in the EPP (Water) and Australian and New Zealand Environment and Conservation Council, *State of the Environment Reporting Taskforce 2000* (ANZECC 2000)	Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 11: Sec 11.4 Vol 4: Ch 11: Sec 11.3
	• Sustainability, including both quality and quantity	Vol 2: Ch 9: Sec 9.3 Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 9: Sec 9.3 Vol 3: Ch 11: Sec 11.4 Vol 4: Ch 9: Sec 9.4 Vol 4: Ch 11: Sec 11.3
	• Physical integrity, fluvial processes and morphology of watercourses, including riparian zone vegetation and form	Vol 2: Ch 9: Sec 9.3 Vol 3: Ch 9: Sec 9.3 Vol 4: Ch 9: Sec 9.4 Vol 4: Ch 11: Sec 11.3
	• Any water resource plans, land and water management plans, declared or proposed wild river areas relevant to the affected catchment.	Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 11: Sec 11.1, 11.4 Vol 4: Ch 11: Sec 11.1
	A description should be given of the surface watercourses and their quality and quantity in the area affected by the project with an outline of the significance of these waters to the river catchment system in which they occur. Details provided should include a description of existing surface drainage patterns and existing and historical flow regimes in major streams and wetlands and a description of present and potential water	Vol 2: Ch 9: Sec 9.3 Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 9: Sec 9.3 Vol 3: Ch 11: Sec 11.3 Vol 4: Ch 9: Sec 9.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	uses downstream of the areas affected by the project.	Vol 4: Ch 11: Sec 11.3
	Details should be provided on the likelihood of flooding, history of flooding (including extent, levels and frequency). Flood studies should include a range of annual exceedance probabilities for affected waterways, based on observed data if available, or use appropriate modelling techniques and conservative assumptions if there are no suitable observations. The flood modelling should include local flooding due to short duration events from contributing catchments on site, as well as larger scale regional flooding including waterways downstream.	Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 11: Sec 11.4, 11.5 Vol 4: Ch 11: Sec 11.3
	The EIS should provide a description, with photographic evidence where appropriate, of the geomorphic condition of any watercourses likely to be affected by project works and operations. The results of this description should form the basis for the planning and subsequent monitoring of rehabilitation of the affected watercourses.	Vol 2: Ch 9: Sec 9.3 Vol 3: Ch 9: Sec 9.3 Vol 4: Ch 9: Sec 9.4
	An assessment is required of existing water quality in surface waters and wetlands likely to be affected by the proposal. The basis for this assessment should be a monitoring program, with sampling stations located upstream and downstream of the project areas. The water quality monitoring should capture seasonal variations or variations with flow where applicable. A relevant range of physical, chemical and biological parameters should be measured to provide a baseline for affected creek or wetland systems.	Vol 2: Ch 9: Sec 9.3 Vol 2: Ch 11: Sec 11.3 Vol 3: Ch 9: Sec 9.3 Vol 3: Ch 11: Sec 11.4 Vol 4: Ch 9: Sec 9.4
3.4.1.2	**Potential impacts and mitigation measures**	
	The water management systems for all project elements should be described, addressing surface water quality, quantity, drainage patterns and sediment movements.	Vol 2: Ch 9: Sec 9.5 Vol 2: Ch 11: Sec 11.5 Vol 3: Ch 9: Sec 9.5 Vol 3: Ch 11: Sec 11.6 Vol 4: Ch 9: Sec 9.6 Vol 4: Ch 11: Sec 11.5
	The beneficial (environmental, production and recreational) use of nearby surface water should be discussed. An analysis of potential impacts on affected creeks should be carried out. This analysis should identify any likely inundation and duration, as this may affect emergency vehicle access.	Vol 2: Ch 9: Sec 9.4 Vol 2: Ch 11: Sec 11.4 Vol 3: Ch 9: Sec 9.4 Vol 3: Ch 11: Sec 11.5 Vol 4: Ch 9: Sec 9.5 Vol 4: Ch 11: Sec 11.4
	Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality	Vol 2: Ch 9: Sec 9.5 Vol 2: Ch 11: Sec 11.4,

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	during the construction, operation and decommissioning of the project. Monitoring programs should also be designed to evaluate changes in the physical integrity and geomorphic processes associated with changed flow regimes in affected water courses.	11.5 Vol 3: Ch 9: Sec 9.5 Vol 3: Ch 11: Sec 11.7.2 Vol 4: Ch 9: Sec 9.6 Vol 4: Ch 11: Sec 11.5
	Where on-site storage of water sourced from waste water treatment plants is proposed, the EIS should detail how this water would be managed to ensure environmental harm is avoided. The EIS should also describe the design features of any such storages to effectively contain saline water and other harmful constituents.	Vol 2: Ch 9: Sec 9.5 Vol 2: Ch 11: Sec 11.5 Vol 4: Ch 11: Sec 11.4, 11.5
	Key water management strategy objectives include: • Maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota) • Maintenance or replication of the existing geomorphic conditions of local watercourses • Minimisation of impacts on flooding levels and frequencies both upstream and downstream of the project.	Vol 2: Ch 9: Sec 9.5 Vol 2: Ch 11: Sec 11.5 Vol 3: Ch 9: Sec 9.5 Vol 3: Ch 11: Sec 11.6 Vol 4: Ch 11: Sec 11.5
	The EIS should include a risk assessment for uncontrolled emissions to water due to system or catastrophic failure, implications of such emissions for human health and natural ecosystems, and strategies to prevent, minimise and contain impacts.	Vol 2: Ch 9: Sec 9.4, 9.6 Vol 2: Ch 11: Sec 11.4 Vol 3: Ch 9: Sec 9.4, 9.5 Vol 3: Ch 11: Sec 11.7 Vol 4: Ch 9: Sec 9.5, 9.7 Vol 4: Ch 11: Sec 11.4, 11.6
	The EIS should describe the proposed project component stormwater drainage systems and the proposed disposal arrangements, including any off-site services and downstream impacts.	Vol 2: Ch 11: Sec 11.4 Vol 4: Ch 11: Sec 11.5, 11.4
	Where dams, weirs, or ponds are proposed, the EIS should investigate the effects of predictable climatic extremes (droughts, floods) upon the structural integrity of the containing walls, and the quality of water contained, and flows and quality of water discharged.	Vol 2: Ch 11: Sec 11.4
	A dam failure impact assessment should be carried out for any proposed dams that, due to their size, trigger the need for such an assessment under the *Water Act 2000*. Any dams that are likely to be referrable under the *Water Act 2000* should be noted and emergency response procedures incorporated into the project's environmental management	Vol 2: Ch 11: Sec 11.4, Sec 11.5

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	plan (EMP).	
	The need, or otherwise, for licensing of any dams (including referable dams) or creek diversions, under the *Water Act 2000* or the *Fisheries Act 1994* or the construction or raising of any waterway barrier works under the *Fisheries Act 1994* should be discussed. The process for water allocation and water discharge should be established in consultation with DERM. Consideration should also be given to any water allocation and management plans.	Vol 2: Ch 9: Sec 9.1.3, Sec 9.4.1 Vol 2: Ch 11: Sec 11.2, 11.4.4 Vol 2: Ch 12
	The environmental values of the surface waters potentially affected by the project should be identified in accordance with the EPP (Water). Surface water quality objectives should be determined after consideration of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.	Vol 2: Ch 9: Sec 9.3 Vol 3: Ch 9: Sec 9.3 Vol 4: Ch 9: Sec 9.3
	Risks to farmland from potentially contaminated surface water flow, particularly during flood events should be assessed.	Vol 2: Ch11: Sec 11.4
	Options for flood mitigation and the effectiveness of mitigation measures should be discussed with particular reference to sediment, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna	Vol 2: Ch11: Sec 11.5
3.4.2	**Groundwater**	
3.4.2.1	**Description of environmental values**	
	The EIS should review the quality, quantity and significance of artesian and non-artesian groundwater resources within the project area.	Vol 2: Ch 10: Sec 10.3.1 Vol 3: Ch 11: Sec 11.4.2, 11.4.3
	The environmental values of the underground waters of the affected area should be described in terms of: • Values identified in the EPP (Water) • Sustainability, including both quality and quantity physical integrity, fluvial processes and morphology of groundwater resources.	Vol 2: Ch 10: Sec 10.3 Vol 3: Ch 11: Sec 11.4.1, 11.4.2, 11.4.3
	This section should include reference to: • Nature of the aquifer(s): Geology/stratigraphy—such as alluvium, volcanic, metamorphic Aquifer type—such as confined, unconfined Depth to and thickness of the aquifers • Hydrology of the aquifer(s): Depth to water level and seasonal changes in levels	Vol 2: Ch 10: Sec 10.3.1 Vol 3: Ch 11: Sec 11.4.2, 11.4.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	Groundwater flow directions (defined from water level contours) Interaction with surface water Interaction with sea/salt water Possible sources of recharge Vulnerability to pollution.	
	The data obtained from the groundwater survey should be sufficient to enable specification of the major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids. The review should include a survey of existing groundwater supply facilities (bores, wells, or excavations). The information to be gathered for analysis should include: • Location and type of facilities • Location, type and status of existing water entitlements • Pumping parameters • Draw down and recharge at normal pumping rates • Seasonal variations (if records exist) of groundwater levels.	Vol 2: Ch 10: Sec 10.2.3, 10.3.1
3.4.2.2	**Potential impacts and mitigation measures**	
	A network of observation points which would satisfactorily monitor groundwater resources both before and after commencement of operations should be developed. Consideration should be given to the Queensland Government's policy proposal for groundwater monitoring in its *Blueprint for Queensland's LNG Industry*.	Vol 2: Ch 10: Sec 10.5
	The EIS should include an assessment of the potential environmental impact caused by the project (and its associated project components) to local groundwater resources, including the potential for groundwater induced salinity. The impact assessment should define the extent of the area within which groundwater resources are likely to be affected by the proposed operations and the significance of the project to groundwater depletion or recharge, and propose management options available to monitor and mitigate these effects. The response of the groundwater resource to the progression and finally cessation of the project should be described. Any potential for the project to impact on groundwater dependent ecosystems should be assessed and described. Avoidance and mitigation measures should be described. An assessment of the potential to contaminate groundwater resources and measures to prevent, mitigate and remediate such contamination should be discussed.	Vol 2: Ch 10: Sec 10.4 Vol 3: Ch 11: Sec 11.5

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	If groundwater injection is selected as one of the preferred associated water use disposal options, the effects of this should be assessed. The assessment should have regard to the issues identified in the EPA Operational Policy *Management of water produced in association with petroleum activity (associated water) 2007* and the DIP Policy *Queensland Coal Seam Gas Water Management Policy (2008).*	Not currently nominated as a preferred option. Vol 2: Ch 10: Sec 10.4.2
3.5	**Coastal environment**	
3.5.1	**Marine water and sediment**	
3.5.1.1	**Description of environmental values**	
	Information should be provided on water quality in the sea and in estuaries below the limit of tidal influence, including salinity, heavy metals, pH, turbidity, and oil in water. The interaction of freshwater flow with marine waters and its significance in relation to marine flora and fauna in and adjacent to the project area, should be discussed.	Vol 3: Ch 10.2.5 Vol 4: Ch 10: Sec 10.2.5
	Environmental values of the coastal seas of the affected area should be described, as relevant, in terms of: • Values identified in the EPP (Water) • The State Coastal Management Plan and the Curtis Coast Regional Coastal Management Plan • The Great Barrier Reef World Heritage Area.	Vol 3: Ch 10.2 Vol 3: Ch 12: Sec 12.3 Vol 4: Ch 10: Sec 10.2.1 Vol 4: Ch 12: Sec 12.3
	An assessment of physical and chemical characteristics of sediments should be provided for: • The area to be dredged; or	Addressed in the Gladstone Ports Corporation (GPC) Environmental Impact Statement (EIS) for the Western Basin Dredging and Disposal Project (WBDDP)
	• If offshore disposal is proposed, the disposal location for dredged material	NA
	• The littoral and marine zone adjacent to the project area	Addressed in the GPC EIS for the WBDDP
	Any contaminants and implications for management of the dredged material should be described. The description of sediment characteristics should be based on the results of sediment sampling and analysis conducted as per a sampling and analysis plan (SAP) approved under the *Environment Protection (Sea Dumping) Act 1981*.	Addressed in the GPC EIS for the WBDDP
	The chemical and physical characteristics of the material to be dredged, the spoil ground and control sites should be summarised. If the material	Addressed in the GPC EIS for the WBDDP

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	is to be disposed in an offshore area, a statement as to the suitability of the sediment for unconfined ocean disposal should be made using the framework within the *National Assessment Guidelines for Dredging* (DEWHA 2009).	
3.5.1.2	**Potential impacts and mitigation measures**	
	This section should define and describe the water quality objectives and practical measures for protecting or enhancing coastal environmental values, to describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the water quality objectives would be monitored, audited and managed.	Vol 4: Ch 10: Sec 10.2.5, Sec 10.3.9, Sec 10.3.10
	This section should also describe the water quality objectives used (including how they were developed), and how predicted activities will meet these objectives (refer to DERM's *Queensland water quality guidelines* and the Australian and New Zealand *Guidelines for Fresh and Marine Water Quality*, ANZECC, 2000).	Vol 4: Ch 10: Sec 10.2.5, Sec 10.3.10
	The potential environmental harm caused by the project on coastal resources and processes should be described in the context of controlling such effects. The State Planning Policy—*Planning and Managing Development involving Acid Sulfate Soils 2002* should be addressed as should the *State Coastal Management Plan* 2001 and the Department of Employment, Economic Development and Innovation *Guidelines for Marine Areas.*	Addressed in the GPC EIS for the WBDDP
	The role of buffer zones in sustaining fisheries resources through maintaining connectivity between coastal and riparian vegetation and estuarine and freshwater reaches of catchments should be discussed.	Vol 4: Ch 10: Sec 10.3
	Impacts on water quality due to increased water turbidity and nutrients from the sediment due to dredging and sea disposal of material, if required, should be addressed and strategies developed to address potential impacts.	Vol 4: Ch 10: Sec 10.3.5, Sec 10.2.6 Vol 4: Ch 12: Sec 12.5.6, Sec 12.5.8
	The potential impacts of sediment quality on the marine environment should be discussed. This assessment should be guided by the suitability of the sediment for ocean disposal as determined by the framework outlined in the *National Assessment Guidelines for Dredging* (DEWHA 2009)	Addressed in the GPC EIS for the WBDDP
	In addition to the above considerations, the following guidelines and standards should be considered: • EPP (Water), and any recent or proposed amendments that incorporate recommendations of the *National Environment Protection Measures*	Vol 3: Ch 12: Sec 12.1.3 Vol 4: Ch12: Sec 12.1.3
	• ANZECC Australian Water Quality Guidelines for Fresh and Marine Waters (2000)	Vol 4: Ch 10: Sec 10.2.5, Table 10.2

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	• Amelioration or mitigation measures to address each activity identified to impact on local and regional water quality	Vol 4: Ch 10: Sec 10.3.5, 10.3.9, 10.3.10
	• Any monitoring of water quality recommended during the dredging activities to ensure environmental values are protected.	Vol 4: Ch 10: Sec 10.3.5 Vol 4: Ch 12: Sec 12.6
3.5.2	**Coastal processes**	
3.5.2.1	**Description of environmental values**	
	This section should describe the physical processes of the adjacent marine environment, including but not limited to currents, tides and storm surges.	Vol 3: Ch 12: Sec 12.3 Vol 4: Ch 12: Sec 12.3
	The environmental values of the coastal resources of the project area should be described in terms of the physical integrity and morphology of landforms created or modified by coastal processes. Assessment should be based on hydrodynamic investigations and include a description of sediment dynamics at any off-shore disposal ground based on the influence of tides, waves, currents and turbidity.	Vol 3: Ch 12: Sec 12.3 Vol 4: Ch 12: Sec 12.3
	The relationship of these processes to marine flora and fauna and biological processes within the study area should also be discussed. The relationship between currents, wave actions and extreme events (such as cyclones) and how they influence coastal processes should be discussed.	Vol 4: Ch 12: Sec 12.5.2, 12.5.4
3.5.2.2	**Potential impacts and mitigation measures**	
	The impacts of development of the new berth area on hydrodynamic processes within the harbour should be described. In particular, impacts on siltation and any implications for marine flora and fauna and/or biological processes should be discussed, including generation and migration of turbid plumes.	Vol 4: Ch 12: Sec 12.4, 12.5
	Information on currents in the harbour should be used to predict impacts, including an assessment of these impacts on marine environmental values. The EIS should discuss strategies to mitigate potential project impacts on coastal processes.	Vol 3: Ch 12: Sec 12.5 Vol 4: Ch 12: Sec 12.5
	Consideration should be given to the intended size of vessels proposed to access the facility, and associated dredging of access channels. Details should be provided of the capacity and lifespan of existing (including existing approved) reclamation areas to deal with capital and future maintenance dredging to the full extent of development proposed. The potential impacts associated with the frequency of maintenance dredging requirements should be discussed.	Vol 4: Ch 12: Sec 12.4.1, 12.5.10
3.6	**Air quality**	

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
3.6.1	**Description of environmental values**	Vol 2: Ch 13: Sec 13.2, 13.3 Vol 3: Ch 13: Sec 13.2, 13.3 Vol 4: Sec 13.3
3.6.2	**Potential impacts and mitigation measures**	Vol 2: Ch 13: Sec 13.4, 13.5, 13.6 Vol 2: Ch 25 Vol 2: Ch 14 Vol 3: Ch 13: Sec 13.4, 13.5, 13.6 Vol 4: Ch 13: Sec 13.4, 13.5, 13.6
3.6.2.1	**LNG plant and gas treatment plants**	
	The objectives for air emissions should be stated in respect of relevant standards (stack and ground level concentrations), relevant emission guidelines, and any relevant legislation, and the emissions modelled using a recognised atmospheric dispersion model. The potential for interaction between the emissions from the plants, and emissions in the air shed, and the likely environmental harm from any such interaction, should also be detailed.	Vol 2: Ch 13: Sec 13.4.2 Vol 4: Ch 13: Sec 13.1.3, 13.1.4
	Where appropriate, the predicted ground level concentrations in nearby areas should be provided. These predictions should be made for both normal and expected maximum emission conditions and the worst case meteorological conditions should be identified and modelled where necessary. Ground level predictions should be made at any receptor believed to be sensitive to the effects of predicted emissions. The techniques used to obtain the predictions should be referenced, and key assumptions and data sets explained.	Vol 2: Ch 13: Sec 13.4.2 Vol 4: Ch 13: Sec 13.4
	With respect to the LNG plant, consideration should also be given to referencing of current DERM and Queensland Health studies being undertaken on the Gladstone air shed and the community reference group on the Clean and Healthy Air for Gladstone Project.	Vol 4: Ch 13: Sec 13.3
	The assessment of the LNG plant's impact on air quality should include the following matters:	Vol 4: Ch 13: Sec 13.3, 13.4
	• An accurate description of the activities carried out on the site and the surrounding environment	Vol 4: Ch 3: Sec 3.5.11
	• Conceptual block flow diagrams clearly showing all unit operations to be carried out on the premises, detailed discussion of all unit	Vol 4: Ch 3: Fig 3.20

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	operations, and detailed lists of all process inputs and outputs	
	• A description of pollution control equipment and pollution control techniques to be employed on the premises and the features of the plant that would be designed to suppress or minimise emissions, including dusts and odours; and compare the proposed technologies against the best available control technologies	Vol 4: Ch 13: Sec 13.6
	• A description of the back up measures to be incorporated that will act in the event of failure of primary measures to minimise the likelihood of plant upsets and adverse air impacts	Vol 4: Ch 13: Sec 13.4.3 (*non-routine operations)*
	• An air emission inventory of the proposed plant for all potential point, line, area and volume sources including fugitive emissions of dusts and odours. The inventory should provide a complete list of emissions to the atmosphere including SOx, NOx, VOC, CO, CO2, particulates, PM10, trace metals, formaldehyde and toxic/hazardous substances. The inventory should list emission concentrations at standard temperature and pressure, and provide the mass emission rate, exit velocity, volume flow rate and temperature at exit. The estimation of emission rates should be based on actual measurements on samples taken from similar facilities, either full-scale facilities operating elsewhere, or experimental or demonstration-scale facilities. Where this is not possible, use published emission factors and/or data supplied by manufacturers of process and control equipment.	Vol 4: Ch 13: Sec 13.2.1 , 13.4.1
	• A comparison of the predicted level of emissions with the best practice national source emission standards.	Vol 4: Ch 13: Sec 13.4.3
	• Air dispersion model estimates of the likely air emission impacts on the surrounding environment. Ground level concentrations at the nearest sensitive receptors based on 1-hour average for maximum (99.9 percentile) and 99.5 percentile values. Results of the dispersion modelling must be presented as concentration contour plots and frequency contour plots. The predicted average ground level concentrations should be made for both normal and expected maximum emission conditions and the worst case meteorological conditions.	Vol 4: Ch 13: Sec 13.4.3
	• An evaluation of the cumulative impacts on the receiving environment considering the project in conjunction with existing and known future emission sources within the region. The evaluation should describe air shed management and the contribution of the plants to air shed capacity in view of existing and known future users of the air shed for assimilation and dispersion of emissions.	Vol 4: Ch 13: Sec 13.4, Sec 13.5
	• An odour impact assessment using the criteria described in the Queensland EPA *Guideline of Odour Impact Assessment from*	Vol 4: Ch 13: Sec 13.4.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	Developments.	
3.6.2.2	**Air quality modelling requirements**	Vol 4: Ch 13: Sec 13.2.2, 13.4.3
3.6.3	**Greenhouse gas emissions and abatement**	
	Provide an inventory of projected GHGs	Vol: 2: Ch 14: Sec 14.5 Vol 3: Ch 14: Sec 14.5 Vol: 4: Ch 14: Sec 14.4
	Description of GHG assessment methodology	Vol 2: Ch 14: Sec 14.2 Vol 3: Ch 14: Sec 14.2 Vol 4: Ch 14: Sec 14.2
	Identify mitigation measures in the plant design and assess how measures minimise GHG emissions	Vol 2: Ch14: Sec 14.7 Vol 3: Ch 14: Sec 14.7 Vol 4: Sec 14: 14.5
	Comparison of mitigation measures with best practice environmental management	Vol 2: Ch 14: Sec 14.7.2 Vol 3: Ch 14: Sec 14.7 Vol 4: Ch 14: Sec 14.5
	Opportunities for further offsetting by indirect means	Vol 3: Ch 14: Sec 14.5 Vol 3: Ch 14: Sec 14.7 Vol 4: Ch 14: Sec 14.5
3.7	**Noise and vibration**	
3.7.1	**Description of environmental values**	Vol 2: Ch 15: Sec 15.3 Vol 3: Ch 15: Sec 15.3 Vol 4: Sec 15.3
3.7.2	**Potential impacts and mitigation measures**	Impacts - Vol 2: Ch 15: Sec 15.4 Mitigation – Vol 2: Ch 15: Sec 15.5, 15.6 Impact - Vol 3: Ch 15: Sec 15.4 Mitigation – Vol 3: Ch 15: Sec 15.5 Impact - Vol 4: Ch 15: Sec 15.5

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		Mitigation – Vol 4: Ch 15: Sec 15.6
3.8	**Waste**	
3.8.1	**Waste generation**	
	This section should provide technical details of waste generation, treatment, minimisation and management. Sources of waste associated with the construction, operation and decommissioning of the project should be identified and described including:	Vol 2: Ch 16: Sec 16.3, Table 16.4 Vol 3: Ch 16: Sec 16.3, Table 16.4 Vol 4: Ch 16: Sec 16.4, Sec 16.7
	• The type and indicative amount of wastes produced, including an estimated inventory of solid and liquid (including wastewater, brine and sewage) wastes generated by each stage and component of the project	
	• Volumes and chemical analysis of wastewater generated by the treatment of associated water for beneficial use	Vol 2: Ch 12: Sec 12.3
	• Collection, handling, transport and fate of wastes including storage	Vol 2: Ch 16: Sec 16.5.3, 16.5.6, Table 16.4 Vol 3: Ch 16: Sec 16.5.3, 16.5.6, Table 16.4 Vol 4: Ch 16: Sec 16.4, 16.6.3, 16.6.5, 16.7
	• Market demand for recyclable waste (where appropriate) • Opportunities for waste avoidance, reuse within the project, and minimisation techniques	Vol 2: Ch 16: Sec 16.5.2, 16.5.3, 16.5.4, Table 16.2 Vol 3: Ch 16: Sec 16.5.2, 16.5.3, 16.5.4, Table 16.2 Vol 4: Ch 16: Sec 16.6.2, 16.6.3, 16.6.4
	• Location, site suitability, dimensions, source and volume of any landfill, including method of construction	Vol 2: Ch 16: Sec 16.5.5 Vol 3: Ch 16: Sec 16.5.5 Vol 4: Ch 16: Sec 16.6.3
3.8.2	**Waste management**	
	The EIS should provide details of waste management methods, which demonstrate that waste minimisation and cleaner production techniques and designs have been implemented through the selection of processes, equipment and facilities to prevent or minimise environmental impacts. The proposals for waste avoidance, reuse, recycling, treatment and disposal should be described having regard for best practice waste management strategies and the *Environmental Protection (Waste) Policy 2000.*	Vol 2: Ch 16: Sec 16.1.3, 16.3, 16.5.2, 16.5.3, 16.5.4, Table 16.4 Vol 3: Ch 16: Sec 16.1.3, 16.3, 16.5.2, 16.5.3, 16.5.4, Table 16.4 Vol 4: Ch 16: Sec 16.1.3,

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	This section should assess the potential impacts generated by wastes during the construction, operational and decommissioning stages of the project. This information should include:	16.6.2, 16.6.3, 16.6.4, 16.6.7
	• Descriptions of processes, equipment and facilities to be incorporated into the overall project specifically for the purpose of avoiding waste generation, separation of wastewater from solid waste, reusing or recycling wastes, or on-site treatment methods for wastes to lessen their effect on the natural environment	
	• Proposed means for management of wastes produced under circumstances other than as a result of normal project development, including wastes generated during modification (e.g. run-off, chemical cleaning before commissioning), unusual conditions when the facilities are operating (e.g. start-up, maintenance, shut-down) and domestic sewage and refuse	Vol 2: Ch 16: Sec 16.1.3, Table 16.4 Vol 3: Ch 16: Sec 16.3, Table 16.4 Vol 4: Ch 14: Sec 14.5 Vol 4: Ch 13: Sec 13.5, 13.6 Vol 4: Ch 16: Sec 16.4, Sec 16.7
	• Council waste facilities within the project development areas and their ability to handle expected waste generation	Vol 2: Ch 16: Sec 16.5.5 Vol 3: Ch 16: Sec 16.5.5 Vol 4: Ch 16: Sec 16.6.3 (*waste disposal)*, 16.6.10
	• Methods to prevent seepage and contamination of groundwater from waste stockpiles	Vol 2: Ch 10: Table 10.3 Vol 2: Ch 16: Sec 16.5.6, Table 16.4 Vol 3: Ch 16: Sec 16.5.6, Table 16.4 Vol 4: Ch 11: Sec 11.5.1 Vol 4: Ch 16: Sec 16.6.6
	• Risk assessment and monitoring procedures for individual sites in relation to the above points.	Vol 2: Ch 16: Sec 16.5.1, 16.5.8, 16.5.9, 16.5.10, Table 16.4 Vol 3: Ch 16: Sec 16.5.1, 16.5.8, 16.5.9, 16.5.10, Table 16.4 Vol 4: Ch 16: Sec 16.6.1, 16.6.7, 16.6.8, 16.6.9, 16.7

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	• Methods to avoid stormwater contamination by raw materials, wastes or products and present the means of containing, recycling, reusing, treating and disposing of stormwater, having regard for the requirements of the EPP (Water)	Vol 2: Ch 11: Sec 11.5 Vol 2: Ch 16: Sec 16.3.4, 16.5.6, 16.5.7 Vol 3: Ch 11: Sec 11.6 Vol 3: Ch 16: Sec 16.3.4, 16.5.6, 16.5.7 Vol 4: Ch 11: Sec 11.5 Vol 4: Ch 16: Sec 16.4, 16.6.2, 16.6.3, 16.7
	Stormwater management should also address: • Nominated stormwater discharge points and discharge criteria • Design criteria, diversions, volume and capacity of any retention ponds, process tanks or bunded areas, as well as those reasonable and practicable measures proposed to prevent the likely release of contaminated stormwater to any drain or waters • Potential impacts during extreme rainfall events • Information on the collection, treatment and disposal of contaminated stormwater runoff from plant and associated materials handling facilities • Details of expected contaminants (e.g. chemical composition, particulates, metals, effluent temperature and pH) in controlled discharges of proposed wastewater and stormwater management systems • Impacts of discharges on potential receiving waters, particularly effects on the downstream environment of stormwater releases (i.e. water – salt balance)	Impacts – Vol 2: Ch 11: Sec 11.4 Mitigation – Vol 2: Ch 11: Sec 11.5 Impacts – Vol 3: Ch 11: Sec 11.5 Mitigation – Vol 3: Ch 11: Sec 11.6 Impacts – Vol 4: Ch 11: Sec 11.4 Mitigation – Vol 4: Ch 11: Sec 11.5
	• An outline the expected disposal strategies, where solid or liquid wastes are to be disposed of off-site.	Vol 2: Ch 16: Sec 16.3, 16.5.3, 16.5.6, Table 16.4 Vol 3: Ch 16: Sec 16.3, 16.5.3, 16.5.6, Table 16.4 Vol 4: Ch 16: Sec 16.4, 16.6.3, 16.6.5, 16.7
3.9	**Transport**	
3.9.1	**Existing transport infrastructure**	Vol 2: Ch 17: Sec 17.3.1 (road), 17.3.2 (rail) Vol 3: Ch 17: Sec 17.3.1 (road), 17.3.2 (rail)

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		Vol 4: Ch 17: Sec 17.3.1 (road), 17.3.2 (rail)
3.9.2	**Transport tasks and routes**	
	The EIS should specify the nature and quantitative estimates of:	Vol 2: Ch 17: Sec 17.6
	• Any proposed changes to transport-related infrastructure required by the project. This includes modifications to roads for access works and realignments, rail lines (including level crossings and services) and air and sea port facilities. The EIS should also identify where the construction of project-related plant and utilities may impact on the jurisdiction of any transport authority.	Vol 3: Ch 17: Sec 17.6 Vol 4: Ch 17: Sec 17.6
	• Expected volumes/tonnage of transported raw materials, wastes, and hazardous goods for all phases of the project • How the identified goods and materials will be moved through the transport network (volume/tonnage, composition, trip timing and routes) • Workforce journey-to-work traffic generated by all project activities. This data should identify traffic mode, volume, composition, timing and routes • Likely heavy and oversize/indivisible loads (volume, composition, timing and routes) highlighting any vulnerable bridges and structures along the proposed routes.	Vol 2: Ch 17: Sec 17.4 Vol 3: Ch 17: Sec 17.4 Vol 4: Ch 17: Sec 17.4
3.9.3	**Potential impacts and mitigation measures**	
	The impact assessment should include:	Vol 2: Ch 17: Sec 17.2
	• Details of the assessment methodology adopted with a summary of the consultation undertaken with the relevant transport authorities (Department Transport and Main Roads (DTMR), QR Limited and local government)	Vol 3: Ch 17: Sec 17.2 Vol 4: Ch 17: Sec 17.2
	• Details of all base data assumptions, including the current condition of the affected network and its performance	Vol 2: Ch 17: Sec 17.3 Vol 3: Ch 17: Sec 17.3 Vol 4: Ch 17: Sec 17.3
	• Road and rail safety issues, in particular safety for other transport users and safe access to the construction sites	Vol 2: Ch 17: Sec 17.4 Vol 3: Ch 17: Sec 17.4 Vol 4: Ch 17: Sec 17.4
	• Road use resulting in reduced life of roads/pavements requiring additional or accelerated rehabilitation and maintenance • Seasonal considerations such as potential for transport impacts during wet weather	Vol 2: Ch 17: Sec 17.5 Vol 3: Ch 17: Sec 17.5 Vol 4: Ch 17: Sec 17.5

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	• Reduced efficiency of traffic flows along road sections and at intersections along key routes, including estimates of possible interruptions to transport operations • Reduced efficiency of rail operations including estimates of possible interruptions to rail operations • Details of any impacts on the natural environment within the jurisdiction of an affected transport authority (for example road and rail corridors) • Details on the nature and likelihood of product-spill during transport where relevant	
3.9.3.1	**Road impacts**	Vol 2: Ch 17: Sec 17.5.1 Vol 3: Ch 17: Sec 17.5.1 Vol 4: Ch 17: Sec 17.5.1
3.9.3.2	**Rail impacts**	Vol 2: Ch 17: Sec 17.5.2 Vol 3: Ch 17: Sec 17.5.2 Vol 4: Ch 17: Sec 17.5.2
3.9.4	**Proposed infrastructure alterations**	Vol 2: Ch 17: Sec 17.6 Vol 3: Ch 17: Sec 17.6 Vol 4: Ch 17: Sec 17.6
3.9.5	**Road management planning**	Vol 2: Ch 17: Sec 17.6.1 Vol 3: Ch 17: Sec 17.6 Vol 4: Ch 17: Sec 17.6.1
3.9.6	**Shipping**	
	The Regional Harbour Master Gladstone should be consulted regarding maritime issues relating to the movement and loading of LNG tankers and any barge operations. The EIS should discuss the results of the consultation.	Vol 2: Ch 17: Sec 17.2.3 Vol 3: Ch 17: Sec 17.2.3 Vol 4: Ch 17: Sec 17.2.3
	Describe current vessels utilising the port and in the Commonwealth Marine area, their size, shipping movements, anchorages, access to/from the port and navigational arrangements.	Vol 2: Ch 17: Sec 17.3.3 Vol 3: Ch 17: Sec 17.3.3 Vol 4: Ch 17: Sec 17.3.3
	In relation to shipping of LNG, details of the number of ships utilising Gladstone Ports Corporation (GPC) port facilities and their size and frequency should be documented. In particular, changes to any of the following are to be described: • Berthing/departure requirements including weather constraints	Vol 3: Ch 17: Sec 17.4.3, Sec 17.5.3 Vol 4: Ch 17: Sec 17.4.4, Sec 17.5.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	• Security zones around the vessels both in berth and in transit, together with impacts on other maritime operations • Interaction with other vessels • Scheduling of vessel movement • Channel configuration, including swing basins • Towage requirements, including provision of escort tugs (if necessary) and having the use of LNG vessel dedicated escort tugs • Pilot requirements • Parameters of vessels to be used • Arrival and departure conditions of the vessels • Anchorage arrangements • Access to and from the port, shipping routes to be used by vessels beyond the port in Commonwealth marine waters. These should be indicated in relationship to the GBRMP and to the main shipping channels • Any other navigational arrangements • Any additional servicing of vessels.	
	In regard to increased shipping volumes, the following should be specifically addressed:	Vol 3: Ch 17: Sec 17.5.3, 17.6.3
	• Potential for introduction of exotic organisms from increased shipping rates • Ballast water management arrangements - including Australian Quarantine and Inspection Service (AQIS) mandatory arrangements and agency contingency planning • Management of ship waste, in particular quarantine waste, domestic garbage, oil and sewage • Potential risk of spills and their management • Potential foreshore damaged caused by LNG tanker and tug activities • Potential for increased vessel strike to marine species • Potential impacts on existing shipping activity from both LNG ship movements and if the project should generate a significant degree of public or private ferry or barge movements in the port • Routes of ships in transit through port waters and the aligned infrastructure such as navigational aids	Vol 4: Ch 17: Sec 17.5.3, 17.6.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	Additional marine transport issues that should be considered include the potential of the proposal to impact on recreational craft. Potential impacts arising from the gas pipeline crossing of waterways which are able to support vessel activity should also be considered.	
3.9.7	**Air services**	
	The air services and their current capacity serving the gas field region and the Gladstone region should be described.	Vol 2: Ch 17: Sec 17.3.4 Vol 3: Ch 17: Sec 17.3.4 Vol 4: Ch 17: Sec 17.3.4
	Projections should be made of the requirements of the project for air transport to and from these regions, and the services required to supply these projections. An assessment is required of the infrastructure needed to support the projected level of air services.	Vol 2: Ch 17: Sec 17.5.4 Vol 3: Ch 17: Sec 17.5.4 Vol 4: Ch 17: Sec 17.4
3.10	**Indigenous cultural heritage**	
3.10.1	**Description of indigenous cultural heritage values**	Vol 2: Ch 18: Sec 18.2, 18.3 Vol 3: Ch 18: Sec 18.2, 18.3 Vol 4: Ch 18: Sec 18.2
3.10.2	**Potential impacts and mitigation measures**	Impact – Vol 2: Ch 18: Sec 18.4 Mitigation – Vol 2: Ch 18: Sec 18.5, 18.6 Impact – Vol 3: Ch 18: Sec 18.4 Mitigation – Vol 3: Ch 18: Sec 18.5, 18.6 Impact – Vol 4: Ch 18: Sec 18.3 Mitigation – Vol 4: Ch 18: Sec 18.4, Sec 18.5
3.11	**Non-indigenous cultural heritage**	
3.11.1	**Description of non-indigenous cultural heritage values**	
	The EIS should describe the existing environmental values for non-indigenous cultural heritage that may be affected by the project activities. The non-indigenous cultural heritage survey should: • Refer to:	Vol 2: Ch 19: Sec 19.3 Vol 3: Ch 19: Sec 19.3 Vol 4: Ch 19: Sec 19.3

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	The Australian Heritage Places Inventory The DERM Queensland Heritage Register and other information regarding places of potential non-indigenous cultural heritage significance Local government heritage register Any existing literature relating to the affected areas • Include locations of culturally significant sites likely to be impacted by the project • Provide a constraints' analysis of the proposed development area to identify and record non-indigenous cultural heritage places • Provide the location of any mining areas with historical significance • Provide a report of work done which includes background research, relevant environmental data and methodology, as well as results of field surveys, significance assessment and conclusions and management recommendations (having due regard for any confidentiality requirements specified by community representatives).	
	• Refer to consultations and negotiations with the local community and historical societies about: Places of non-indigenous cultural heritage significance The significance of any non-indigenous cultural heritage places located or identified	Vol 2: Ch 19: Sec 19.2 Vol 3: Ch 19: Sec 19.2 Vol 4: Ch 19: Sec 19.2
3.11.2	**Potential impacts and mitigation measures**	Impact – Vol 2: Ch 19: Sec 19.4 Mitigation – Vol 2: Ch 19: Sec 19.5, 19.6 Impact – Vol 3: Ch 19: Sec 19.4 Mitigation – Vol 3: Ch 19: Sec 19.5, 19.6 Impact – Vol 4: Ch 19: Sec 19.4 Mitigation – Vol 4: Ch 19: Sec 19.5, 19.6
4	**Social values and management of impacts**	
4.1	**Social**	
4.1.1	**Social and cultural area**	Vol. 2: Ch 20: Sec 20.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		Vol. 3: Ch 20: Sec 20.4
		Vol. 4: Ch 20: Sec 20.4
4.1.2	**Community engagement**	Vol. 2: Ch 20: Sec 20.3
		Vol. 3: Ch 20: Sec 20.3
		Vol. 4: Ch 20: Sec 20.3
4.1.3	**Social baseline study**	Vol. 2: Ch 20: Sec 20.4
		Vol. 3: Ch 20: Sec 20.4
		Vol. 4: Ch 20: Sec 20.4
4.1.4	**Workforce profile**	Vol. 2: Ch 20: Sec 20.5
		Vol. 3: Ch 20: Sec 20.5
		Vol. 4: Ch 20: Sec 20.5
4.1.5	**Potential impacts**	Vol 2: Ch 20: Sec 20.2.4, 20.6.2,
		Vol 3: Ch 20: Sec 20.2.3, 20.6.2
		Vol 4: Ch 20: Sec 20.2.3, 20.6.2
4.1.6	**Mitigation measures and management strategies**	Vol 2: Ch 20: Sec 20.6, 20.7
		Vol 3: Ch 20: Sec 20.6, 20.7
		Vol 4: Ch 20: Sec 20.6, 20.7
4.2	**Health and safety**	
4.2.1	**Description of environmental values**	Vol 2: Ch 22: Sec 22.6
		Vol 3: Ch 22: Sec 22.6
		Vol 4: Ch 22: Sec 22.5
4.2.2	**Potential impacts and mitigation measures**	Vol 2: Ch 22: Sec 22.6
		Vol 3: Ch 22: Sec 22.6
		Vol 4: Ch 22: Sec 22.5
5	**State and local economies and management of impacts**	
5.1	**Economy**	

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
5.1.1	**Description of affected local and regional economies**	Vol 2: Ch 21: Sec 21.3 Vol 3: Ch 21: Sec 21.3 Vol 4: Ch 21: Sec 21.3
5.1.2	**Potential impacts and mitigation measures**	Vol 2: Ch 21: Sec 21.4 Vol 3: Ch 21: Sec 21.4 Vol 4: Ch 21: Sec 21.4
5.2	**Sustainable development**	
5.2	The EIS should provide a comparative analysis of how the project conforms to the objectives for 'sustainable development' (see the *National Strategy for Ecologically Sustainable Development (1992)*, available from the Australian Government Publishing Service). This analysis should consider the cumulative impacts (both beneficial and adverse) of the project from a life-of-project perspective, taking into consideration the scale, intensity, duration and frequency of the impacts to demonstrate a balance between environmental integrity, social development and economic development.	Vol 1: Ch 3: Sec 3.5
5.2	This information is required to demonstrate that sustainable development aspects have been considered and incorporated during the scoping and planning of the project.	Vol 1: Ch3: Sec 3.4
6	**Hazard and risk**	
6.1	**Hazard and risk assessment**	
	This section of the EIS should describe the potential hazards and risks that may be associated with the project and should incorporate all known hazards, which may include:	Vol 2: Ch 22: Sec 22.3, 22.4 Vol 3: Ch 22: Sec 22.3, 22.4 Vol 4: Ch 22: Sec 22.3
	• Identification of potential hazards, accidents, spillages and abnormal events occurring during all stages of the project, including possible frequency of occurrence	
	• Indication of cumulative risk levels to surrounding land uses	Vol 2: Ch 22: Sec 22.4.4 Vol 3: Ch 22: Sec 22.4.4 Vol 4: Ch 22: Sec 22.4
	• Identification of all hazardous substances to be used, stored, processed or produced and the rate of usage	Vol 2: Ch 22: Sec 22.3 Vol 3: Ch 22: Sec 22.3 Vol 4: Ch 22: Table 22.2
	• Potential wildlife hazards such as snakes and disease vectors.	Vol 2: Ch 22: Sec 22.4.2 Vol 3: Ch 22: Sec 22.4.2

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
		Vol 4: Ch 22: Sec 22.5.3
	The EIS should deal with on-site risks. External risks to the project should also be considered. External risks from natural hazards could be determined on the basis of Australia/New Zealand Standard on Risk Management AS/NZS 4360:2004. The study should assess risks during the construction, operational and decommissioning phases of the project. These risks should be assessed in quantitative terms where possible. Possible hazards, accidents, and abnormal events that may arise for the project, both during construction and in operation should be described, including: • Accidental release of hazardous goods or other materials • Fires associated with incidents arising from the project activities • Vehicle and other transport-related accidents • Vulnerability of the project area to bushfire, flooding, cyclones, seismic events and other natural disasters. Analysis of the consequences of each of these events on safety and environmental damage in the project area should be conducted, including direct harm to the environment as a result of project hazards. The analysis should examine the likelihood of these consequences being experienced, both individually and collectively	Vol 2: Ch 22: Sec 22.4 Vol 3: Ch 22: Sec 22.4 Vol 4: Ch 22: Sec 22.3
	In regard to the on-site handling and storage of explosive raw material, consultation is encouraged with Emergency Management Queensland, Chemical Hazards and Emergency Management Services Unit.	Vol 2: Ch 22: Sec 22.3 Vol 3: Ch 22: Sec 22.3 Vol 4: Ch 22: Sec 22.3
	Details should be provided on the safeguards that would be employed or installed to reduce the likelihood and severity of hazards, consequences and risks to persons, fauna and environmentally sensitive sites within and adjacent to the project areas.	Vol 2: Ch 22: Sec 22.5, 22.6, 22.7, 22.8 Vol 3: Ch 22 Vol 4: Ch 22: sec 22.5, Sec 22.6, 22.7
6.1.1	**Gas pipeline**	Vol 3: Ch 22: Sec 22.5, 22.4
6.1.2	**LNG plant and LNG transport**	
	The LNG plant is considered to be a major hazard facility in terms of the *Dangerous Goods Safety Management Act 2001)*. The study should assess risks associated with the LNG plant and the shipment of LNG, during the construction, operational and decommissioning phases. These risks should be assessed in quantitative terms where possible, and should involve a preliminary hazard identification exercise to identify the nature and scale of hazards which might occur. This exercise should	Vol 4: Ch 22: Sec 22.5.1

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	consider the following matters:	
	• Construction accidents	
	• Pipeline, processing unit or storage vessel rupture or loss of containment, and explosions and fires associated with such incidents • The release of liquid gaseous or particulate pollutants or any other hazardous material used, produced or stored on the site	Vol 4: Ch 22: Sec 22.3.3
	• Impact of LNG flare on aviation activity	Vol 4: Ch 22: Sec 22.3.3 Vol 4: Ch 13: Sec 13.5
	• Marine collision	Vol 4: Ch 22: Sec 22.3.5
	• Spills of materials during ship loading and unloading	Vol 4: Ch 22: Sec 22.3.4
	• The potential for breaching of a LNG or LPG vessel's hull and the resulting breach size and spill rate	Vol 4: Ch 22: Sec 22.3.5
	• The extent of thermal dispersion and resulting hazard/ignition zones following a LNG or LPG spillage (e.g. 35 kWm2 and 5 kWm2 analysis)	Vol 4: Ch 22: Sec 22.3.3
	• Natural events such as cyclones, earthquakes, bushfires and local flooding.	Vol 4: Ch 22: Table 22.15
	In particular, risk assessments of marine operational activities (when LNG and LPG vessels are at berth, during loading and during vessel movements within the port limits) should be undertaken to determine if operational activities associated with these vessels are likely to impact on other operational activities within the port.	Vol 4: Ch 22: Sec 22.3.4, Sec 22.3.5
	A set of representative incident scenarios should be selected. This set should include credible event scenarios (e.g. a catastrophic failure of a processing unit and the consequential explosion zone). This will require an evaluation of the likelihood of each scenario occurring in order to calculate the level of risk in surrounding areas due to the presence of the facility.	Vol 4: Ch 22: Sec 22.3.3
	The risk analysis should include fatality and serious injury consequences, and present individual fatality risk contours at 0.5, 1, 5, 10, and 50 x 10^{-6} per year and injury risk contours at 10 and 50 x 10^{-6} per year. Risk contours should be presented on a suitably scaled location map.	Vol 4: Ch 22: Sec 22.3.3, Figure 22.7
6.1.3	**Cumulative risk**	
	The risk analysis is to address the potential impacts that may occur on the normal on-site day-to-day activities during the construction and/or operation of the facilities.	Vol 2: Ch 22: Sec 22.6.1 Vol 3: Ch 22: Sec 22.6.1 Vol 4: Ch 22: Sec 22.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	Furthermore, the project must determine the level of change that may result on the risk contours of other relevant existing or proposed industrial facilities located in the area as a result of the proposed project. Individual risk criteria should be used to limit risks to individual workers and members of the public. Societal risk criteria should be used to limit risk to the affected population as a whole.	Vol 2: Ch 22: Sec 22.4 Vol 3: Ch 22: Sec 22.4 Vol 4: Ch 22: Sec 22.4
	Any changes to operating or storage procedures that would reduce the possibility of these events occurring, or reduce the severity of the events should they occur, are to be identified and adopted where appropriate. Draft risk management plans are to be presented for construction and operational phases of the project.	Vol 2: Ch 22 Vol 3: Ch 22 Vol 4: Ch 22: Sec 22.4
	The acceptability of the risk on-site and to surrounding land uses should be assessed by referring to nationally-adopted risk criteria presented in the New South Wales Department of Urban Affairs and Planning's Hazardous Industry Planning Advisory Paper No. 4 "Risk Criteria for Land Use Safety Planning. Details of the methodology and results of each step described above should be presented in the EIS.	Vol 2: Ch 22: Sec 22.1.2 Vol 3: Ch 22: Sec 22.1.2 Vol 4: Ch 22: Sec 22.4
6.2	**Emergency management plan**	Vol 2: Ch 22: Sec 22.7 Vol 3: Ch 22: Sec 22.7 Vol 4: Ch 22: Sec 22.6
7	**Cumulative impacts**	Vol 1: Ch 5 Vol 2: Ch 25 Vol 3: Ch 25 Vol 4: Ch 25
8	**Matters of national environmental significance**	
8.1	**Impacts on World Heritage properties and National Heritage places**	
	The EIS should provide: • A description of the values of the Great Barrier Reef World Heritage Area (GBRWHA) and National Heritage places that are likely to be impacted by the project, including but not restricted to the significant regional habitat for listed threatened and migratory marine species.	Vol 2: Ch 23: Sec 23.11.6 Vol 3: Ch 23: Sec 23.13.1 Vol 4: Ch 23: Sec 23.3.1
	• A description of the potential direct and indirect impacts on the values of each area, place, site or reserve, resulting from: Modification, destruction, fragmentation, isolation or disturbance of an important, sensitive or substantial area of habitat A substantial change in water quality (including temperature) and hydrological regime which may adversely impact on	Vol 3: Ch 23: Sec 23.13 Vol 4: Ch 23: Sec 23.4

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
	biodiversity, ecological integrity, social amenity or human health Persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected.	
	• A description of the impacts on other users of the area.	Vol 3: Ch 23: Sec 23.13 Vol 4: Ch 23: Sec 23.4
	• A discussion of the extent to which identified impacts can be forecast or predicted and managed.	Vol 2: Ch 23: Sec 23.11 Vol 3: Ch 23: Sec 23.13.1 Vol 4: Ch 23: Sec 23.4, Sec 23.5
	• A description of any mitigation measures proposed to reduce the impact on the values and environments of each area, place, site or reserve.	Vol 2: Ch 23: Sec 23.11 Vol 3: Ch 23: Sec 23.13 Vol 4: Ch 23: Sec 23.4, Sec 23.5
8.2	**Impact on a listed threatened species and ecological communities**	Vol 2: Ch 23: Sec 23.5, Sec 23.4 Vol 3: Ch 23: Sec 23.10 Vol 4: Ch 23: Sec 23.3.3, 23.4.3
8.3	**Impact on a listed migratory species**	Vol 2: Ch 23: Sec 23.6 Vol 3: Ch 23: Sec 23.11 Vol 4: Ch 23: Sec 23.3.3, 23.3.2, 23.4.3, 23.5
8.4	**Impact on Ramsar wetlands**	Vol 2: Ch 23: Sec 23.7 Vol 3: Ch 23: Sec 23.12
8.5	**Format of MNES Section**	Vol 2: Ch 23 Vol 3: Ch 23 Vol 4: Ch 23
9	**Environmental management plan**	Vol 2: Ch 24 Vol 3: Ch 24 Vol 4: Ch 24
10	**Conclusions and recommendations**	ES

TOR Section	Terms of Reference	Volume No. & Chapter No. in EIS
11	**References**	Can be found at the end of each chapter/ attachment
12	**Recommended appendices**	
12.1	**Final TOR for this EIS**	Vol 5: Attachment 1
12.2	**TOR cross reference table**	Vol 5: Attachment 2
12.3	**Development approvals**	Vol 1: Ch 2
12.4	**Summary consultation report**	Vol 2: Ch 2 Vol 3: Ch 2 Vol 4: Ch 2
12.5	**Study team**	Vol 5: Attachment 3
12.6	**Glossary of terms**	Vol 5: Attachment 4
12.7	**Specialist studies**	Vol 5 – a number of specialists studies have been completed
12.8	**Corporate environmental policy**	Vol 1: Ch 1: Sec 1.2.1, 1.2.2
12.9	**List of proponent commitments**	Vol 1: Ch 6