Gorgon Gas Development and Jansz Feed Gas Pipeline:

Terrestrial and Subterranean Environment Protection Plan

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Terminology, Definitions and Abbreviations

Terms, definitions and abbreviations used in this document are listed below. These align with the terms, definitions and abbreviations defined in Schedule 2 of the Western Australian Gorgon Gas Development and Jansz Feed Gas Pipeline Ministerial Implementation Statements No. 800 and No. 769 respectively (Statements No. 800 and 769) and the Commonwealth Gorgon Gas Development and Jansz Feed Gas Pipeline Ministerial Approvals (EPBC Reference: 2003/1294, 2008/4178, and 2005/2184).

'As far as practicable', 'where practicable' and 'practicable'	All mean reasonably practicable having regarded, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge.
ABU	Australasia Business Unit
Additional Support Area	Gorgon Gas Development Additional Construction, Laydown and Operations Support Area
ALARP	As Low As Reasonably Practicable Defined as a level of risk that is not intolerable, and cannot be reduced further without the expenditure of costs that are grossly disproportionate to the benefit gained.
API	American Petroleum Institute
ARI	Assessment on Referral Information (for the proposed Jansz Feed Gas Pipeline dated September 2007) as amended or supplemented from time to time.
AS	Australian Standard
AS/NZS	Australian Standard/New Zealand Standard
ASBU	Australasia Strategic Business Unit
At risk	Being at risk of Material Environmental Harm or Serious Environmental Harm and/or, for the purposes of relevant EPBC Act relevant listed threatened species and threatened ecological communities and listed migratory species, at risk of Material Environmental Harm or Serious Environmental Harm.
Avifauna	Birds of a particular region.
BTEX	Benzene, toluene, ethylbenzene and xylene aromatic hydrocarbon compounds present in petroleum; may be primary pollutants of soils and groundwater associated with petroleum products.
Bund	An area of containment, such as a dam, wall, or other artificial embankment.
Carbon Dioxide (CO_2) Injection System	The mechanical components required to be constructed to enable the injection of reservoir carbon dioxide, including but not limited to compressors, pipelines and wells.

CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2 Seismic Baseline Survey Program	The CO_2 Seismic Baseline Survey Program as described in the CO_2 Seismic Environmental Management Plan (Chevron Australia 2009).
CO_2 Seismic Survey Program	The programme of seismic surveys to be undertaken over the life of the CO_2 Injection Project to monitor injected CO_2 in accordance with the Section 13 Approval.
Commonwealth Marine Area	Zoned areas of waters of the sea, the seabed, and the airspace above the waters of the sea, defined under section 24 of the EPBC Act (Cth).
Construction	Construction includes any Proposal-related (or action-related) construction and commissioning activities within the Terrestrial and Marine Disturbance Footprints, excluding investigatory works such as, but not limited to, geotechnical, geophysical, biological and cultural heritage surveys, baseline monitoring surveys and technology trials.
Construction Period	The period from the date on which the Gorgon Joint Venturers first commence construction of the Proposal until the date on which the Gorgon Joint Venturers issue a notice of acceptance of work under the EPCM, or equivalent contract entered into in respect of the second LNG train of the Gas Treatment Plant.
CPI	Corrugated Plate Interceptor
Cth	Commonwealth of Australia
Cut Batters	Cut earthen walls with a sloping face
DBNGP	Dampier to Bunbury Natural Gas Pipeline
DEC	Former Western Australian Department of Environment and Conservation (now DPaW)
DEWHA	Former Commonwealth Department of the Environment, Water, Heritage and the Arts
DLN	Dry Low NO_x
DotE	Commonwealth Department of the Environment
DPaW	Western Australian Department of Parks and Wildlife
Ecological Community	Refers to all the interacting organisms living together in a specific habitat.
Ecological Element	Element listed in Condition 6.1 of Statement No. 800 and Statement No. 769 and Condition 5.1 EPBC Act Reference: 2003/1294 and 2008/4178.

EIS/ERMP	Environmental Impact Statement/Environmental Review and Management Programme (for the Proposed Gorgon Development dated September 2005) as amended or supplemented from time to time.
EMP	Environmental Management Plan
Environmental Harm	Has the meaning given by Part 3A of the *Environmental Protection Act 1986* (WA).
EP Act	Western Australian *Environmental Protection Act 1986*
EPA	Western Australian Environmental Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPBC Reference: 2003/1294	Commonwealth Ministerial Approval (for the Gorgon Gas Development) as amended or replaced from time to time.
EPBC Reference: 2005/2184	Commonwealth Ministerial Approval (for the Jansz Feed Gas Pipeline) as amended or replaced from time to time.
EPBC Reference: 2008/4178	Commonwealth Ministerial Approval (for the Revised Gorgon Gas Development) as amended or replaced from time to time.
EPCM	Engineering, Procurement and Construction Management
Gorgon Gas Development	The Gorgon Gas Development as approved under Statement Nos. 800 and 965, and EPBC References: 2003/1294 and 2008/4178 (as varied by the Commonwealth Environment Minister), as amended or replaced from time to time.
Gorgon Gas Development Footprint	Consists of the cleared areas and uncleared areas approved to be cleared on Barrow Island used for the construction and operation of the Gorgon Gas Development and Jansz Feed Gas Pipeline.
H_2S	Hydrogen sulfide
ha	Hectare
HDD	Horizontal Directional Drilling
HDPE	High Density Polyethylene
HES	Health, Environment, and Safety
IMS	Impact Mitigation Strategy
ISO	International Organization for Standardization
Jansz Feed Gas Pipeline	The Jansz Feed Gas Pipeline as approved in Statement No. 769 and EPBC Reference: 2005/2184 as amended or replaced from time to time.

Karst	An area of irregular limestone in which erosion has produced fissures, sinkholes, underground streams, and caverns.
kg	Kilogram
km	Kilometre
kW	Kilowatt
LNG	Liquefied Natural Gas
m	Metre
m^3	Cubic metre
Management Triggers	Are quantitative, or where this is demonstrated to be not practicable, qualitative matters above or below whichever relevant additional management measures must be considered.
Marine Disturbance Footprint	The area of the seabed to be disturbed by construction or operations activities associated with the Marine Facilities listed in Condition 14.3 of Statement No. 800, Condition 12.3 of Statement No. 769 and Condition 11.3 of EPBC Reference: 2003/1294 and 2008/4178 (excepting that area of the seabed to be disturbed by the generation of turbidity and sedimentation from dredging and dredge spoil disposal) as set out in the Coastal and Marine Baseline State Report required under Condition 14.2 of Statement No. 800, Condition 12.2 of Statement No. 769, and Condition 11.2 of EPBC Reference: 2003/1294 and 2008/4178.
Marine Facilities	In relation to Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178, the Marine Facilities are the: • Materials Offloading Facility (MOF) • LNG Jetty • Dredge Spoil Disposal Ground • Offshore Feed Gas Pipeline System and marine component of the shore crossing • Domestic Gas Pipeline For the purpose of Statement No. 800, Marine Facilities also include: • Marine upgrade of the existing WAPET landing. In relation to Statement No. 769, Marine Facilities are the Offshore Feed Gas Pipeline System and marine component of the shore crossing.
Material Environmental Harm	Environmental Harm that is neither trivial nor negligible.
MEG	Monoethylene glycol
Migratory Species	Species listed as migratory under section 209 of the EPBC Act (Cth).
MOF	Materials Offloading Facility

MSDS	Material Safety Data Sheet
MTPA	Million Tonnes Per Annum
MW	Megawatt
NES	[Matters of] National Environmental Significance, as defined in Part 3, Division 1 of the EPBC Act (Cth).
NO_x	Nitrogen oxides (NO and NO_2)
OE	Operational Excellence
OEMS	Operational Excellence Management System
Operations (Gorgon Gas Development)	In relation to Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178, for the respective LNG trains, this is the period from the date on which the Gorgon Joint Venturers issue a notice of acceptance of work under the Engineering, Procurement and Construction Management (EPCM) contract, or equivalent contract entered into in respect of that LNG train of the Gas Treatment Plant; until the date on which the Gorgon Joint Venturers commence decommissioning of that LNG train.
Operations (Jansz Feed Gas Pipeline)	In relation to Statement No. 769, for the pipeline, this is the period from the date on which the Proponent issues a notice of acceptance of work under the Engineering, Procurement and Construction Management (EPCM) contract, or equivalent contract entered into in respect of that pipeline; until the date on which the Proponent commences decommissioning of that pipeline.
PER	Public Environmental Review for the Gorgon Gas Development Revised and Expanded Proposal dated September 2008, as amended or supplemented from time to time.
Performance Standards	Are matters which are developed for assessing performance, not compliance, and are quantitative targets or where that is demonstrated to be not practicable, qualitative targets, against which progress towards achievement of the objectives of conditions can be measured.
Practicable	Practicable means reasonably practicable having regard to, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge. For the purposes of EPBC Reference: 2003/1294 and 2008/2178, which include the term ‘practicable’, when considering whether the draft plan meets the requirements of these conditions, the Commonwealth Minister will determine what is ‘practicable’ having regard to local conditions and circumstances including but not limited to personnel safety, weather or geographical conditions, costs, environmental benefit and the current state of scientific and technical knowledge.

Section 13 Approval	The document dated 14 September 2009 setting out the conditions and restrictions of the Barrow Island Act 2003 Minister's approval granted to the Gorgon Joint Venturers under section 13 of that Act to inject carbon dioxide into the Dupuy Formation beneath Barrow Island as varied, added to or substituted for in accordance with condition 19 of that document.
Serious Environmental Harm	Environmental harm that is: a) irreversible, of a high impact or on a wide scale; or b) significant or in an area of high conservation value or special significance and is neither trivial nor negligible.
SEWPaC	Former Commonwealth Department of Sustainability, Environment, Water, Population and Communities
Significant Fauna	Fauna identified as significant ecological elements in the Terrestrial and Subterranean Baseline State and Environmental Impact Report.
Significant Impact	An impact on a Matter of National Environmental Significance, relevant to EPBC Reference: 2003/1294, 2005/2185, and 2008/4178 that is important, notable or of consequence having regard to its context or intensity.
SO_x	Sulfur oxides (SO and SO_2)
sp.	Species
Statement No. 748	Western Australian Ministerial Implementation Statement No. 748 (for the Gorgon Gas Development) as amended from time to time [superseded by Statement No. 800].
Statement No. 769	Western Australian Ministerial Implementation Statement No. 769 (for the Jansz Feed Gas Pipeline) as amended from time to time.
Statement No. 800	Western Australian Ministerial Implementation Statement No.800, issued for the Revised and Expanded Gas Development, as amended from time to time. Statement No. 800 supersedes the Gorgon Gas Development as originally approved by Statement No 748. The conditions of Statement No. 800 also apply to the Additional Support Area under Statement No. 965.
Statement No. 865	Western Australian Ministerial Implementation Statement No. 865 (for the Gorgon Gas Development).
Statement No. 965	Western Australian Ministerial Implementation Statement No. 965, issued for the Additional Support Area, as amended from time to time. Statement No.965 applies the conditions of Statement No. 800 to the Additional Support Area."
Stormwater	Natural run-off of rainwater that occurs during or after storms or heavy rainfall events.
Stygofauna	Groundwater-dwelling aquatic fauna.
TAPL	Texaco Australia Pty Ltd

Taxon (plural: taxa)	A taxon (plural taxa), or taxonomic unit, is a name designating an organism or a group of organisms.
TDF	Terrestrial Disturbance Footprint
TEG	Triethylene glycol
Terrestrial Disturbance Footprint	The area to be disturbed by construction or operations activities associated with the Terrestrial Facilities listed in Condition 6.3 of Statement No. 800, Condition 6.3 of Statement No. 769, and Condition 5.2 of EPBC Reference: 2003/1294 and 2008/4178, and set out in the Terrestrial and Subterranean Baseline State and Environmental Impact Report required under Condition 6.1 of Statement No. 800 including the Additional Support Area approved by Statement No. 965, Condition 6.1 of Statement No. 769, and Condition 5.1 of EPBC Reference: 2003/1294 and 2008/4178.
Terrestrial Facilities	In relation to Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178, the Terrestrial Facilities are the: • Gas Treatment Plant • Carbon Dioxide Injection System • Associated Terrestrial Infrastructure forming part of the Proposal • Areas impacted for seismic data acquisition • Onshore Feed Gas Pipeline System and terrestrial component of the Shore Crossing. Terrestrial Facilities also include those defined in Condition 6.3 of Statement No. 769 (the Onshore Feed Gas pipeline system and the terrestrial component of the Shore Crossing) and Schedule 1 of Statement No. 965 (the Additional Support Area).
Threatened Ecological Communities	Ecological communities listed as critically endangered, endangered, or vulnerable under section 181 of the EPBC Act (Cth).
Threatened Species	Species listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable, or conservation dependent under section 178 of the EPBC Act (Cth).
Troglofauna	Obligate cave- or karst-dwelling terrestrial subterranean fauna occurring above the watertable.
Vibroseis	A method of seismic exploration. The seismic energy source (ground vibration controlled by shaking the mass of the vibroseis truck) is distributed over a time of several seconds.
VOC	Volatile Organic Compounds; organic chemical compounds that have high enough vapour pressures under normal conditions to vaporise and enter the atmosphere.
WA	Western Australia
WAPET	West Australian Petroleum Pty Ltd

WAPET Landing	Proper name referring to the site of the barge landing existing on the east coast of Barrow Island prior to the date of Statement No. 800..

1.0 Introduction

1.1 Proponent

Chevron Australia Pty Ltd (Chevron Australia) is the proponent and the person taking the action for the Gorgon Gas Development on behalf of the following companies (collectively known as the Gorgon Joint Venturers):

- Chevron Australia Pty Ltd
- Chevron (TAPL) Pty Ltd
- Shell Development (Australia) Pty Ltd
- Mobil Australia Resources Company Pty Limited
- Osaka Gas Gorgon Pty Ltd
- Tokyo Gas Gorgon Pty Ltd
- Chubu Electric Power Gorgon Pty Ltd

pursuant to Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178.

Chevron Australia is also the proponent and the person taking the action for the Jansz Feed Gas Pipeline on behalf of the Gorgon Joint Venturers, pursuant to Statement No. 769 and EPBC Reference: 2005/2184.

1.2 Project

Chevron Australia proposes to develop the gas reserves of the Greater Gorgon Area (Figure 1-1).

Subsea gathering systems and subsea pipelines will be installed to deliver feed gas from the Gorgon and Jansz–Io gas fields to the west coast of Barrow Island. The feed gas pipeline system will be buried as it traverses from the west coast to the east coast of the Island where the system will tie in to the Gas Treatment Plant located at Town Point. The Gas Treatment Plant will comprise three Liquefied Natural Gas (LNG) trains capable of producing a nominal capacity of five Million Tonnes Per Annum (MTPA) per train. The Gas Treatment Plant will also produce condensate and domestic gas. Carbon dioxide (CO_2), which occurs naturally in the feed gas, will be separated during the production process. As part of the Gorgon Gas Development, Chevron Australia will inject the separated CO_2 into deep formations below Barrow Island. The LNG and condensate will be loaded from a dedicated jetty offshore from Town Point and then transported by dedicated carriers to international markets. Gas for domestic use will be exported by a pipeline from Town Point to the domestic gas collection and distribution network on the mainland (Figure 1-2).

1.3 Location

The Gorgon gas field is located approximately 130 km and the Jansz–Io field approximately 200 km off the north-west coast of Western Australia. Barrow Island is located off the Pilbara coast 85 km north-north-east of the town of Onslow and 140 km west of Karratha. The Island is approximately 25 km long and 10 km wide and covers 23 567 ha. It is the largest of a group of islands, including the Montebello and Lowendal Islands.

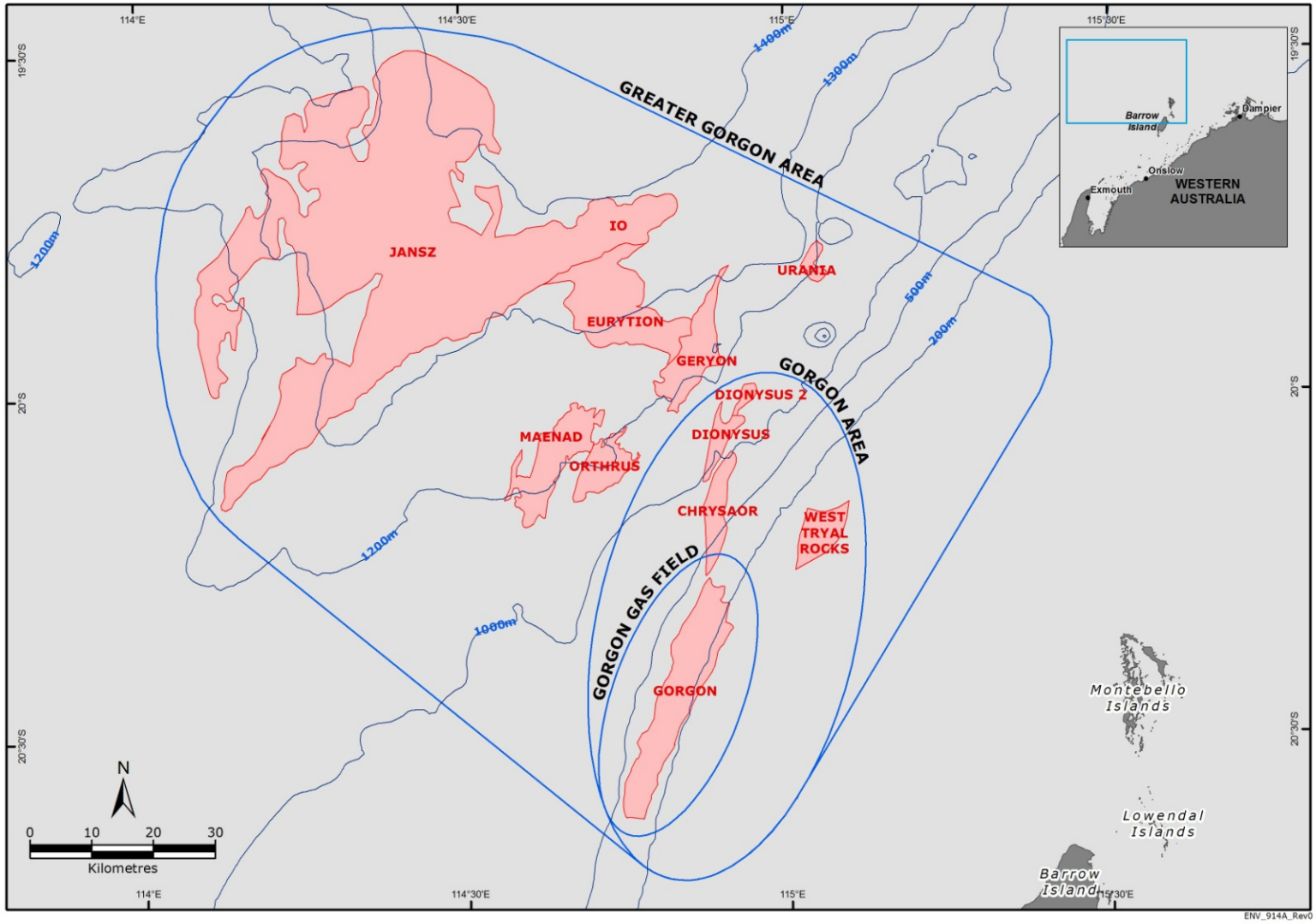

Figure 1-1 Location of the Greater Gorgon Area

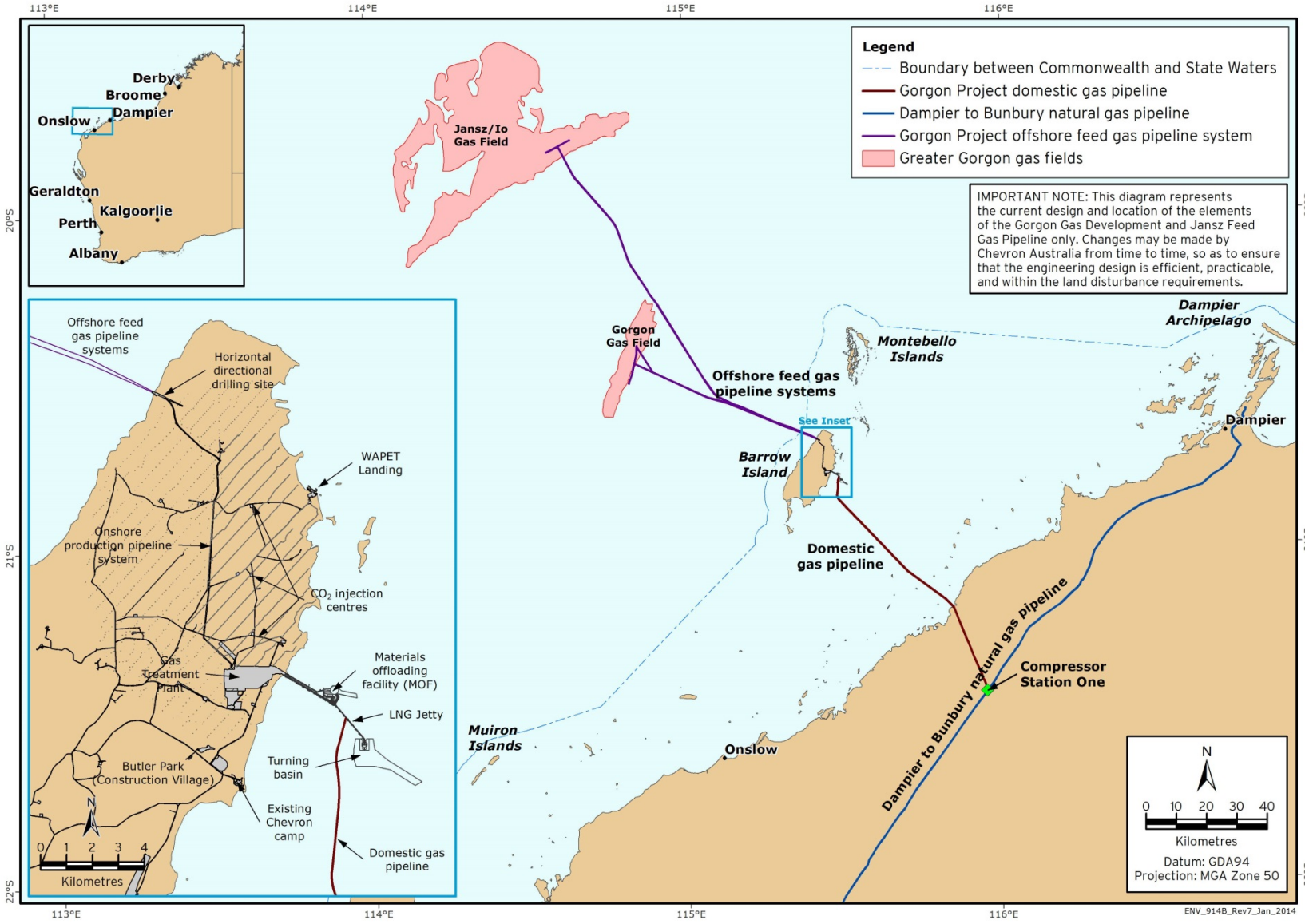

Figure 1-2 Location of the Gorgon Gas Development and Jansz Feed Gas Pipeline

1.4 Approvals

The initial Gorgon Gas Development was assessed through an Environmental Impact Statement/Environmental Review and Management Programme (EIS/ERMP) assessment process (Chevron Australia 2005, 2006).

The initial Gorgon Gas Development was approved by the Western Australian State Minister for the Environment on 6 September 2007 by way of Ministerial Implementation Statement No. 748 (Statement No. 748) and the Commonwealth Minister for the Environment and Water Resources on 3 October 2007 (EPBC Reference: 2003/1294).

In May 2008, under section 45C of the Western Australian *Environmental Protection Act 1986* (EP Act), the Environmental Protection Authority (EPA) approved some minor changes to the Gorgon Gas Development that it considered 'not to result in a significant, detrimental, environmental effect in addition to, or different from, the effect of the original proposal' (EPA 2008). The approved changes are:

- excavation of a berthing pocket at the Barge (WAPET) Landing facility
- installation of additional communications facilities (microwave communications towers)
- relocation of the seawater intake
- modification to the seismic monitoring program.

In September 2008, Chevron Australia sought both State and Commonwealth approval through a Public Environment Review (PER) assessment process (Chevron Australia 2008) for the Revised and Expanded Gorgon Gas Development to make some changes to 'Key Proposal Characteristics' of the initial Gorgon Gas Development, as outlined below:

- addition of a five MTPA LNG train, increasing the number of LNG trains from two to three
- expansion of the CO_2 Injection System, increasing the number of injection wells and surface drill locations
- extension of the causeway and the Materials Offloading Facility (MOF) into deeper water.

The Revised and Expanded Gorgon Gas Development was approved by the Western Australian State Minister for the Environment on 10 August 2009 by way of Ministerial Implementation Statement No. 800 (Statement No. 800). Statement No. 800 also superseded Statement No. 748 as the approval for the initial Gorgon Gas Development. Statement No. 800 therefore provides approval for both the initial Gorgon Gas Development and the Revised and Expanded Gorgon Gas Development, which together are known as the Gorgon Gas Development. Amendments to Statement No. 800 Conditions 18, 20, and 21 under section 46 of the EP Act were approved by the Western Australian State Minister for the Environment on 7 June 2011 by way of Ministerial Implementation Statement No. 865 (Statement No. 865). Implementation of the Gorgon Gas Development will therefore continue to be in accordance with Statement No. 800 as amended by Statement No. 865.

On 26 August 2009, the Commonwealth Minister for the Environment and Water Resources (EPBC Reference: 2008/4178) issued approval for the Revised and Expanded Gorgon Gas Development, and varied the conditions for EPBC Reference: 2003/1294.

Since the Revised and Expanded Gorgon Gas Development was approved, further minor changes have also been made and/or approved to the Gorgon Gas Development and are now also part of the Development. Further changes may also be made/approved in the future. This Plan relates to any such changes, and where necessary this document will be specifically revised to address the impacts of those changes.

Use of an additional 32 ha of uncleared land for the Gorgon Gas Development Additional Construction, Laydown, and Operations Support Area (Additional Support Area) was approved by the Western Australian State Minister for Environment on 2 April 2014 by way of Ministerial

Implementation Statement No. 965 and by Variation issued by the Commonwealth Minister for the Environment. Statement No. 965 applies the conditions of Statement No.800 to the Additional Support Area and requires all implementation, management, monitoring, compliance assessment and reporting, environmental performance reporting, protocol setting and record keeping requirements applicable to the Additional Support Area under Statement No.800 to be carried out on a joint basis with the Gorgon Gas Development.

The Jansz Feed Gas Pipeline was assessed via Environmental Impact Statement/Assessment on Referral Information (ARI) and EPBC Referral assessment processes (Mobil Australia 2005, 2006).

The Jansz Feed Gas Pipeline was approved by the Western Australian State Minister for the Environment on 28 May 2008 by way of Ministerial Implementation Statement No. 769 (Statement No. 769) and the Commonwealth Minister for the Environment and Water Resources on 22 March 2006 (EPBC Reference: 2005/2184).

This Plan covers the Gorgon Gas Development as approved under Statement No. 800 and as approved by EPBC Reference: 2003/1294 and EPBC Reference: 2008/4178 and including the Additional Support Area as approved by Statement No. 965 and as varied by the Commonwealth Minister for the Environment. In addition, this Plan covers the Jansz Feed Gas Pipeline as approved by Ministerial Implementation Statement No. 769 and EPBC Reference: 2005/2184.

In respect of the Carbon Dioxide Seismic Baseline Survey Program, which comprises the only works approved under Statement No. 748 before it was superseded, and under EPBC Reference: 2003/1294 before the Minister approved a variation to it on 26 August 2009, note that under Condition 1A.1 of Statement No. 800 and Condition 1.4 of EPBC Reference: 2003/1294 and 2008/4178 this Program is authorised to continue for six months subject to the existing approved plans, reports, programs and systems for the Program, and the works under that Program are not the subject of this Plan.

1.5 Purpose of this Plan

1.5.1 Legislative Requirements

1.5.1.1 State Ministerial Conditions

This Plan is required under Condition 7.1 of Statement No. 800, which is quoted below:

> *Prior to commencement of construction of any of the Terrestrial Facilities identified in Condition 6.3, the Proponent shall submit a Terrestrial and Subterranean Environment Protection Plan (the Plan) that meets the objectives identified in Condition 7.4 and the requirements of Condition 7.5 as determined by the Minister, unless otherwise allowed in Condition 7.2.*

This Plan is also required under Condition 7.1 of Statement No. 769, which is quoted below:

> *Prior to commencement of construction of any of the Terrestrial Facilities identified in Condition 6.3, the Proponent shall submit a Terrestrial and Subterranean Environment Protection Plan (the Plan) that meets the objectives identified in Condition 7.4 and the requirements of Condition 7.5 as determined by the Minister, unless otherwise allowed in Condition 7.2.*

1.5.1.2 Commonwealth Ministerial Conditions

This Plan satisfies the requirements of Condition 6 of EPBC Reference: 2003/1294 and 2008/4178, which is quoted below:

> *Prior to commencement of construction of any of the Terrestrial Facilities identified in Condition 5.2, the person taking the action must submit to the Minister for approval, a Terrestrial and Subterranean Environment Protection Plan (the Plan) that meets the*

> *objectives identified in Condition 6.4 and the requirements of Condition 6.5 as determined by the Minister, unless otherwise allowed in Condition 6.2.*

Table 1-1 lists the legislative requirements.

1.5.2 Objectives

The objectives of this Plan, as stated in Condition 7.4 of Statement No. 800 and Condition 6.4 of EPBC Reference: 2003/1294 and 2008/4178 are to:

- reduce the adverse impacts from the construction and operation of the Terrestrial Facilities as far as practicable
- ensure the construction and operation of the Terrestrial Facilities does not cause Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint, including below the surface of the land.

The objective of this Plan as stated in Condition 7.4 of Statement No. 769 is to:

- reduce the adverse impacts from the construction and operation of the Terrestrial Facilities within the Terrestrial Disturbance Footprint as far as practicable
- ensure the construction and operation of the Terrestrial Facilities does not cause Material or Serious Environmental Harm outside and below the Terrestrial Disturbance Footprint (TDF).

These capitalised terms are defined in Statement No. 800 and are reproduced in the Terminology, Definitions and Abbreviations section of this Plan.

1.5.3 Scope

This Plan includes the construction (including commissioning) and operations of the Terrestrial Facilities of the Gorgon Gas Development and Jansz Feed Gas Pipeline, whether occurring independently or simultaneously.

This Plan has an option to be submitted in a staged approach, as listed under Condition 7.2 of Statement No. 800 and Statement No. 769 (and similarly under Condition 6.2 of EPBC Reference 2003/1294 and 2008/4178):

> '*In the event that any portions of the Plan related to specific elements or sub-elements (Schedule 1) is not submitted as required by Condition 7.1, the Proponent shall submit the portions of the Plan relevant to that element or sub-element to the Minister prior to the commencement of construction of that element or sub-element. All portions of the Plan shall meet the objectives identified in Condition 7.4 and the requirements of Condition 7.5 as determined by the Minister'.*

This Plan does not currently include the CO_2 Seismic Survey Program. The Plan will be updated and re-issued for approval to the Western Australian Minister for the Environment and the Commonwealth Minister for the Environment prior to undertaking future Seismic Survey programs. In the meantime, section 2.1.5 contains a preliminary description of the CO_2 Seismic Survey Program for information only.

1.5.4 Requirements

The requirements of this Plan, as stated in Conditions 7.5 to 7.8 of Statement No. 800, Conditions 7.5 to 7.8 of Statement No. 769, and Conditions 6.5 and 6.7 of EPBC Reference: 2003/1294 and 2008/4178, are listed in Table 1-1.

Table 1-1 Requirements of this Plan

Ministerial Document	Condition No.	Requirement	Section Reference in this Plan
Statement No. 769	7.5.i	The Plan shall include management measures to reduce the adverse impacts from the construction and operation on the Terrestrial Disturbance Footprint as far as practicable.	Section 4.0
Statement No. 800	7.5.i	The Plan shall include management measures to reduce the adverse impacts (including from light and noise) from the construction and operation on the Terrestrial Facilities listed in Condition 6.3 as far as practicable.	Section 4.0
Statement No. 769	7.5.ii	The Plan shall include management measures to ensure that construction and operation of the Terrestrial Facilities do not cause Material or Serious Environmental Harm outside and below the Terrestrial Disturbance Footprint	Section 4.3.3.4
Statement No. 800	7.5.ii	The Plan shall include management measures to ensure that construction and operation of the Terrestrial Facilities do not cause Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint (TDF), including below the surface of the land.	Section 4.0
Statement No. 800 and Statement No. 769	7.6.i	The measures required by 7.5.i and 7.5.ii shall address but not be limited to Vegetation Clearing Audit Procedures to determine the extent of clearing and rehabilitation on an annual basis.	Section 4.5 Vegetation Clearing and Audit Common User Procedure (Chevron Australia 2012b)
Statement No. 769	7.6.ii	The measures required by 7.5.i and 7.5.ii shall address but not be limited to procedures in relation to and protocols for capturing, relocating, handling, housing and caring for significant fauna found within the Terrestrial Disturbance Footprint (TDF) that are not required by the DPaW for translocation.	Section 4.7 Fauna Handling and Management Common User Procedure (Chevron Australia 2013b)
Statement No. 800	7.6.ii	The measures required by 7.5.i and 7.5.ii shall address but not be limited to procedures in relation to and protocols for capturing, relocating, handling, housing, caring for and reporting to the DPaW threatened or listed fauna found within the Terrestrial Disturbance Footprint (TDF) that are not required by the DPaW for translocation.	Sections 4.7 and 7.2.4 Fauna Handling and Management Common User Procedure (Chevron Australia 2013b)
Statement No. 800 and Statement No. 769	7.6.iii	The measures required by 7.5.i and 7.5.ii shall address but not be limited to procedures to avoid secondary impacts to fauna as a consequence of risks such as animals being trapped in construction trenches or subject to vehicle strike.	Section 4.7 Fauna Handling and Management Common User Procedure (Chevron Australia 2013) Traffic Management Common User Procedure (Chevron Australia 2012c)

Ministerial Document	Condition No.	Requirement	Section Reference in this Plan
Statement No. 800 and Statement No. 769	7.6.iv	The measures required by 7.5.i and 7.5.ii shall address, but not be limited to, measures including detailed drainage and containment designs for all works and infrastructure that control stormwater run-off outside the TDF with the aim of ensuring that run-off is consistent with the pre-construction run-off regime as far as practicable, and any recharge does not cause pollution.	Section 4.3
Statement No. 769	7.6.v	The measures required by 7.5 i and 7.5 ii shall address, but not be limited to measurable limits which specify the Performance Standards to be met when undertaking actions controlled by the Plan.	Section 5.0
Statement No. 800	7.6.v	The measures required by 7.5 i and 7.5 ii shall address, but not be limited to Performance Standards against which achievement of the objectives of this condition can be determined.	Section 5.0
Statement No. 800 and Statement No. 769	7.7	The Proponent shall report any Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint (TDF) to the DPaW and DotE within 48 hours of detection.	Section 7.2.4
EPBC Reference: 2003/1294 and 2008/4178	6.5I	Management measures to reduce the adverse impacts (including from light and noise) from the construction and operation of the Terrestrial Facilities listed in Condition 5.2, as far as practicable.	Section 4.0
EPBC Reference: 2003/1294 and 2008/4178	6.5II	Management measures to ensure that construction and operation of the Terrestrial Facilities listed in Condition 5.2 do not cause Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint, including below the surface of the land.	Section 4.0
EPBC Reference: 2003/1294 and 2008/4178	6.6I	Vegetation Clearing Audit Procedures to determine the extent of clearing and rehabilitation on an annual basis.	Section 4.5 Vegetation Clearing and Audit Common User Procedure (Chevron Australia 2012b)
EPBC Reference: 2003/1294 and 2008/4178	6.6II	Procedures in relation to and protocols for capturing, relocating, handling, housing, caring for and reporting to the DPaW, threatened or listed fauna found within the Terrestrial Disturbance Footprint that are not required by DPaW, for translocation.	Section 4.7 Fauna Handling and Management Common User Procedure (Chevron Australia 2013)
EPBC Reference: 2003/1294 and 2008/4178	6.6III	Procedures to avoid secondary impacts to fauna as a consequence of risks such as animals being trapped in construction trenches or subject to vehicle strike	Section 4.7 Fauna Handling and Management Common User Procedure (Chevron Australia 2013) Traffic Management Common User Procedure (Chevron Australia 2012c)

Ministerial Document	Condition No.	Requirement	Section Reference in this Plan
EPBC Reference: 2003/1294 and 2008/4178	6.6IV	Measures including detailed drainage and containment designs for all works and infrastructure that control stormwater run-off outside the Terrestrial Disturbance Footprint with the aim of ensuring that run-off is consistent with the pre-development run-off regime, as far as practicable, and any recharge does not cause pollution.	Section 4.3
EPBC Reference: 2003/1294 and 2008/4178	6.6V	Performance Standards against which achievement of the objectives of this condition can be determined.	Section 5.0
EPBC Reference: 2003/1294 and 2008/4178	3.2.1	A description of the EPBC Act listed species and their habitat likely to be impacted by the components of the action which are the subject of that plan.	Appendix 2
EPBC Reference: 2003/1294 and 2008/4178	3.2.2	An assessment of the risk to these species from the components of the action the subject of that plan, relevant to that plan	Appendix 2
EPBC Reference: 2003/1294 and 2008/4178	3.2.3	Details of the management measures proposed in relation to these species if it is a requirement of the condition requiring that plan.	Section 4.0
EPBC Reference: 2003/1294 and 2008/4178	3.2.5	Performance Standards in relation to that species if it is a requirement of the condition requiring that plan	Section 5.0

Any matter specified in this Plan is relevant to the Gorgon Gas Development or Jansz Feed Gas Pipeline only if that matter relates to the specific activities or facilities associated with that particular development. Statement No.965 requires the implementation of this Plan, in respect of the Additional Support Area and the Gorgon Gas Development, to be carried out on a joint basis.

The sections in this Plan, which are noted in the table above to meet the conditions of EPBC Reference: 2003/1294 and 2008/4178, shall be read and interpreted as only requiring implementation under EPBC Reference: 2003/1294 and 2008/4178 for managing the impacts of the Gorgon Gas Development on, or protecting the EPBC Act matter listed in the Terrestrial and Subterranean Baseline State and Environmental Impact Report (Chevron Australia 2009a). The implementation of matters required only to meet the requirements of Statement No. 800 (and Statement No. 769) are not the subject of the EPBC Reference: 2003/1294 and 2008/4178.

1.5.5 Hierarchy of Documentation

This Plan will be implemented for the Gorgon Gas Development and Jansz Feed Gas Pipeline via the Chevron Australasia Business Unit (ABU) Operational Excellence Management System (OEMS). The OEMS is the standardised approach that applies across the ABU to continuously improve the management of safety, health, environment, reliability, and efficiency to achieve world-class performance. Implementation of the OEMS enables the Chevron ABU to integrate its Operational Excellence (OE) objectives, processes, procedures, values, and behaviours into the

daily operations of Chevron Australia personnel and contractors working under Chevron Australia's supervision. The OEMS is designed to be consistent with and, in some respects, go beyond ISO 14001:2004 (Environmental Management Systems – Requirements with Guidance for Use) (Standards Australia/Standards New Zealand 2004a).

Figure 1-3 and Figure 1-4 provide an overview of the overall hierarchy of environmental management documentation within which this Plan exists. Further details on environmental documentation for the Gorgon Gas Development and Jansz Feed Gas Pipeline are provided in Section 6.1 of this Plan.

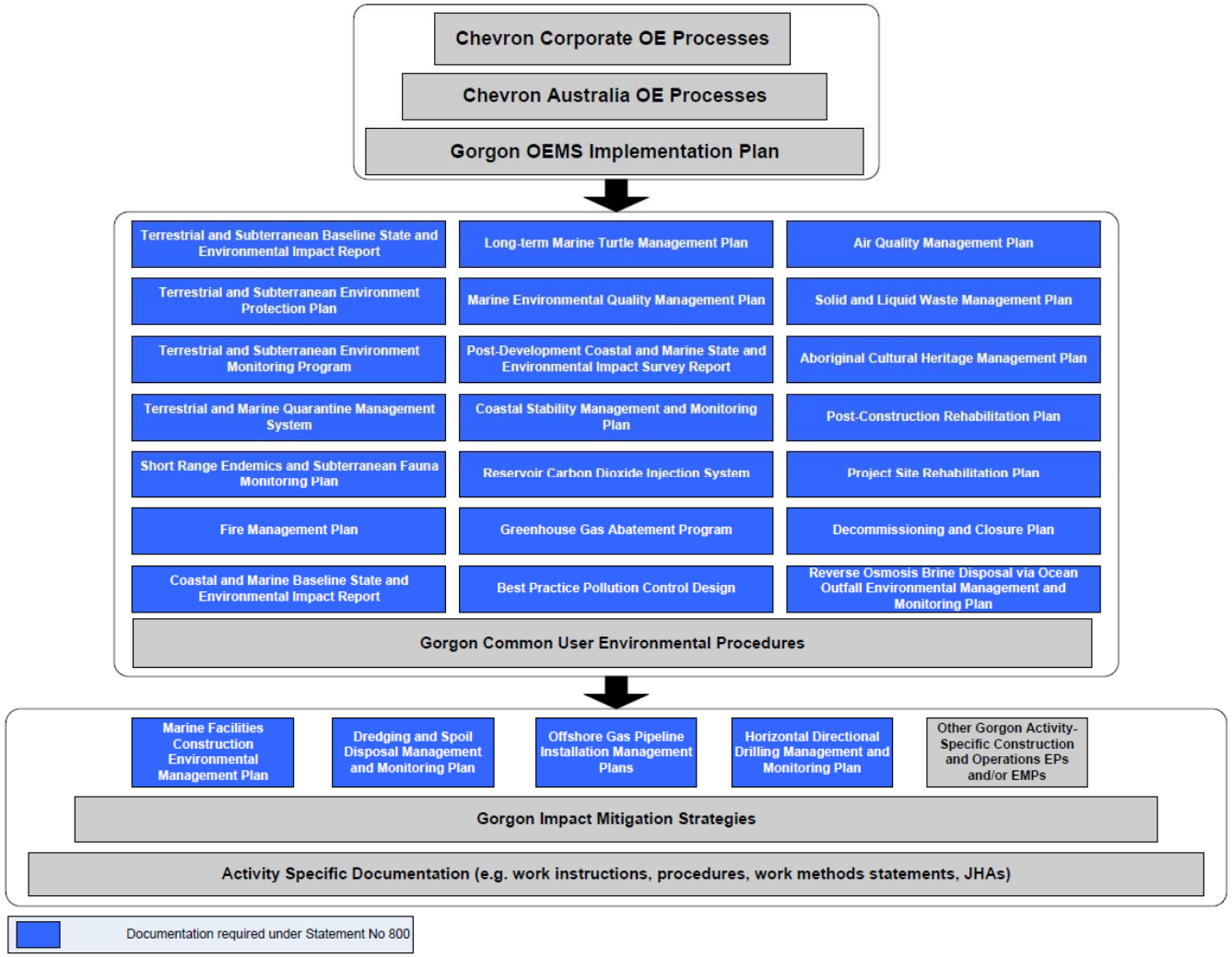

Figure 1-3 Hierarchy of Gorgon Gas Development Environmental Documentation

Note: Figure 1-3 refers to all Plans required for Statement No. 800. The Plans are only relevant to EPBC Reference: 2003/1294 and 2008/4178, if required for the conditions of those approvals.

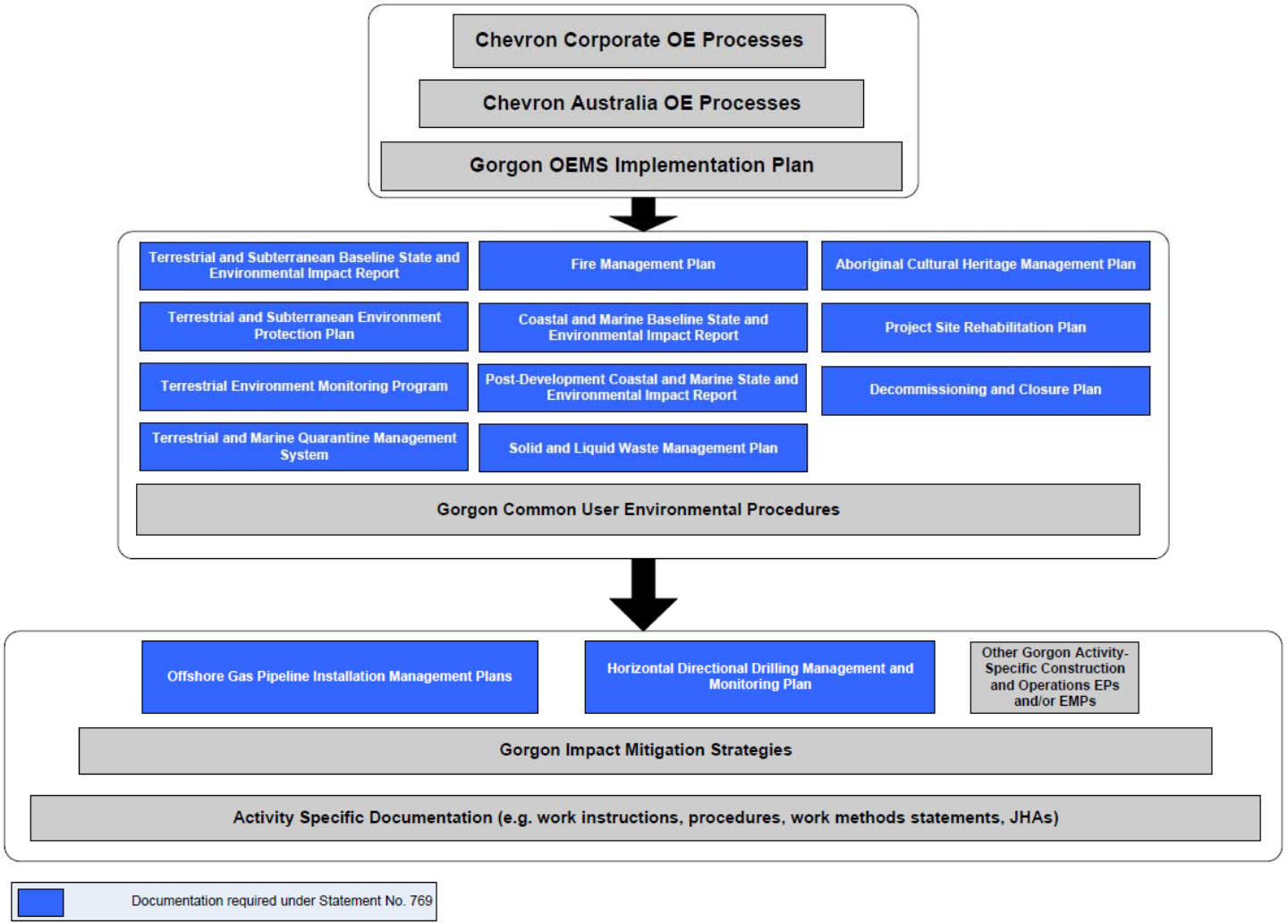

Figure 1-4 Hierarchy of Jansz Feed Gas Pipeline Environmental Documentation

Note: Figure 1-4 refers to all Plans required for Statement No. 769. They are only relevant to EPBC Reference: 2005/2184 if required for the conditions of that approval.

1.5.6 Stakeholder Consultation

Regular consultation with stakeholders has been undertaken by Chevron Australia throughout the development of the environmental impact assessment management documentation for the Gorgon Gas Development and Jansz Feed Gas Pipeline. This stakeholder consultation has included engagement with the community, government departments, industry operators, and contractors to Chevron Australia via planning workshops, risk assessments, meetings, teleconferences, and the PER, EIS/ERMP and Environmental Review (Chevron Australia 2013) formal approval processes.

Under Condition 7.3 of Statement No. 800, Condition 7.3 of Statement No. 769 and Condition 6.3 of EPBC Reference: 2003/1294 and 2008/4178, Chevron Australia is required to consult with the Western Australian (WA) Department of Parks and Wildlife (DPaW), the Commonwealth Department of Environment (DotE) and other relevant WA government agencies during preparation of this Plan.

This document has been prepared with input from:

- The former Western Australian Department of Environment and Conservation (DEC) (now DPaW): Workshops and meetings were held involving the DEC and Chevron Australia personnel to discuss the scope and content of this Plan during its development. The DEC reviewed draft revisions of this Plan along with the feedback of the independent reviewers. The DEC's comments have been incorporated or otherwise resolved.
- The former Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) (now DotE): The DEWHA reviewed draft revisions of this Plan along with the feedback of the independent reviewers. The DEWHA's comments have been incorporated or otherwise resolved.
- Dr Owen Nichols, Environmental Management and Research Consultants. Dr Nichols reviewed Revision 0 of this Plan and his comments have been incorporated or otherwise resolved.
- Dr Eddie van Etten School of Natural Sciences, Edith Cowan University. Dr van Etten reviewed Revision 0 of this Plan and his comments have been incorporated or otherwise resolved.
- Mr Brenton Knott, Faculty of Natural and Agricultural Sciences–Animal Biology, University of Western Australia: Mr Knott reviewed Revision 0 of this Plan and his comments have been incorporated or otherwise resolved.
- Dr Andrew Burbidge, Consultant Conservation Biologist. Dr Burbidge reviewed Revision 0 of this Plan and his comments have been incorporated or otherwise resolved.

Under EPBC Reference: 2005/2184 Conditions 7 and 8, relevant WA government agencies must be consulted in the preparation of this Plan. With the exception of DPaW, who reviewed the Plan, no other WA Government agencies were identified as relevant to be consulted with.

Figure 1-5 shows the development, review, and approval process for this Plan.

1.5.7 Public Availability

This Plan will be made public as and when determined by the Minister, under Condition 35 of Statement No. 800, Condition 20 of Statement No. 769, and Condition 22 of EPBC Reference: 2003/1294 and 2008/4178.

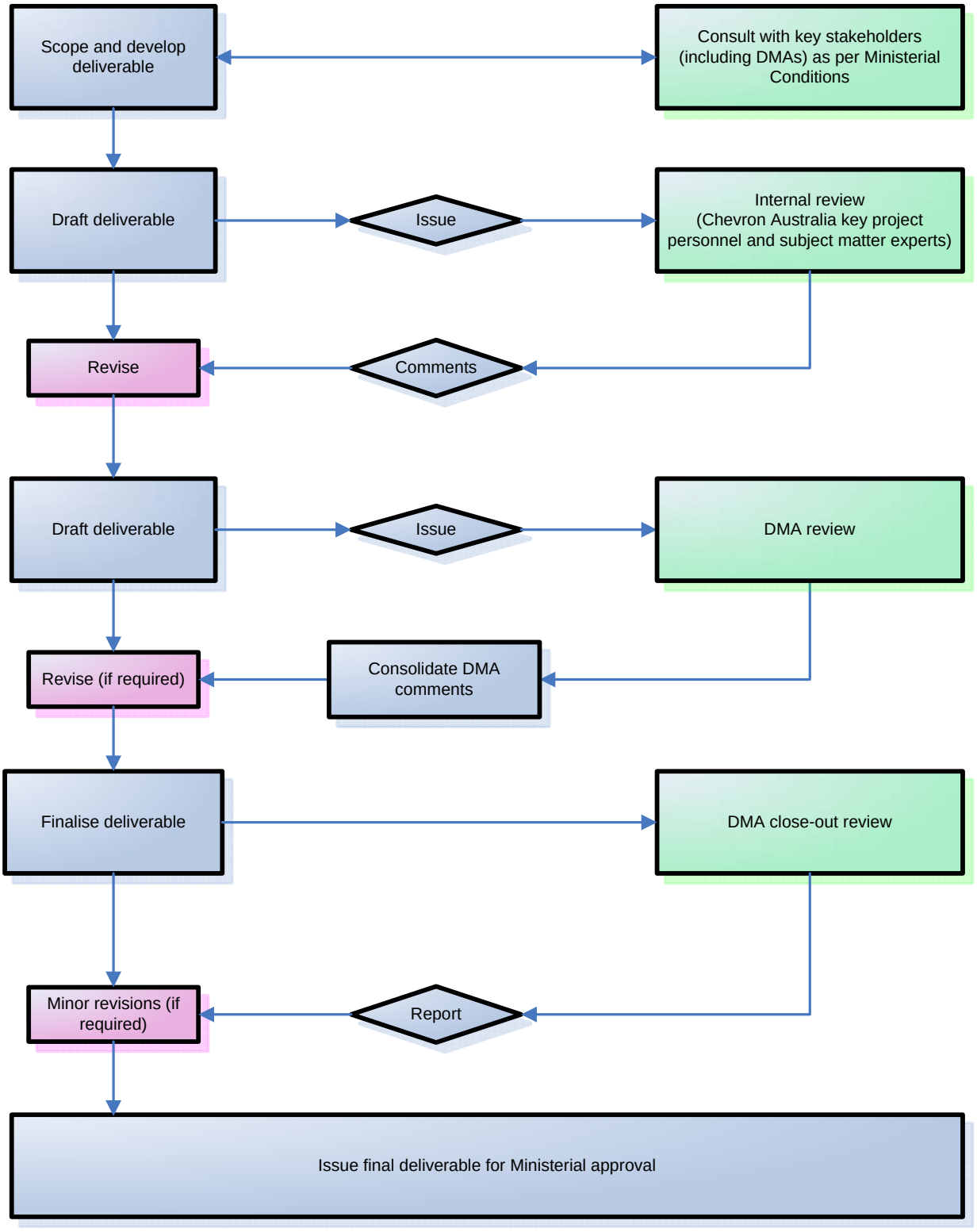

Figure 1-5 Deliverable Development, Review, and Approval Flow Chart

2.0 Relevant Facilities and Activities

2.1 Terrestrial Facilities

2.1.1 Overview

This Plan addresses issues associated with the Terrestrial Facilities of the Gorgon Gas Development and the Terrestrial Facilities of the Jansz Feed Gas Pipeline, which are shown in Figure 1-2 and Figure 2-1 of this Plan. The Gorgon Gas Development Terrestrial Facilities are defined in Condition 6.3 of Statement No. 800 and Condition 5.2 of EPBC Reference: 2003/1294 and 2008/4178 as the:

- Gas Treatment Plant
- Carbon Dioxide Injection System
- Associated Terrestrial Infrastructure forming part of the Proposal
- Areas impacted for seismic data acquisition
- the Onshore Feed Gas Pipeline System and terrestrial component of the shore crossing.

Terrestrial Facilities also include those defined in Condition 6.3 of Statement No. 769 (the Onshore Feed Gas pipeline system and the terrestrial component of the Shore Crossing) and Schedule 1 of Statement No. 965 (the Additional Support Area).

Additional details on the Terrestrial Facilities can be found in the Draft EIS/ERMP (Chevron Australia 2005), the section 45C approval (EPA 2008), the PER (Chevron Australia 2008) and the Environmental Review (Chevron Australia 2013). Please note that the description of the Terrestrial Facilities provided in subsequent sections is as currently proposed. More specific details are contained in various Gorgon Gas Development and Jansz Feed Gas Pipeline approval and assessment documents, which are issued from time to time.

2.1.2 Gas Treatment Plant

The Gas Treatment Plant will be located near Town Point (Figure 2-1), on the east coast of Barrow Island. The Gas Treatment Plant includes:

- LNG trains: 3 × 5 MTPA (nominal)
- Gas Processing Drivers: 6 × 80 MW (nominal) gas turbines fitted with dry low NOx (DLN) burners
- Power Generation: 5 × 116 MW (nominal) conventional gas turbines fitted with DLN burners
- Flare design: Ground flare for the main plant flare; boil-off gas elevated flare in storage and loading area
- LNG Tanks: 2 × 180 000 m^3 (nominal)
- Condensate Tanks: 4 × 35 000 m^3 (nominal).

The Gas Treatment Plant will produce three main products for export from Barrow Island:

- LNG for international export
- domestic gas for use on the Australian mainland
- hydrocarbon condensate (light oil).

Typical Gas Treatment Plant processes are described in Chapter 6 of the Draft EIS/ERMP (Chevron Australia 2005).

2.1.3 Carbon Dioxide Injection System

Reservoir carbon dioxide (CO_2) will be disposed of by injection into the Dupuy Formation more than 2000 m below Barrow Island to limit the greenhouse gas and atmospheric pollutant emissions associated with the Gorgon Gas Development and Jansz Feed Gas Pipeline's production of LNG. The CO_2 injection process is described in the Draft EIS/ERMP (Chevron Australia 2005).

The CO_2 Injection System will consist of the mechanical components required to enable the injection of reservoir CO_2 and managing the performance integrity of the injection facilities and the Dupuy Formation. These include:

- CO_2 compression facilities located within the Gas Treatment Plant boundary
- a belowground CO_2 pipeline (approximately 10 km long in an 8 ha easement) between the Gas Treatment Plant and the three CO_2 injection drill centres to the north
- nine CO_2 injection wells directionally drilled from the three CO_2 injection drill centres north of the Gas Treatment Plant site (Figure 1-2)
- up to four observation wells for monitoring the subsurface spread of the CO_2 plume
- four pressure management water wells, required to manage pressure in the Dupuy Formation
- two pressure management water injection wells for the reinjection of water produced from the lower Dupuy Formation by the pressure management wells. The water will be reinjected into the Barrow Group from a vertical depth of 1200 to 1600 m
- shallow drilled anode wells will be required for all well types associated with the CO_2 injection system for the purposes of cathodic protection. This includes the CO_2 injection wells, the pressure management wells and the pressure management water injection wells and the observation wells.

Monitoring activities, including the acquisition of seismic data will be undertaken as part of ongoing reservoir performance management.

2.1.4 Associated Terrestrial Infrastructure

Associated terrestrial infrastructure associated with the Gorgon Gas Development consists of:

- the terrestrial component of the Barge (WAPET) Landing
- Construction Village
- the Administration and Operations Complex
- the permanent Utilities Area located within the Gas Treatment Plant
- the Utilities Corridors between the Utilities Area and within the Gas Treatment Plant and between the Utilities Area and the Construction Village), also servicing the Administration and Operations Complex
- road upgrades, including the road between WAPET Landing and Town Point, and from Town Point to the Airport (via the Construction Village), and the road along the feed gas pipeline system route
- airport modifications, consisting of the extension of the existing runway to the south and associated vegetation clearing
- communications, consisting of a microwave communications tower and associated communications infrastructure to be installed on Barrow Island
- onshore water supply infrastructure, consisting of a seawater demineralisation (reverse osmosis) plant, associated treated water and brine storage tanks, and treated water pumps

and delivery piping to end users within the Gas Treatment Plant and utility corridors, reverse osmosis brine disposal pumps, and the terrestrial component of the reverse osmosis brine pipeline.

Associated terrestrial infrastructure will be primarily located in the vicinity of, and south, of, the Gas Treatment Plant site on the east coast of Barrow Island (Figure 2-1).

2.1.5 Areas Impacted for Seismic Data Acquisition

Seismic data acquisition is expected to be repeated a number of times throughout the life of the Carbon Dioxide Injection Project, in order to monitor the behaviour of the CO_2 injected into the Dupuy Formation below Barrow Island. Differences between the data obtained during the CO_2 Seismic Baseline Survey Program and repeat CO_2 Seismic Survey Programs will be used to map the extent of the CO_2 plume over time.

Detailed information on the CO_2 Seismic Baseline Survey Program, which was completed in 2009, is provided in the 'Proposed Activity' section of the CO_2 Seismic Baseline Survey Environmental Management Plan (Chevron Australia 2009b).

The following information is a preliminary description of the CO_2 Seismic Survey Program for information only. Repeat seismic surveys will be performed as required over the life of Carbon Dioxide Injection Project, allowing flexibility to increase or decrease the frequency of surveys depending on the behaviour of the injected carbon dioxide.

Initial surveys will focus on the areas around the injection wells where the injected CO_2 is expected to be concentrated, with future surveys increasing in lateral extent to ensure coverage of the CO_2 plume over time. Surveys are not expected to go beyond the area the subject of the CO_2 Seismic Baseline Survey. The frequency of repeat surveys will be decided in response to the information gathered by the previous surveys and will be agreed with WA Government in accordance with the Section 13 Approval.

The onshore component of the seismic surveys will be performed using a combination of explosive and vibroseis seismic sources. The source and receiver lines for the repeat surveys will be installed using the same methods used for the CO_2 Seismic Baseline Survey, with appropriate modifications based on the survey requirements and potential technology updates. A typical seismic source effort may include a combination of techniques such as:

- explosive shot hole lines (22 for the Baseline Survey) for data acquisition in the eastern part of the survey area. Shot holes will typically be drilled to 15 m below sea level with typically 4 kg explosives used as the seismic energy source
- vibroseis lines (15 lines totalling 68.5 km for the Baseline Survey) for data acquisition in the eastern part of the survey area. Vibroseis data in the areas of lower elevation and thinner karst limestone will provide suitable data quality and is preferable to explosives where data is affected by background noise such as that from the Gas Treatment Plant
- Offshore lines (21 for the Baseline Survey) for shallow water marine acquisition using a small airgun source being recorded by the receivers on the land. The objective of the marine component is to extend the coverage of the data further east.
- The seismic reflections will be recorded using receiver lines (73 for the Baseline Survey), typically spaced at 200 m intervals (13 500 receiver locations for the Baseline Survey).

2.1.6 Onshore Feed Gas Pipeline System and Terrestrial Component of the Shore Crossing (Gorgon and Jansz)

The Onshore Feed Gas Pipeline System traverses Barrow Island from the west coast at North Whites Beach to the Gas Treatment Plant site near Town Point on the east coast (Figure 2-1). The pipeline system will be approximately 14 km long and located within a right-of-way between 30 and 45 m wide. The pipelines will be buried with excavated material backfilled into the trench.

The installation of the Onshore Feed Gas Pipeline System includes trenching, welding, and pipe lowering activities. The trench is limited to no more than 2000 m of open continuous single pipeline trench at any one time; however, the trench required for the pipeline systems (cables and tubes) will require the entire trench to be open for a relatively short period of time.

The terrestrial component of the Shore Crossing consisted of infrastructure for drilling eight Horizontally Directionally Drilled (HDD) holes from the shore to an exit point approximately 500 m offshore, and insertion of pipe strings into these holes. A ninth hole was drilled for a seawater intake system, which provides water required for the activities associated with drilling and pre-commissioning.

The facilities required for construction of the Shore Crossing included breakover supports and pipeline rollers for insertion of the pipelines. The HDD site is approximately 80 m by 110 m.

The pipeline stringing yard is located inland of the HDD site and includes a laydown area for the breakover supports and pipeline rollers. The portion of the stringing yard closest to the HDD site is approximately 60 m wide and approximately 325 m long. The laydown area extends an additional distance inland (up to 1010 m) at a narrower width (approximately 35 m).

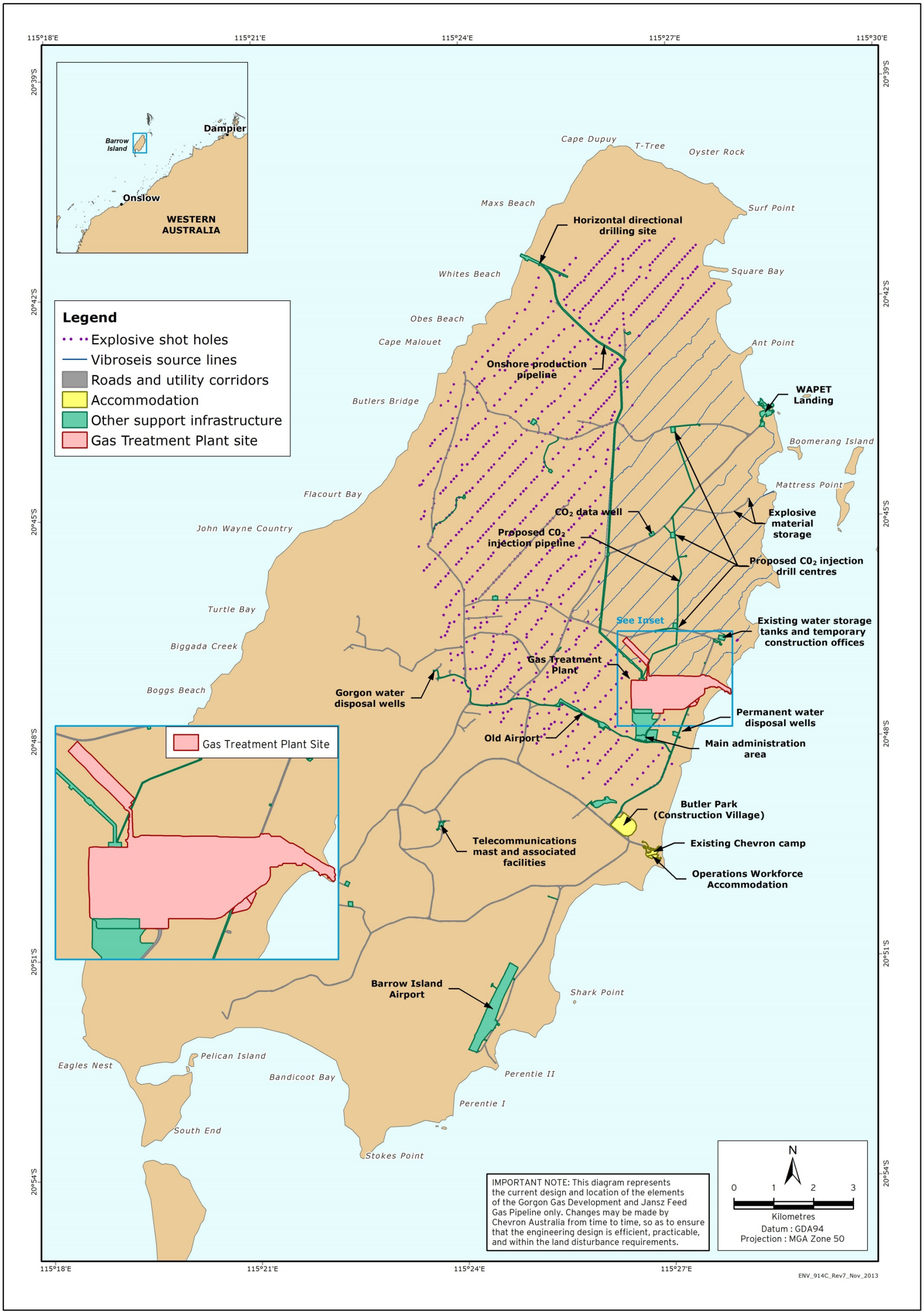

Figure 2-1 Gorgon Gas Development and Jansz Feed Gas Pipeline Terrestrial Facilities on Barrow Island

2.2 Activities

The planned activities associated with the Gorgon Gas Development have been grouped into three categories (listed in Table 2-1). Activities associated with construction and operations on Barrow Island are also applicable to the Jansz Feed Gas Pipeline. These categories are based on the type, intensity, and frequency of potential impacts associated with the particular activity.

Please note that the description of the activities provided in subsequent sections is as currently proposed. More specific details are contained in various Gorgon Gas Development and Jansz Feed Gas Pipeline approval and assessment documents, which are issued from time to time.

Table 2-1: Planned Activities Associated with the Gorgon Gas Development

Construction and Operations on Barrow Island (also applicable to the Jansz Feed Gas Pipeline)	Surface Seismic Activities on Barrow Island	Subsurface Seismic Activities on Barrow Island
• clearing and earthworks • burning of vegetation • abrasive blasting • concrete batching • waste generation, storage, and disposal • drilling and blasting • operation of machinery, plant, and equipment • pipeline installation and site reinstatement • pipeline pressure testing, flooding, and gauging • vehicle movements • winning and crushing of material • chemical and fuel transportation, storage, use, and disposal • land use change • operation of Gas Treatment Plant	• vibroseis • drilling for placement of subsurface explosives	• explosion of 4 kg charges at approximately 15 m below sea level (below the watertable)

3.0 Risk Assessment

3.1 Overview

Chevron Australia has prepared the HES Risk Management: ASBU – Standardized OE Process (Chevron Australia 2012) to assess and manage health, environment, and safety (HES) risks, which it internally requires its employees, contractors, etc. to comply with.

A number of environmental risk assessments have been completed for the Gorgon Gas Development. A strategic risk assessment was undertaken during the preparation of the Draft EIS/ERMP to determine the environmental acceptability of the Development, and to identify key areas of risk requiring mitigation (Chevron Australia 2005).

This original assessment was reviewed as part of the development of the Gorgon Gas Development Revised and Expanded Proposal (Chevron Australia 2008), in light of the changes to the Gorgon Gas Development (described in Section 1.4). The outcomes of these assessments have been reviewed and considered during the preparation of this Plan.

Impacts from the Jansz Gas Feed Pipeline on Barrow Island and the surrounding State territorial waters have been assessed in the Draft EIS/ERMP (Chevron Australia 2005).

Impacts from the Jansz Feed Gas Pipeline in Commonwealth Marine Area have been assessed in the EPBC Referral assessment processes (Mobil Australia 2005, 2006).

Additional detailed risk assessments have been undertaken for specific scopes of work, using Chevron's RiskMan2 Procedure (Chevron Corporation 2008).

The Gorgon Gas Development Environmental Basis of Design (Chevron Australia 2008a) defines the environmental design requirements for the Gorgon Gas Development facilities. Deviations from the requirements of the Environmental Basis of Design document have been subjected to an As Low As Reasonably Practicable (ALARP) assessment and environmental risks should be managed to ALARP levels and lower (i.e. the risk acceptability test is applied to design decisions).

Table 3-1 summarises the risk assessments that have been undertaken to date, and that have provided input into this Plan.

Table 3-1 Risk Assessments Relevant to this Plan

Scope of Risk Assessment	Method(s)	Documentation	Year
Entire Scope of the Approved Development	AS/NZS 4360:2004	Draft EIS/ERMP (Chevron Australia 2005)	2005
Entire Scope of the Revised and Expanded Proposal	AS/NZS 4360:2004	Gorgon Gas Development PER (Chevron Australia 2008)	2008

3.2 Methodology

The methodology for the environmental risk assessments undertaken during the EIS/ERMP assessment process is documented in Chapter 9 of the Draft EIS/ERMP (Chevron Australia 2005).

The risk assessments were undertaken in accordance with the following standards:

- Australian Standard/New Zealand Standard (AS/NZS) 4360:2004 Risk management (Standards Australia/Standards New Zealand 2004b)
- AS/NZS Handbook 203:2006 Environmental Risk Management – Principles and Process (Standards Australia/Standards New Zealand 2006)

- AS/NZS 3931:1998 Risk Analysis of Technological Systems – Application Guide (Standards Australia/Standards New Zealand 1998).

The main components of the RiskMan2 risk assessment methodology include:

- **Hazard Identification**: Identifying potential hazards that are applicable to Gorgon Gas Development activities and determining the hazardous events to be evaluated.
- **Hazard Analysis**: Determining the possible causes that could lead to the hazardous events identified; the consequences of the hazardous events; and the safeguards and controls currently in place to mitigate the events and/or the consequences.
- **Risk Evaluation**: Evaluating the risks using the Chevron Integrated Risk Prioritization Matrix (Appendix 3). The risk ranking is determined by a combination of the expected frequency of the hazard occurring (likelihood) and the consequence of its occurrence. Note that when assessing the consequence, no credit is given to the hazard controls; hazard controls are taken into account in determining the likelihood of the event.
- **Residual Risk Treatment**: Reviewing the proposed management controls for each of the risks identified and proposing additional controls or making recommendations, if required.

Using the Chevron Integrated Risk Prioritization Matrix (Appendix 3), identified risks are categorised into four groups, which determine the level of response and effort in managing the risks. The risk-ranking categories have been used in the development of this Plan to determine whether the residual risks were acceptable or whether further mitigation was required.

3.3 Outcomes

The potential impacts associated with the Gorgon Gas Development and Jansz Feed Gas Pipeline are described in detail in the Draft EIS/ERMP (Chevron Australia 2005) and Gorgon Gas Development PER (Chevron Australia 2008). These impacts and the residual risks are summarised in Table 3-2. These risks have been categorised into risks related to the different phases, e.g. Construction, Commissioning, Non-routine or Routine Operations. Information on the potential impacts and residual risks identified for the CO_2 Seismic Baseline Survey Program is provided in the CO_2 Seismic Baseline Survey Program Environmental Management Plan (Chevron Australia 2009b).

The major environmental issues investigated during the environmental assessment process for the Revised Proposal included cumulative air, light, and noise emissions impacts. The cumulative risk for the terrestrial environment on Barrow Island has been ranked as Medium (with mitigation safeguards in place when assessing consequence) (Chevron Australia 2005). This risk level is related to the remote likelihood of a combination of threats that together are critical threats (i.e. widespread, long-term impact on populations or extinction of a Barrow Island race of a listed species) to terrestrial fauna and flora on Barrow Island.

The cumulative risk for the subterranean environment on Barrow Island was also ranked as Medium (with mitigation safeguards in place when assessing consequence) (Chevron Australia 2005). This risk level is related to the remote likelihood of a critical threat to a subterranean fauna population such as through a catastrophic release of CO_2 into the superficial aquifer, leading to the loss of local populations of listed fauna.

Additional potential impacts related to associated stressors were identified through consultation with DPaW in August 2009 and these are included in Table 3-2 (identified with *). However, because these potential impacts were incorporated subsequent to the risk assessment and identification of residual risks during the EIS/ERMP process, the residual risk rating for each stressor (i.e. low, medium, or high) has not been reclassified.

As a result of approval under section 45C of the EP Act for the use of sea water for construction earthworks on the Gas Treatment Plant, additional consultation occurred with DPaW in April 2010,

which resulted in the inclusion of sea water and its potential impacts in the risk assessment (identified with ^ in Table 3-2; see also Appendix 2).Condition 3.2.1 of EPBC Reference: 2003/1294 and 2008/4178 requires a description of the EPBC Act listed species likely to be impacted by the components of the action that is the subject of this Plan. Condition 3.2.1 of EPBC Reference: 2003/1294 and 2008/4178 also requires descriptions of the habitat of those listed species. The EPBC Act listed species and habitat descriptions are detailed in Appendix 2.

Condition 3.2.2 of EPBC Reference: 2003/1294 and 2008/4178 requires an assessment of the risk to EPBC Act listed species from the components of the action. The risks identified during the assessments noted in Table 3-1 include the risks to the listed species in Appendix 2.

Table 3-2 Residual Risks Associated with Environmental Factors

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
Soil and Landform	Clearing and earthworks	**Construction and Commissioning** Clearing and earthworks associated with construction of the Terrestrial Facilities (e.g. trenching, access tracks, laydown areas).	• soil compaction • soil inversion • disturbance to significant geological features (e.g. caves) • changes in landform • *erosion, caused by wind, water, and sedimentation	M
		Operations Minor clearing and earthworks. Re-clearing survey lines for CO_2 seismic survey program, every 5–10 years.		L
	Liquid and solid waste disposal	**Construction and Commissioning** Generation and disposal of liquid and solid wastes including: hydrotest water; domestic waste and sewage; waste chemicals and oil; drilling waste (e.g. drilling cuttings and fluid); produced formation water.	• soil contamination • *erosion, caused by wind, water, and sedimentation	M
		Operations Generation and disposal of liquid and solid waste, including: domestic waste and sewage; waste chemicals and oil. drilling waste (e.g. drilling cuttings and fluid) and produced formation water.		L
	Leaks or spills	**Construction, Commissioning and Non-routine Operations** Spill during storage and transport of fuel or hazardous material; spill or leak during waste storage and disposal; failure of plant, equipment, or pipelines; HDD drilling fluid release.	• soil contamination • *erosion, caused by wind, water, and sedimentation	M
	^Seawater application	**Construction** Use of sea water for earthworks associated with construction of the Gas Treatment Plant.	• increase in salinity levels in soil profile • alterations to vegetation rehabilitation	M

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
Surface and Groundwater	Clearing and earthworks	**Construction and Commissioning** Clearing and earthworks associated with construction of the Terrestrial Facilities (e.g. access tracks and laydown areas).	• sedimentation of natural drainage systems • disturbance to natural drainage patterns	M
		Operations Minor clearing and earthworks. Re-clearing survey lines for CO_2 seismic survey program, every 5–10 years.		L
	Physical presence	**Construction, Commissioning, and Operations** Presence of sealed/hardstand areas associated with the Terrestrial Facilities.	• change in water infiltration and recharge rates • increased run-off • change in groundwater level • *altered drainage patterns	M
	Liquid and solid waste disposal	**Construction and Commissioning** Generation and disposal of liquid and solid wastes including: hydrotest water; domestic waste and sewage; waste chemicals and oil; drilling waste (e.g. drilling cuttings and fluid); produced formation water. Use of drilling muds.	• surface water and groundwater contamination • local loss of stygofauna	M
		Operations Generation and disposal of liquid and solid waste, including: domestic waste and sewage; and waste chemicals and oil. Drilling waste (e.g. drilling cuttings and fluid) and produced formation water.		L
	Leaks or spills	**Construction, Commissioning, and Non-routine Operations** Spill during storage and transport of fuel or hazardous material; spill or leak during waste storage and disposal; failure of plant, equipment, or pipelines.	• surface water and groundwater contamination • local loss of stygofauna	M
	^Seawater application	**Construction** Use of sea water for earthworks associated with construction of the Gas Treatment Plant.	• surface water and groundwater contamination (salinity) • local increase in groundwater levels and mounding • local loss of troglofauna and stygofauna	M

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
Air Quality	Atmospheric emissions	**Construction, Commissioning and Operations** Combustion and fugitive emissions of SO_2, NO_x, CO_2, CO, CH_4, VOCs, and particulates. Low levels of vehicle and equipment exhaust (NO_x, SO_x). **Commissioning and Non-routine Operations** CO_2 leak; pipeline or equipment failure; flaring; smoke and particulates from fire; gas venting during start-up and shutdown of Gas Treatment Plant.	• decrease in local and regional air quality • decrease in global air quality resulting from greenhouse gas emissions	L
	Clearing and earthworks	**Construction and Commissioning** Dust generation associated with clearing, earthworks, and vehicle movements.	• localised reduction in air quality	L
		Operations Localised dust generation associated with minor clearing, earthworks, and vehicle movements. Wind erosion of unsealed surfaces.		L
Flora and Vegetation Communities	Clearing and earthworks	**Construction and Commissioning** Clearing and earthworks associated with construction of the Terrestrial Facilities (e.g. access tracks and laydown areas).	• loss and/or disturbance to restricted flora and vegetation species and communities • erosion or removal of topsoil and seed bank • spread of *Setaria verticillata* (associated with construction of the Shore Crossing for the Feed Gas Pipeline System) • change in soil profile and drainage due to earthworks may change dominance patterns in communities	H (restricted flora and vegetation communities)
		Operations Minor clearing and earthworks. Re-clearing survey lines for CO_2 seismic survey program, every 5–10 years.		L (restricted flora and vegetation communities)
		Construction, Commissioning, and Operations Minor clearing and earthworks. Re-clearing survey lines for CO_2 seismic survey program, every 5–10 years.		L (general flora and vegetation communities)

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
	Fire	**Construction and Commissioning** Ignition during drilling and blasting, welding or grinding activities; vehicle exhausts. **Operations** Ignition during maintenance activities; vehicle exhausts; fallout of burning particles from flare.	• long-term loss of vegetation community • alteration of vegetation community composition • maintenance of unnatural fire regime to protect infrastructure with consequent loss of habitat diversity • secondary effects if infrastructure damaged (e.g. may cause leakage of greywater pipes)	M
	Atmospheric emissions	**Construction and Commissioning** Low levels of vehicle and equipment exhaust (NOx, SOx). Flaring and venting during commissioning. Combustion and fugitive emissions of SO_2, NOx, CO_2, CO, CH_4, VOCs, and particulates during commissioning. **Operations** Combustion and fugitive emissions of SO_2, NOx, CO_2, CO, CH_4, VOCs, and particulates. Low levels of vehicle and equipment exhaust (NOx, SOx). **Commissioning and Non-routine Operations** CO_2 leak; pipeline or equipment failure; flaring; smoke and particulates from fire; gas venting during start-up and shutdown of Gas Treatment Plant.	• physiological effects of deposition of pollutants on flora and vegetation • localised change in taxon dominance due to nitrogen enrichment and soil acidity • alteration of community composition • reduced growth due to soil acidity or CO_2 • increased growth due to uptake of nitrogen or CO_2	L
	Light/ shade/ heat/ cold	**Construction, and Commissioning and Operations** Temporary shading from stockpiles, temporary equipment, etc. Heat and reflected light from infrastructure.	• decrease in plant growth or localised loss of vegetation within shaded areas	L

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
	Dust	**Construction and Commissioning** Clearing and earthworks associated with construction of the Terrestrial Facilities (e.g. access tracks and laydown areas); vehicle and machinery movements on unsealed roads and exposed surfaces; wind erosion of stockpiles; rock crushing and screening. **Operations** Localised dust generation associated with minor clearing, earthworks, and vehicle movements. Wind erosion of unsealed surfaces.	• reduced photosynthetic activity of plants (Thompson *et al.* 1984) • increased absorption of near-infrared radiation and elevated leaf temperatures (Sharifi *et al.* 1997)	L
	Unpredicted CO_2 migration	**Non-routine Operations** Failure of CO_2 injection facilities; failure of subsurface containment.	• increased or decreased plant growth depending on concentration of CO_2 • mortality of plants in the event of an ongoing severe leak	L
	Leaks or spills	**Construction, Commissioning, and Non-routine Operations** Spill during storage and transport of fuel or hazardous material; spill or leak during waste storage and disposal; failure of plant, equipment, or pipelines; leakage of storage tanks and bunds.	• localised loss of vegetation • reduced plant growth • soil contamination affecting regrowth • *soil erosion • *altered vegetation association	L
	^Seawater application	**Construction** Use of sea water for earthworks associated with construction of the Gas Treatment Plant.	• overspray or surface water run-off onto vegetation • decrease in plant growth or localised loss of vegetation • alterations to vegetation rehabilitation	M
Terrestrial Fauna	Clearing and earthworks	**Construction and Commissioning** Clearing and earthworks associated with construction of the Terrestrial Facilities (e.g. access tracks and laydown areas).	• direct displacement or loss of individuals • increased resource competition in adjacent areas	M

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
		Operations Minor clearing and earthworks. Re-clearing survey lines for CO_2 seismic survey program, every 5–10 years.	• habitat fragmentation • *habitat loss	L
	Physical interaction (including vehicle movements)	**Construction and Commissioning** Vehicular traffic. Operation of equipment and machinery. Workforce activities. Presence of infrastructure. **Operations** As above, but at lower frequency.	• direct behavioural disturbance • injury or fatality (i.e. road kill) • possible obstruction of fauna movements • *habitat fragmentation • *habitat loss	M
	Leaks or spills	**Construction, Commissioning, and Non-routine Operations** Spill during storage and transport of fuel or hazardous material. Spill or leak during waste storage and disposal. Failure of plant, equipment, or pipelines.	• smothering or acute toxicity to habitat and/or fauna • chronic toxicity to sensitive habitat and/or fauna • increased risk of fire • *drowning and/or other mortality	L
	Light or shade	**Construction and Commissioning** Shading from infrastructure. Artificial lighting at night from construction sites and flare. **Operations** As above. **Commissioning and Non-routine Operations** Flaring during process upset or emergency.	• congregation of fauna in shaded areas • risk to sheltering fauna from periodically moving machinery • possible increase in range of shade-dependent fauna • attraction of insects to light may increase the availability of food for adaptable birds and bats • possible changes in community structure in area affected by light spill	M

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
	Atmospheric emissions	**Construction, Commissioning and Operations** Low levels of vehicle and equipment exhaust (NOx, SOx). Combustion and fugitive emissions of SO_2, NOx, CO_2, VOCs and particulates. **Commissioning and Non-routine Operations** Pipeline or equipment failure resulting in the emission of H_2S, BTEX, CO_2, or hydrocarbons. Flaring releasing combustion products or unburnt gas. Smoke and particulates from fire and flaring. Unscheduled start-up and shutdown of Gas Treatment Plant.	• sub-lethal effect from inhalation of pollutants • sub-lethal effect from ingestion of pollutant on vegetation or in water • potential direct toxic effect on fauna from non-routine emission of H_2S or BTEX • asphyxiation from CO_2 inhalation in burrows or low-lying habitats	L
	Dust	**Construction and Commissioning** Clearing of vegetation and removal of topsoil. Earthmoving, such as levelling of the site, excavation, drilling, and transport of fill within the site. Movement of heavy machinery and vehicles on unpaved surfaces. Blasting. **Operations** Localised dust generation associated with minor clearing, earthworks, and vehicle movements. Wind erosion of unsealed surfaces.	• minor physiological effects on fauna in immediate area • negligible effects on vegetated habitats and forage plants	L
	Unpredicted CO_2 migration	**Non-routine Operations** Failure of CO_2 injection facilities or subsurface containment. Emergency venting of CO_2 to atmosphere if injection system breaks down.	• release of large volumes of CO_2 to the atmosphere with potential for accumulation at ground surface during still weather • asphyxiation of fauna in low-lying areas (e.g. fauna burrows) • exceedance of greenhouse gas emissions budget	L

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
	Heat and/or cold	**Construction, Commissioning and Operations** Heat from sources such as power generators, turbines, air coolers, flare, pipelines, earthmoving equipment, welding units, and vehicles. Cold from pipelines. Feed gas pipeline will be at ambient temperature.	• heat plume from flare and air coolers could injure/kill avifauna flying over Gas Treatment Plant • attraction of insects and reptiles to heat in cold weather • *attraction of fauna to shelter in or under piping and to moisture	L
	Noise and vibration	**Construction, Commissioning** Blasting. Earthworks, vehicle movements, and the operation of equipment. Seismic survey.	• physiological impacts to fauna in immediate vicinity due to blast overpressure • short-term behavioural changes • disturbance of fauna in vicinity of seismic source discharges	M
		Operations Gas Treatment Plant operation. Operation of vehicles and equipment. Flaring. Seismic survey program every 5–10 years.		M
	Fire	**Non-routine Construction, Commissioning, and Operations** Vehicles, drilling and blasting activities, and welding sparks are potential ignition sources. Flare event dislodging hot build-up from inside ground flare. Run-off of water or foam used in fire control near infrastructure.	• temporary loss of habitat • injury or mortality in fire • damage to infrastructure potentially causing gas or liquid leaks • effects on soil or water quality from run-off containing nutrients and chemicals	M
Subterranean Fauna	Clearing and earthworks	**Construction and Commissioning** Clearing and earthworks for the Gas Treatment Plant and associated infrastructure. Excavation of material to a depth of 8 m during site preparation. Use of drilling muds. Shallow blasting of cap rock over 40–60% of Gas Treatment Plant site. Installation of approximately 750 piles, possibly to a depth of approximately 32 m.	• direct loss of troglofauna and habitat within Gas Treatment Plant Footprint • run-off during construction causing sedimentation of aquifer • localised loss of stygofauna	H
		Operations Minor clearing and earthworks.		L

Environmental Factor	Stressor	Causes	Potential Impacts	Residual Risk[1]
	Physical presence	**Construction, Commissioning and Operations** Impermeable surfaces with no groundwater recharge over 30–40% site (45–60 ha).	• reduced groundwater recharge under Gas Treatment Plant affecting humidity and groundwater in subterranean environment where surface water is diverted to drains • local loss of troglofauna and stygofauna	M
	Wastewater discharge	**Construction, Commissioning, and Operations** Use of treated greywater to control dust.	• contamination and nutrient loading of subterranean habitats at Gas Treatment Plant site	M
	Noise and vibration	**Construction and Commissioning** Shallow blasting of cap rock over 40–60% of Gas Treatment Plant site. Installation of approximately 750 piles, possibly to a depth of approximately 32 m.	• direct loss of habitat or rupture of subsurface karst lenses • vibration effects (sedimentation/partial collapse of karstic formations) • *local loss of troglofauna and stygofauna	M
	Leaks or spills	**Construction, Commissioning, and Non-routine Operations** Failure of proposed bulk storage tanks (MEG, TEG, diesel, condensate) and containment bund. Spill during storage and transport of fuel or hazardous material. Spill or leak during waste storage and disposal. Failure of plant, equipment, or pipelines.	• potential contamination of subterranean habitat • acute toxicity to troglofauna and/or stygofauna	M
	Unpredicted CO_2 migration	**Non-routine Operations** Failure of CO_2 injection facilities or subsurface containment.	• acidification of groundwater with potential loss of stygofauna • potential for leaking CO_2 to settle above the watertable (due to difference in density to water and air) affecting troglofauna (i.e. asphyxiation)	L
	^Seawater application	**Construction** Use of sea water for earthworks associated with construction of the Gas Treatment Plant.	• groundwater contamination (salinity) • local increase in groundwater levels and mounding • local loss of troglofauna and stygofauna	M

Notes:

1 L=Low, M=Medium, H=High.

** Stressors identified in consultation with DPaW (in August 2009), subsequent to a full risk assessment process being undertaken as part of the EIS/ERMP.*

^ Stressors identified in consultation with DPaW (in April 2010), subsequent to a full risk assessment process being undertaken as part of the EIS/ERMP.

3.4 Terrestrial Disturbance Footprint

In relation to the Terrestrial Disturbance Footprint (TDF), the objectives for management of potential impacts, as stated in Condition 7.4 of Statement No. 800 and Statement No. 769, and Condition 6.4 of EPBC Reference: 2003/1294 and 2008/4178, are to:

- reduce the adverse impacts from the construction and operation of the Terrestrial Facilities within the Terrestrial Disturbance Footprint as far as practicable (Statement No. 769)
- reduce the adverse impacts from the construction and operation of the Terrestrial Facilities as far as practicable (Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178)
- ensure the construction and operation of the Terrestrial Facilities does not cause Material or Serious Environmental Harm outside and below the Terrestrial Disturbance Footprint (Statement No. 769)
- ensure the construction and operation of the Terrestrial Facilities does not cause Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint, including below the surface of the land (Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178).

The TDF is as defined in the Terrestrial and Subterranean Baseline State and Environment Impact Report (Chevron Australia 20012d), as amended from time to time. The TDF includes the Gorgon Gas Development and Jansz Feed Gas Pipeline Footprints and a zone beyond them that contains the area that may be disturbed by construction or operations activities associated with the Terrestrial Facilities. In accordance with Condition 7.4 of Statement No. 800, Chevron Australia will aim to reduce adverse impacts from the construction and operation of the Terrestrial Facilities as far as practicable. As required under Condition 7.4 of Statement No. 769, Chevron Australia will also aim to reduce Material and Serious Environmental Harm from the construction and operation of the Terrestrial Facilities as far as practicable inside the TDF (excluding the Gorgon Gas Development Footprint), noting that Chevron Australia shall not cause or allow Material or Serious Environmental Harm outside the TDF (in accordance with Condition 6.6 of Statement No. 800).

The environmental management measures proposed for reducing adverse impacts from Gorgon Gas Development and Jansz Feed Gas Pipeline activities are discussed in Section 4.0.

4.0 Management of Impacts

4.1 Overview

Measures to reduce adverse impacts associated with the Gorgon Gas Development and Jansz Feed Gas Pipeline were developed and included in the Draft EIS/ERMP (Chevron Australia 2005). Environmental management measures were also derived from the risk assessments conducted to date, discussions with stakeholders, and lessons learned from existing developments. The management measures proposed meet the objectives set out in Section 1.5.2, and primarily relate to management within the TDF for activities associated with the Gorgon Gas Development and Jansz Feed Gas Pipeline.

The management measures have been incorporated into this Plan where appropriate; however, Chevron Australia is adopting a systematic approach towards implementing environmental management measures associated with the Gorgon Gas Development and Jansz Feed Gas Pipeline using the following documentation:

- Common User Procedures (see Section 6.1.3.2)
- Contractor and subcontractor plans, procedures, work method statements, impact mitigation strategies

The following sections outline management measures for the key environmental stressors identified in Table 3-2, and align with those measures that meet Condition 7.6 of Statement No. 800 and Statement No. 769, and Condition 6.6 of EPBC Reference: 2003/1294 and 2008/4178. The key environmental risks were identified from proposal-related stressors having a residual risk level of medium or high (see Section 3.2). The stressors are:

- liquid and solid waste disposal (Section 4.2)
- leaks or spills (Section 4.4)
- clearing and earthworks (Section 4.5)
- physical presence (surface water management (Section 4.3)
- fire (Section 4.6)
- physical interaction (including vehicle movements) (Section 4.7)
- light and shade (Section 4.8)
- noise and vibration (Section 4.9)
- wastewater discharge (Section 4.2)
- seawater application.

Management measures are either described or referenced to the relevant documentation in the following sections. In addition, the management of stormwater, including detailed drainage and containment design, is also described below as required by Condition 7.6.iv of Statement No. 800 and Statement No. 769 and Condition 6.6.iv EPBC Reference: 2003/1294 and 2008/4178.

The measures outlined below include the measures required in respect of the matters of National Environmental Significance (NES) listed in the Terrestrial and Subterranean Baseline State and Environment Impact Report (Chevron Australia 2012d), as required by EPBC Reference: 2003/1294 and 2008/4178.

4.2 Solid and Liquid Waste Disposal (including Wastewater Discharge)

A Solid and Liquid Waste Management Plan (Chevron Australia 2012e) is required under Condition 30.1 of Statement No. 800, Condition 16.1 of Statement No. 769, and Condition 20 of EPBC Reference: 2003/1294 and 2008/4178. The management of solid and liquid waste, except surface-collected liquid wastes (e.g. stormwater) and closed drains, is described in the Solid and Liquid Waste Management Plan. Therefore, this Terrestrial and Subterranean Environment Protection Plan focuses on the management of surface water (stormwater and surface water run-off).

4.3 Surface Water Management

4.3.1 Environmental Design Objectives

In relation to the design of the surface water drainage systems during construction and operations, the key considerations for minimising environmental impact are to:

- mirror as closely as reasonably practicable the natural hydrological regime of the existing environment
- minimise contamination of surface and ground water of the surrounding environment
- maximise infiltration of clean stormwater, where practicable, to minimise environmental impact to stygofauna.

In relation to mirroring the natural hydrological regime, the drainage system is designed to collect uncontaminated stormwater and redistribute it to the groundwater aquifer and to the surrounding terrestrial environment in a manner that minimises channelisation and erosion. Infiltration to the groundwater table beneath the Gas Treatment Plant, Butler Park (Construction Village), and the Administration Area will be facilitated by maximising unpaved areas, where practicable, and by integrating special design features in the uncontaminated stormwater and surface water run-off drain systems.

In relation to contamination, the surface water drainage system is designed to segregate, intercept, treat, and/or dispose of streams of potential contamination from the Gas Treatment Plant. The specific systems for surface water management are dealt with in the Gas Treatment works approval from time to time.

The management of seawater application for construction earthworks on the Gas Treatment Plant is discussed in Section 4.10.

4.3.2 Stormwater and Surface Run-off System Overview

To ensure that any contaminated stormwater run-off and spills can be collected and routed to suitable treatment, the surface water drainage system is intended to be designed and installed on the Gas Treatment Plant and Additional Support Area, with some elements of the system commissioned and used during the construction phase of the Gas Treatment Plant.

The stormwater and surface water run-off system is intended to be designed as a segregated system depending on the level of contamination or origin of the intercepted surface water, and provide treatment and/ or disposal commensurate to the level of contamination. Four different systems are planned (see Figure 4-1):

- Class 1 Drainage System: Run-off from areas of the Gas Treatment Plant or associated terrestrial infrastructure, which are deemed to be always or frequently contaminated, will be collected in a separate system and treated to a level required for its co-disposal along with the process and sanitary wastewater collected from the Gas Treatment Plant into the designated produced water disposal wells. Contaminated run-off from the Class 1 catchment area will be transferred via a closed piping system to an oily water collection tank and then piped to a Corrugated Plate Interceptor (CPI) for oil/water separation. Oil and sludge will accumulate in the CPI and will be periodically removed and disposed of in line with the requirements of the Solid and Liquid Waste Management Plan (Chevron Australia 2012e). The treated effluent will be piped to the waste water disposal tanks and disposed of via dedicated disposal wells.
- Class 2 Drainage System: Potentially contaminated run-off from areas of the Gas Treatment Plant or associated terrestrial infrastructure is intended to be collected and closed-piped to the Stormwater Holding Pond, tested, and if found to meet appropriate environmental discharge criteria, discharged to the clean stormwater system (Class 3 Drainage System). If the water quality is found to exceed the environmental discharge criteria, the collected run-off will be disposed via the dedicated produced water disposal wells. Water quality acceptance criteria for the Class 2 potentially contaminated run-off has been provided to the DER as part of the Works Approval Application for the Gas Treatment Plant. The first flush (i.e. first 25 mm) of stormwater run-off from the Class 2 catchment areas is considered potentially contaminated. Clean water (volumes exceeding the initial 25 mm first flush) will overflow to the Class 3 system and ultimately be discharged to the terrestrial environment.
- Class 3 Drainage System: The Class 3 system covers uncontaminated stormwater from clean areas (Class 3 drainage) and overflow (post first flush volumes) from the Class 2 system at the Gas Treatment Plant. Class 3 drains will also be provided for Butler Park (Construction Village), and the Administration and Operations Complex (collecting run off from areas such as building roofs and open areas away from equipment). The class 3

drainage is planned to be collected and disposed of to the terrestrial environment adjacent to these facilities in a manner that minimises sediment carryover and prevents erosion.

- Class 4 Drainage System: Off-site drainage channels intercepted as a result of the selected location for the Gas Treatment Plant, Butler Park (Construction Village), and Administration and Operations Complex are intended to be diverted away from these facilities to the natural environment using measures such as cut-off drains at the top of the cut batters or perimeter drains diverting water to the weired stormwater ditches of the Class 3 system.

The key design feature to achieve the segregation of the four drainage system classes will be through the use of appropriate paving or concrete (i.e. 'paved areas'). The areas intended to be paved are:

- areas required to be load bearing
- areas subject to contamination by spillages that could damage natural ground and water systems or exceed site discharge limits for aqueous effluents.

Paving in areas where spillages may occur will be sloped into the appropriate collection systems leading to one of the three segregated drainage systems (Class 1, Class 2, or Class 3) or to a closed bund or sump, thus providing a facility for removal by a vacuum truck.

Rainwater on unpaved areas and roads in excess of the rainwater filtered to the ground is intended to be routed to the uncontaminated Class 3 drainage system and discharged to the surrounding terrestrial environment in a manner that minimises channelisation and erosion.

Process liquid waste streams and systems are planned to be separate systems to the stormwater drainage system.

4.3.3 Management Measures to Minimise Environmental Impacts

4.3.3.1 Design and Operation of Stormwater and Surface Run Off System

The following requirements are intended to be met by the Class 1 drainage system, where practicable:

- An appropriate specification will be applied to all piping and drainage channel design to minimise the risk of leakage to the environment and contamination of soil and groundwater.
- Underground piping or drainage system components transporting contaminated run-off will be equipped with adequate leak detection.
- The design of the Class 1 drainage system will incorporate a water trap or similar device that will form a barrier to hydrocarbon vapour and liquids, including LNG, entering the drainage system.
- Class 1 run-off will pass through a Corrugated Plate Interceptor (CPI) to separate the dispersed oil fraction prior to disposal via the produced water disposal wells.
- Remote Class 1 run-off will be collected and disposed of via a vacuum truck to the Oily Water Collection Tank.

Further detail on the Class 1 system has been provided in the EP Act Part V Works Approval Application for the Gas Treatment Plant and the specific systems shall be dealt with in the works approval from time to time.

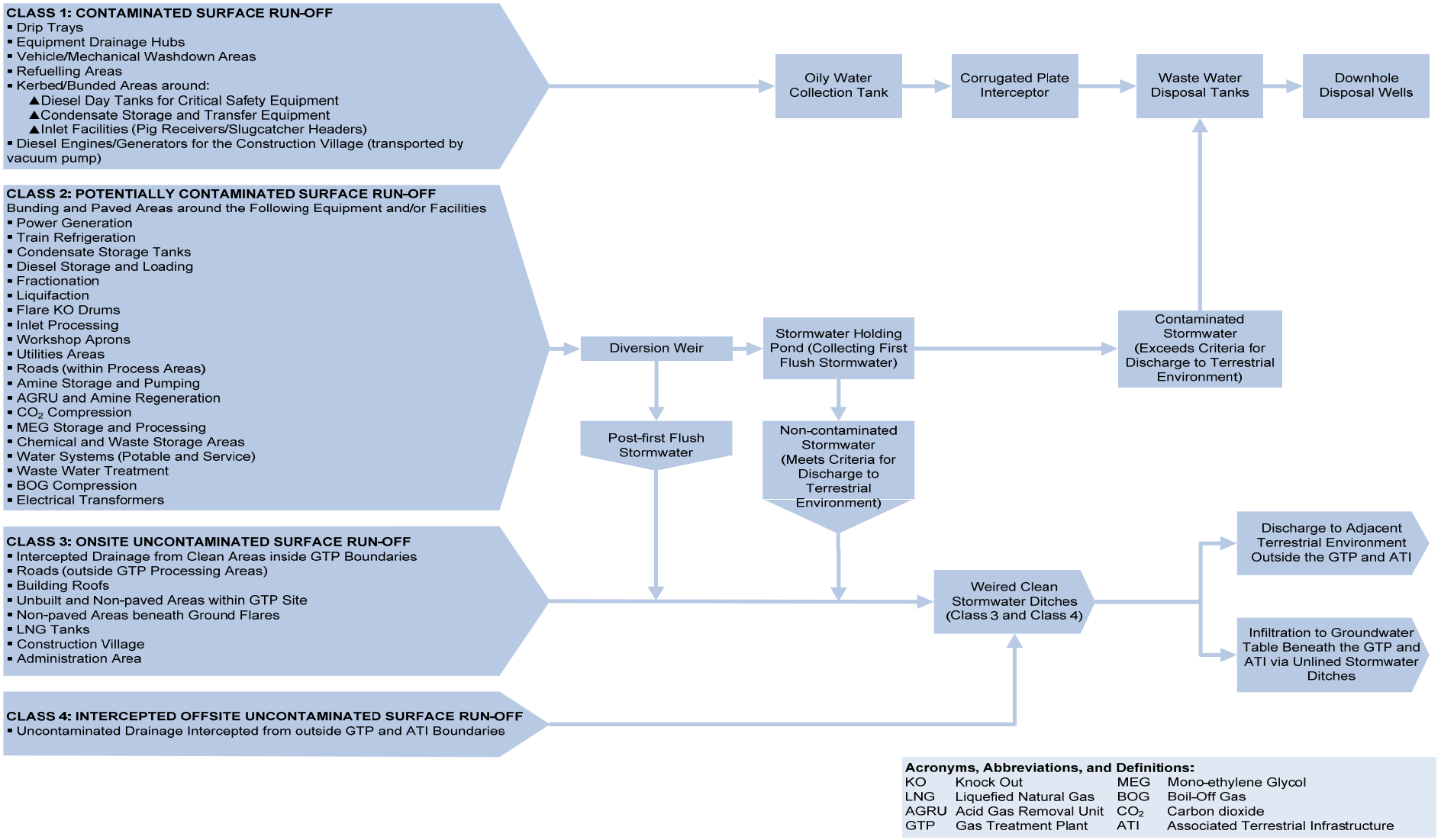

Figure 4-1 Overview of the Gorgon of the Gas Treatment Plant Stormwater and Surface Water Run-off System

The following requirements are intended to be integrated in the design of the Class 2 drainage system, where practicable:

- The Stormwater Holding Pond will be provided with a dispersed hydrocarbon skimming device and its design will allow sediment to settle.
- An appropriate specification will be applied to all piping and drainage channel design to minimise the risk of leakage to the environment and contamination of soil and groundwater to as low as reasonably practicable.
- Underground piping or drainage system components transporting potentially contaminated run-off will be equipped with adequate leak detection.
- The design of the Class 2 drainage system will incorporate a water trap or similar device that will form a barrier to hydrocarbon vapours and liquids, including LNG, entering the drainage system.
- Class 2 drainage trenches surrounding process equipment that is capable of spilling flammable liquids, including LNG or refrigerant, will be segregated into fire zones through the use of separation barriers extending up half the depth of the trench such that volumes of LNG or refrigerant exceeding the capacity of that section of trench will flow into the next section of trench rather than overflowing to adjacent unpaved areas. Each section of trench will incorporate a water trap connection to the Class 2 drainage system header.
- Firewater from the Class 2 catchment areas will be collected until volumes exceed the capacity of the Stormwater Holding Pond, at which point firewater will be diverted to the Class 3 drains. (Note: the Stormwater Holding Pond and associated Class 2 piping can hold the equivalent volume of firewater used in a four-hour firefighting event associated with a major fire within the Gas Treatment Plant before the water requires diversion).
- Bunds within the Class 2 catchment area will be designed and constructed to the requirements outlined in Section 4.3.3.2.
- The Stormwater Holding Pond will be equipped with adequate containment and leak detection.

The following requirements are intended to be met by the Class 3 drainage system, where practicable:

- The Class 3 drainage system will be an open drain system, which is designed to minimise suspended sediment discharge to the environment.
- The Class 3 drainage system will mirror the natural hydrological cycle as close as reasonably practicable by:
    - minimising erosion and sediment carryover both within the Gas Treatment Plant, Butler Park (Construction Village), and the Administration and Operations Complex sites, and at discharge points to the environment through the use of erosion control measures including vegetation cover, jute mesh or geotextile, rip-rap or stone pitching, gabions and grout-filled mattresses, concrete or concrete-filled bags, drop structures and chutes, pipes, ‘D’ base channels, weirs, ripping or ‘moonscaping’.
    - redistributing clean stormwater collected within the Class 3 drains via infiltration drains to ensure groundwater recharge; and redistribution trenches to prevent redistribution through channels or point sources.
- The Class 3 drain system will accept clean overflow from the Class 2 and Class 4 system.
- The size, cross-sectional shape, and gradient of channels will be designed to avoid scouring and sudden changes in velocity. Channels with high velocities are intended to be lined, while drop structures will be constructed where slopes are steep.

The following requirements are intended to be met by the Class 4 drainage system, where practicable:

- The size, cross-sectional shape, and gradient of the channel will be designed to avoid scouring and sudden changes in velocity. Channels with velocities sufficient to cause significant scour are intended be lined, while drop structures should be constructed where slopes are steep.
- The Class 4 drainage system will mirror the natural hydrological cycle as close as reasonably practicable by:
    - diverting and redistributing run-off high in the catchment
    - minimising sediment carryover to the environment
    - using vegetation cover to ensure that any collection and redistribution of flow minimises erosion. Where there is insufficient vegetation cover, alternatives may include the use of jute mesh or geotextile, rip-rap or stone pitching, gabions and grout-filled mattresses, concrete or concrete-filled bags, drop structures and chutes, pipes, base channels, weirs, ripping or 'moonscaping'.

4.3.3.2 Bunding and Curbing

Bunding or curbing is intended to be provided around hazardous liquid material storage. Bunding will be provided in chemical, hydrocarbon, and hazardous waste storage areas and areas where spills of hazardous liquids could occur.

The following is a summary of the key design requirements for temporary and permanent bunds:

- Bunding will be provided for hazardous liquid storage volumes equal or greater than 250 litres. Smaller vessels will be stored in chemical storage areas, which also need to be bunded.
- Temporary and permanent bunds will be constructed using waterproof reinforced concrete, steel, or an alternative material, which is deemed to be appropriate for the specific application.
- Temporary bunding facilities for use during construction will be designed to the same standard as permanent facilities, where practicable. As such it may be advantageous to provide self-bunded tanks for temporary installations where practicable.
- Portable bunding may be used. Acceptable forms of portable bunding include self-bunded pallets (stored undercover) and self-bunded tanks.
- All components of bunds must be impervious and chemically resistant to the liquid contained. Bunds with the potential to collect flammable and combustible substances will be constructed of fire-resistant materials.
- Tanks containing hazardous liquid will incorporate an adequate leak detection system which should be designed to the American Petroleum Institute (API) Standard Welded Steel Tanks for Oil Storage (API 2013).
- On-plot bunds will be graded to a sump and drained by gravity via a normally closed locked valve (or similar device) to the relevant class drainage system as identified in Figure 4-1. Where gravity drainage is not practicable, a sump and pump with local pump controls shall be provided to the relevant class drainage system.
- Remote bunds (where hard connections to the appropriate drainage system are not possible) will be graded to a sump and be provided with an appropriate connection for a gully sucker or mobile pump system to empty accumulated run-off.
- Operating procedures will be developed that will require bund drain valves to be closed at all times, including during a rainfall event, and that will specify water quality testing

requirements prior to disposal. If the water is free of contaminants, it will be released outside the bund. Bunds will be graded to a local collection sump equipped with a connection to the appropriate Class 1 or Class 2 Drainage System.

- Where practicable, bunding is intended to incorporate fauna protection measures as listed in Section 4.3.3.3.

Bunding and curbing design is intended to incorporate the requirements of the following standards, where relevant and practicable:

- AS 1940:2004: The Storage and Handling of Flammable and Combustible Liquids (Standards Australia 2004)
- API 650: Welded Steel Tanks for Oil Storage (API 2013).

4.3.3.3 Fauna Protection Measures

Pits, sumps, ponds, gutters, trenches, and drains on Barrow Island will potentially act as pit traps for fauna, including small and large marsupials and reptiles. Therefore, pits are intended to be covered with a grating or solid plate where reasonably practicable so as to prevent the ingress of fauna. In addition, sumps, basins, gutters, trenches, or drains with the potential to trap fauna will be provided with a means of escape, where practicable.

The number of persistent water bodies should be minimised on site, and, where practicable, sumps and retention basins should be kept dry.

4.3.3.4 Management Measures Specific to Construction

The following measures will manage the potential for chemical and hydrocarbon contamination or sediment run-off during the construction period.

Prevention of Chemical/Hydrocarbon Contamination

The relevant Class 1 and/or Class 2 drainage system components associated with chemical storage, chemical loading, diesel loading, diesel transfer, vehicle refuelling, and power generation (temporary) facilities are intended to be constructed as an integral part of the construction of these facilities.

Contaminated run-off from these areas will be collected in sumps or bunds, thus providing a facility for removal by vacuum truck.

Equipment associated with the disposal of contaminated stormwater including the oily water collection tank and CPI, Waste Water Disposal Tanks and its associated system, and the Stormwater Holding Pond, are intended to be installed as early as is reasonably practicable in the construction schedule.

Hydrocarbon-contaminated water will be treated and disposed of in line with the requirements of the Solid and Liquid Waste Management Plan (Chevron Australia 2012e).

The drainage from the concrete batching plant and truck washout areas will be re-used where safe and practicable. If re-use is not practicable, washout will be collected, treated, and disposed of as per the Solid and Liquid Waste Management Plan (Chevron Australia 2012e).

Prevention of Sediment Run-off

The Class 3 and Class 4 drainage systems will be installed as early as reasonably practicable in the construction schedule and will be constructed to maximise infiltration at the source.

Construction civil works are likely to result in elevated levels of suspended solids in run-off. Run-off from the Gas Treatment Plant site is intended to be managed so as to ensure reduction in suspended sediment levels prior to discharge.

Additional measures to minimise sediment carryover as a result of civil works will include:

- use of erosion barriers, flow diversion devices and sedimentation sumps. Where the installation of sediment sumps is not feasible, sediment flowing off the construction site will be controlled using an alternative method, e.g. silt fencing, geotextile fabric
- installation of contour banks to intercept and disperse run-off on steep disturbed slopes, where practicable
- planning and management of clearing earthworks to minimise land clearing requirements and limit the area of exposed topsoil to the minimum required for safe execution of construction activities.

Procedural controls to maintain drain systems in a safe and operable state include:

- regular visual inspections and additional inspections prior to and after heavy rains
- removal of sediment build-up and reinstatement of any damaged elements of the drain systems as soon as reasonably practicable.

4.3.4 Closed Drains

A closed drain system for the Gas Treatment Plant will be provided to ensure that hydrocarbon liquids drained from vessels (e.g. during maintenance activities) are collected in a safe and environmentally responsible manner so as to reduce fugitive emissions of volatile hydrocarbons to the atmosphere and avoid flammable hazards.

It is intended that hydrocarbon liquids collected in the closed drain system will be recovered to process, or to the condensate storage system for sale with the condensate product. Where hydrocarbon liquids cannot practicably be recovered to process or to the condensate storage system, they will be managed in line with the Solid and Liquid Waste Management Plan (Chevron Australia 2012e).

4.4 Leaks or Spills

Chevron Australia is not abstracting groundwater from, or injecting liquids into, the superficial aquifer on Barrow Island at this stage of the Gorgon Gas Development and Jansz Feed Gas Pipeline. Therefore, the potential pathways reasonably foreseeable for impacts to groundwater are via leaks or spills and influences on recharge arising from changes in surface water regimes.

In addition to the measures outlined in Sections 4.2 and 4.3, management of potential impacts of leaks and spills will, where reasonably practicable, include these additional measures:

- Wherever practicable, non-hazardous (or least hazardous) materials will be selected for use on site.
- Hazardous material storage areas will be designed and engineered in accordance with applicable industry standards to safely handle the volumes and operating conditions required for each substance.
- Tanks and machinery will be equipped with appropriate spill and leak protection devices in accordance with applicable design standards and specifications.
- Legal requirements pertaining to hazardous materials and substances will be adhered to for packaging, segregating, storing, transporting, transferring, and handling.
- An inventory of hazardous materials stored at work sites will be maintained on site.
- Major maintenance of vehicles and equipment will be conducted at designated maintenance areas.
- Bulk transfer lines will be fitted with dry break couplings. These will be fit-for-purpose, not outside design life limits, and regularly checked for damage to prevent leaks.

- Personnel will be trained in their roles, functions, and responsibilities, including emergency response, prior to refuelling or fuel transfer.
- Relevant personnel will be trained in spill response.
- Sufficient and appropriate equipment, materials, and resources will be available, and maintained, to respond to a spill incident.
- Upon detection of a spill or leak, the person shall report the incident in accordance with the Gorgon Gas Development Incident Reporting Procedures.
- Spills shall be contained and cleaned up immediately and product Material Safety Data Sheets (MSDSs) consulted as applicable to guide clean-up actions.

Impacts to surface water regimes will be limited through the solid and liquid waste management measures specified in Section 4.2.

4.5 Clearing and Earthworks

Chevron Australia has prepared an internal Vegetation Clearing Permit System to address vegetation clearing for the Gorgon Gas Development and Jansz Feed Gas Pipeline that it internally requires its employees and contractors to comply with, where reasonably practicable.

Vegetation clearing audit procedures are required under Condition 7.6.i of Statement No. 800 and Statement No. 769, and Condition 6.6.i of EPBC Reference: 2003/1294 and 2008/4178; they are described in detail in the Vegetation Clearing and Audit Common User Procedure (Chevron Australia 2012b).

4.6 Fire

A Fire Management Plan (Chevron Australia 2009b) is required under Condition 12 of Statement No. 800, Condition 11 of Statement No. 769, and Condition 9 of EPBC Reference: 2003/1294 and 2008/4178. Measures to manage planned fires (e.g. for vegetation clearing purposes) and respond to incidents involving fires are detailed in the Fire Management Plan (Chevron Australia 2009b). Any fauna injured during planned fire activities will be managed by measures detailed in the Fauna Handling and Management Common User Procedure (Chevron Australia 2013). Management measures relating to rehabilitation of those areas requiring rehabilitation following burning are addressed within the Post-Construction Rehabilitation Plan (Chevron Australia 2009c).

4.7 Physical Interaction (including Vehicle Movements)

The management of traffic in relation to fauna is required under Condition 7.6.iii of Statement No. 800 and Statement No. 769, and Condition 6.6iii of EPBC Reference: 2003/1294 and 2008/4178, and is described in detail in the Traffic Management Common User Procedure (Chevron Australia 2012c).

Management of fauna handling and other secondary impacts to fauna are required under Condition 7.6.ii and 7.6.iii of Statement No. 800 and Statement No. 769, and Condition 6.6.ii and 6.6.iii of EPBC Reference: 2003/1294 and 2008/4178, and are described in detail in the Fauna Handling and Management Common User Procedure (Chevron Australia 2013).

4.8 Light

The management of light emissions for the Gorgon Gas Development and Jansz Feed Gas Pipeline will focus primarily on its effect on marine turtles, and implicitly its effect on nocturnally-

active birds or mammals that may also be affected by bright lights (see the Terrestrial and Subterranean Baseline State and Environmental Impact Report [Chevron Australia 2012d]). A Long-term Marine Turtle Management Plan (Chevron Australia 2013b) is required under Condition 16.1 of Statement No. 800, Conditions 13.4(ii)d and 14.4v of Statement No. 769, and Condition 12.1 of EPBC Reference: 2003/1294 and 2008/4178. Management and monitoring of light, including principles to manage light emissions from construction or operations that do not affect coastal areas, is described in the Long-term Marine Turtle Management Plan. If required, additional management measures may be investigated based on incidents or observations of environmental occurrences (e.g. mass aggregations of fauna) that are deemed significant.

4.9 Noise and Vibration

Noise emissions for the Gorgon Gas Development and Jansz Feed Gas Pipeline will be managed for its effect on terrestrial fauna (key receptors are the White-winged Fairy-wren [Barrow Island], and mammals) and nesting marine turtles. The Terrestrial and Subterranean Baseline State and Environmental Impact Report (Chevron Australia 2012d) indicates that no significant fauna on Barrow Island are thought to have a critical reliance on hearing to either avoid predators, or to locate and hunt prey. However, noise interference with communications between White-winged Fairy-wrens (Barrow Island) was used as the basis for defining a 1000 m environmental impact TDF.

Noise and vibration design criteria for the Gas Treatment Plant and Utilities Areas, informed by the Environment Basis of Design (Chevron Australia 2008a) and the Health and Safety Basis of Design (Chevron Australia 2007a), were based on human health/worker exposure criteria, stipulated in relevant legislation and standards. Individual equipment noise levels have been specified in accordance with Australian Standards and the ALARP principle and a cumulative noise study has been carried out to establish cumulative noise levels from the whole of the gas treatment plant (these were reported in the PER [Chevron Australia 2008]).

Measures to manage and, where practicable, reduce noise from the Gas Treatment Plant are described in the Long-term Marine Turtle Management Plan (Chevron Australia 2013b).

Measures to manage noise associated with the construction of the Feed Gas Pipeline System Shoreline Crossing on the west coast of Barrow Island are described in the Horizontal Directional Drilling Management and Monitoring Plan (Chevron Australia 2011).

Noise and vibration monitoring on beaches either side of Town Point is summarised further in the Long-term Marine Turtle Management Plan (Chevron Australia 2013b). Noise monitoring for terrestrial receptors is linked to the ecological monitoring program, as explained in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013c).

4.10 Seawater Application

The water supply for construction activities, such as earthworks and dust suppression will use freshwater, treated greywater, and seawater on the Gas Treatment Plant site. The aim of seawater application is to complement the use of available freshwater and treated greywater within specific limits, and specific areas and stages of construction activities on the Gas Treatment Plant site.

The application of seawater on the Gas Treatment Plant site will be managed by:

- establishing a 50 m buffer zone, within the perimeter of the Gas Treatment Plant boundary, to reduce the potential of seawater over-spray or run-off to surrounding vegetation and by only using freshwater or treated greywater in the buffer zone
- using freshwater and treated greywater in preference to seawater, where available and practicable to do so

- reducing seawater volumes to lowest practicable and technical effective levels and not exceeding 4500 KL/day
- using designated seawater and freshwater trucks, with seawater trucks only to be used on the Gas Treatment Plant Footprint
- employing additional construction drainage control measures, if required, to prevent direct surface run-off of seawater beyond the Gas Treatment Plant boundary
- considering other potential practicable control measures in detailed execution plans; e.g. varying the sequence of locations of application, effective distribution using specified vehicles which remain in the Gas Treatment Plant site boundary, volume use monitoring
- removing topsoil prior to applying seawater for construction activities.

Groundwater monitoring for terrestrial receptors is part of the ecological monitoring program as explained in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2009k). In addition to the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2009k), monthly groundwater monitoring of groundwater level and salinity will occur for at least the first six months from commencement of seawater application at existing down hydraulic gradient groundwater monitoring boreholes. The results of the monthly groundwater monitoring will be provided to DEC. If the results of the monthly groundwater monitoring demonstrate any adverse impacts to terrestrial receptors or any effects beyond those expected from the seawater application groundwater modelling (Chevron Australia 2010), immediate action will be taken to prevent further impacts in consultation with WA DEC which may include, but not be limited to: modifying the buffer zone; application methodology; application rates; and monitoring program.

The seawater application groundwater modelling predictions are presented in Section 5.3.2 of the Gorgon Project Application for Consideration under section 45C of the EP Act (Chevron Australia 2010). The following is an excerpt from this document:

> *"As identified in the assessment (Golder Associates 2009), the maximum lateral movement of the mound is interpreted to be less than 100 m from the edge of the area of seawater application. The results also suggest that the majority of mounding may occur directly below the area of seawater application, with maximum mounding heights of one metre or less beyond the seawater application area."*

The process for reporting of environmental incidents resulting from seawater application will be in accordance with the reporting requirements listed in Table 7.1.

4.11 Management Triggers

Chevron Australia applies management triggers to inform appropriate management responses when a level of change has been observed. Management triggers have been applied to ecological monitoring.

Chevron Australia will implement a process to guide an appropriate management response in relation to changes detected in ecological elements that exceed management trigger levels. The type of response (e.g. 'alert', 'review', 'action' for ecological monitoring) will be guided by the level of detected change in the trend over time, and the type of parameter affected. Each level of response will not preclude the need for immediate management actions.

These management triggers, as they relate to the terrestrial environment, are described in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013c).

5.0 Objectives, Performance Standards, and Relevant Documentation

5.1 Overview

This section summarises the environmental objectives, performance standards, and relevant documentation that have been developed as part of a systematic approach to the management of proposal-related risks. Specific objectives, performance standards, and documentation will be used to assess and demonstrate the overall environmental performance for the Gorgon Gas Development and Jansz Feed Gas Pipeline against the stated environmental objectives.

Table 5-1 details the objectives, performance standards, and documentation that relate to this Plan.

5.2 Objectives

Chevron Australia is committed to conducting activities associated with the Gorgon Gas Development and Jansz Feed Gas Pipeline in an environmentally responsible manner, and aims to implement best practice environmental management as part of a program of continual improvement. To meet this commitment, objectives have been defined that relate to the management of the identified environmental risks for the Gorgon Gas Development. These objectives are those in Condition 7 of Statement No. 800 and Statement No. 769, and Condition 6 of EPBC Reference: 2003/1294 and 2008/4178, and where necessary, additional, more specific objectives have been developed.

Table 5-1 details the objectives specific to this Plan.

5.3 Performance Standards

Performance standards are the measures Chevron Australia will use to assess whether or not it is meeting its objectives. For each objective and element of each objective, Chevron Australia has described a matter ('description') that will be measured, and a quantitative target or, where there is no practicable quantitative target, a qualitative target, which is to be measured against when assessing whether the objective has been met. These targets have been developed specifically for assessing performance, not compliance, and so failure to meet the target does not represent a breach of this Plan. Rather, it indicates that an objective may not have been met and there may be a need for management action or review of this Plan.

Table 5-1 includes performance standards required in respect of the matters of NES listed in the Terrestrial and Subterranean Baseline State and Environment Impact Report (Chevron Australia 2009a), as required by Condition 3.2.5 of EPBC Reference: 2003/1294 and 2008/4178.

Table 5-1 details the performance standards specific to this Plan.

5.4 Relevant Documentation

Chevron Australia has defined the relevant documentation that contains information about whether the performance standards have been met.

Table 5-1 details the relevant documentation specific to this Plan.

Table 5-1 Objectives, Performance Standards, and Relevant Documentation

Objectives	Performance Standards		Evidence/Relevant Documentation
	Description	Target	
To reduce the adverse impacts from the construction and operation of the Terrestrial Facilities as far as practicable	• Develop an Environment Protection Plan that addresses each of the requirements specified in Condition 7.6 of Statements No. 800 and 769, and Condition 6.6 of EPBC Reference: 2003/1294 and 2008/4178 • Implement the management measures described in the Plan	• Develop the Gorgon Gas Development and Jansz Feed Gas Pipeline Environment Protection Plan prior to the commencement of construction • 100% implementation of the management measures identified in this Plan Implementation of improvements to any of those management or design features, or operating controls, in accordance with Condition 36 of Statement No. 800, Condition 21 of Statement No. 769, and Conditions 25 and 26 of EPBC Reference: 2003/1294 and 2008/4178 • No clearing of vegetation in excess of the amount specified under the Barrow Island Act, or outside the Gorgon Gas Development Footprint	• The Minister for Environment (State and Commonwealth) approves the Plan • Changes (if any) to the Environment Protection Plan as required under Condition 36 of Statement No. 800, Condition 21 of Statement No. 769, and Conditions 25 and 26 of EPBC Reference: 2003/1294 and 2008/4178 • Results of Vegetation Clearing Audit to determine the extent of clearing and rehabilitation in accordance with the Vegetation Clearing and Audit Common User Procedure
To ensure the construction and operation of the Terrestrial Facilities does not cause Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint (TDF), including below the surface of the land	Report any Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint (TDF)	• No exceedance of ecological monitoring management triggers for any ecological elements • 100% reporting of any detected Material or Serious Environmental Harm outside the TDF within 48 hours to DPaW and DotE	• Ecological monitoring records • Incident reports • Results of the terrestrial and subterranean environment state as per Schedule 3 of Statement No. 800 and EPBC Reference: 2003/1294 and 2008/4178, and Condition 5.2 of Statement No. 769, included in the Annual Environmental Performance Report submitted to the Minister for Environment (State and Commonwealth)

6.0 Implementation

6.1 Environmental Management Documentation

6.1.1 Overview

Figure 1-3 and Figure 1-4 in Section 1.5.5 of this Plan show the hierarchy of environmental management documentation within which this Plan exists. The following sections describe each level of documentation in greater detail.

6.1.2 Chevron ABU OE Documentation

As part of the Chevron ABU, the Gorgon Gas Development and Jansz Feed Gas Pipeline is governed by the requirements of the ABU OEMS, within which a number of OE Processes exist. The Gorgon Gas Development and Jansz Feed Gas Pipeline will implement internally those OE Processes (and supporting OE Procedures) that apply to the Gorgon Gas Development and Jansz Feed Gas Pipeline activities where those processes are appropriate and reasonably practicable.

The key ABU OE Processes taken into account during the development of this Plan, with a description of the intent of the Process, are:

- **HES Risk Management Process** (Chevron Australia 2012): Process for identifying, assessing and managing HES, operability, efficiency and reliability risks related to the Gorgon Gas Development and Jansz Feed Gas Pipeline.
- **Environmental Stewardship Process** (Chevron Corporation 2007): Applies during the Operations Phase of the Gorgon Gas Development and Jansz Feed Gas Pipeline. Process for ensuring all environmental aspects are identified, regulatory compliance is achieved, environmental management programs are maintained, continuous improvement in performance is achieved, and alignment with ISO 14001:2004 (Standards Australia/Standards New Zealand 2004a) is achieved.
- **Hazardous Communication Process** (Chevron Australia 2006a): Process for managing and communicating chemical and physical hazards to the workforce.
- **Management of Change Process** (Chevron Australia 2008b): Process for assessing and managing risks stemming from permanent or temporary changes to prevent incidents.
- **Contractor Health, Environment, and Safety Management Process** (Chevron Australia 2010a): Process for defining the critical roles, responsibilities and requirements to effectively manage contractors involved with the Gorgon Gas Development and Jansz Feed Gas Pipeline.
- **Competency Development Process** (Chevron Australia 2010b): Process for ensuring that the workforce has the skills and knowledge to perform their jobs in an incident-free manner, and in compliance with applicable laws and regulations.
- **Incident Investigation and Reporting and Process** (Chevron Australia 2010c): Process for reporting and investigating incidents (including near misses) to reduce or eliminate root causes and prevent future incidents.
- **Emergency Management Process** (Chevron Australia 2010d): Process for providing organisational structures, management processes and tools necessary to respond to emergencies and to prevent or mitigate emergency and/or crisis situations.
- **Compliance Assurance Process** (Chevron Australia 2009k): Process for ensuring that all HES and OE-related legal and policy requirements are recognised, implemented, and periodically audited for compliance.

6.1.3 Gorgon Gas Development and Jansz Feed Gas Pipeline Documentation

6.1.3.1 Ministerial Plans and Reports

In addition to this Plan, a number of other plans and reports have been (or will be) developed for the Gorgon Gas Development and Jansz Feed Gas Pipeline that are required under State and/or Commonwealth Ministerial Conditions (refer to Figure 1-3 and Figure 1-4). These documents address the requirements of specific conditions and provide standards for environmental performance for the Gorgon Gas Development and Jansz Feed Gas Pipeline.

6.1.3.2 Common User Procedures

The Gorgon Gas Development and Jansz Feed Gas Pipeline Common User Procedures support the Ministerial plans and reports, and specify more detailed requirements and relevant considerations for specific environmental issues. The Gorgon Gas Development and Jansz Feed Gas Pipeline Common User Procedures that support this Plan are listed in Table 6-1.

Table 6-1 Common User Procedures Relevant to this Plan

	Flora	Vegetation	Fauna	Habitat	Ecological Communities	Groundwater	Surface Water Landform	Significant Landforms
Vegetation Clearing and Audit	X	X	X	X	X		X	X
Fauna Handling and Management			X					
Traffic Management	X	X	X	X	X	X	X	X
Barrow Island Weed Hygiene	X	X						

6.1.3.3 Environmental Management Plans

A number of activity-specific Environmental Management Plans (EMPs) are required under Ministerial Conditions (refer to Figure 1-3); however, other internal work scope EMPs are also being developed to effectively manage specific work scopes for the Gorgon Gas Development and Jansz Feed Gas Pipeline. These work scope EMPs will be developed and implemented such that any requirements specified in higher level documents (such as this Plan) are met.

Gorgon personnel, including contractors and subcontractors, involved in a particular scope of work for the Gorgon Gas Development and Jansz Feed Gas Pipeline are internally required to comply with the work scope EMP associated with that work scope, where reasonably practicable.

6.1.3.4 Impact Mitigation Strategies

Impact Mitigation Strategies (IMSs) are aspect-based management standards developed for the construction phase of the Gorgon Gas Development and Jansz Feed Gas Pipeline that accompany the activity-specific EMPs (refer to Figure 1-3). The IMSs document the detailed management requirements associated with potential impacts for the Gorgon Gas Development and Jansz Feed Gas Pipeline. Each IMS covers a particular environmental aspect that requires management (e.g. light, noise and vibration, atmospheric emissions, etc.).

Personnel (including contractors and subcontractors) involved in that particular scope of work are internally required to comply with the IMSs where reasonably practicable. The IMSs also document requirements for contractors to develop internal work-scope EMPs for the Gorgon Gas Development and Jansz Feed Gas Pipeline, which include work procedures (such as step-by-step procedures and work method statements) to mitigate their impacts.

Chevron Australia intend to develop equivalent management requirements to implement during Operations of the Gorgon Gas Development and Jansz Feed Gas Pipeline.

6.1.3.5 Work Scope or Activity-specific Documentation

A variety of internal Chevron Australia, contractor, and subcontractor documentation will be developed, including documents such as task-specific work instructions, procedures, work method statements, and Job Hazard Analyses. These detailed documents will specify the way activities shall be performed in a step-by-step manner.

These procedural documents are specific to the Gorgon Gas Development and Jansz Feed Gas Pipeline (where required) and include any environmental requirements that are detailed in higher level documentation relevant to a specific scope of work (i.e. the IMSs and EMPs described in the previous sections).

6.2 Training and Inductions

All personnel (including contractors and subcontractors) are required to attend environmental inductions and training relevant to their role on the Gorgon Gas Development and Jansz Feed Gas Pipeline. Training and induction programs facilitate the understanding personnel have of their environmental responsibilities, and increase their awareness of the management and protection measures required to reduce potential impacts on the environment.

Chevron Australia has prepared the ABU Competency Development Process (Chevron Australia 2010b) to deal with the identification and assessment of required competencies for environmental roles, which it internally requires its employees, contractors, etc. to comply with.

Environmental training and competency requirements for personnel, including contractors and subcontractors, are maintained in a Gorgon Gas Development and Jansz Feed Gas Pipeline HES training matrix or the Competency Management System for operations personnel.

The training and induction requirements related to this Plan are detailed in two Common User Procedures:

- Fauna Handling and Management Common User Procedure (Chevron Australia 2013)
- Traffic Common User Procedure (Chevron Australia 2012c).

7.0 Auditing, Reporting, and Review

7.1 Auditing

7.1.1 Internal Auditing

Chevron Australia has prepared the internal ABU Compliance Assurance Process (Chevron Australia 2009k) to manage compliance, and which it internally requires its employees, contractors, etc. to comply with. This Process will also be applied to assess compliance of the Gorgon Gas Development and Jansz Feed Gas Pipeline against the requirements of Statement No. 800, Statement No. 769, and EPBC Reference: 2003/1294, 2008/4178, and 2005/2184 where this is appropriate and reasonably practicable. In accordance with Condition 2-1 of Statement No. 965, assessment of compliance will be undertaken on a joint basis.

An internal Audit Schedule has been developed and will be maintained for the Gorgon Gas Development and Jansz Feed Gas Pipeline (with input from the Engineering, Procurement and Construction Management [EPCM] Contractors) that includes audits of the Development's environmental performance and compliance with the Ministerial Conditions. A record of all internal

audits and the audit outcomes is maintained. Actions arising from internal audits are tracked until their close-out.

Under EPBC Reference: 2003/1294 and 2008/4178, Condition 24 also requires that the person taking the action must maintain accurate records of activities associated with or relevant to the conditions of approval and make them available on request by DotE. Such documents may be subject to audit by the DotE and used to verify compliance with the conditions of approval.

Any document that is required to be implemented under this Plan will be made available to the relevant DPaW/DotE auditor.

7.1.2 External Auditing

Audits and/or inspections undertaken by external regulators will be facilitated via the Gorgon Gas Development and Jansz Feed Gas Pipeline's Regulatory Approvals and Compliance Team. The findings of external regulatory audits will be recorded and actions and/or recommendations will be addressed and tracked. Chevron Australia may also undertake independent external auditing during the Gorgon Gas Development and Jansz Feed Gas Pipeline Project.

Under EPBC Reference: 2003/1294 and 2008/4178, Condition 23 also requires that upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.

7.2 Reporting

7.2.1 Compliance Reporting

Condition 4 of Statement No. 800 and Condition 2 of EPBC Reference: 2003/1294 and 2008/4178 requires Chevron Australia to submit a Compliance Assessment Report annually to address the previous 12-month period. Condition 4 of Statement No. 769 and Condition 5 of EPBC Reference: 2005/2184 similarly require that Chevron Australia submit an annual Audit Compliance Report, for the previous 12-month period. A compliance reporting table is provided in Appendix 1 to assist with auditing for compliance with this Plan for Statement No. 800, Statement No. 769, and EPBC Reference: 2003/1294 and 2008/4178. In accordance with Conditions 2-1 and 2-2 of Statement No.965, compliance assessment and compliance reporting will be carried out on a joint basis with Statement No.800.

7.2.2 Environmental Performance Reporting

Condition 5.1 of Statement No. 800 and Statement No. 769, and Condition 4 of EPBC Reference: 2003/1294 and 2008/4178 require that Chevron Australia submits an annual Environmental Performance Report to the Western Australian Minister for the Environment and to the Commonwealth DotE respectively, for the previous 12-month period.

In addition, under Condition 5.3 of Statement No. 800 and Statement No. 769, and Condition 4.2 for EPBC Reference: 2003/1294 and 2008/4178 every five years from the date of the first annual Report, Chevron Australia shall submit to the Western Australian Minister for the Environment an Environmental Performance Report covering the previous five-year period. In accordance with Conditions 2-1 and 2-2 of Statement No.965, performance reporting will be carried out on a joint basis with Statement No.800.

Specific details on the content of the Environmental Performance Report are defined in Condition 5.2 and Schedule 3 of Statement No. 800, Condition 5.2 of Statement No. 769, and Schedule 3 of EPBC Reference: 2003/1294 and 2008/4178.

These details require reporting on the terrestrial and subterranean environment state from monitoring data, and changes to the terrestrial and subterranean environment state. These details are provided in, and reported against, the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013) required under Condition 8 of Statement No. 800 and Statement No. 769, and Condition 7 of EPBC Reference: 2003/1294 and 2008/4178.

7.2.3 Routine Internal Reporting

The Gorgon Gas Development and Jansz Feed Gas Pipeline will use a number of routine internal reporting formats to effectively implement the requirements of this Plan. Routine reporting is likely to include daily, weekly, and/or monthly HES reports for specific scopes of work on the Development. These reports include information on a number of relevant environmental aspects as determined by Chevron Australia, such as details of environmental incidents (if any), environmental statistics and records, records of environmental audits and inspections undertaken, status of environmental monitoring programs, tracking of environmental performance against performance indicators, targets, and criteria, etc.

7.2.4 Incident Response and Reporting

7.2.4.1 Incident Reporting

Chevron Australia has prepared the ABU Emergency Management Process (Chevron Australia 2010d) and Incident Investigation and Reporting Process (Chevron Australia 2010c), which it internally requires its employees, contractors, etc to follow in the event of environmental incidents. These Processes will also be applied internally to environmental incidents identified in this Plan, where this is appropriate and reasonably practicable.

Table 7-1 lists the environmental incidents, reporting requirements, and timing specific to this Plan. In accordance with Conditions 2-1 and 2-2 of Statement No. 965, incident reporting will be carried out on a joint basis with Statement No.800.

Note that under Condition 3.2.7 of EPBC Reference: 2003/1294 and 2008/4178, reports will be made in respect of significant impacts detected by the monitoring programs under this Plan, whether or not the impact is caused by the Gorgon Gas Development.

Table 7-1 Incident Reporting Requirements

Incident	Reporting to	Timing
Threatened or listed fauna cared for, injured, or killed within the Terrestrial Disturbance Footprint	DPaW	Annual Performance Report
Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint (attributable to the Gorgon Gas Development)	DPaW/DotE	Within 48 hours of detection
Significant impacts detected by the monitoring program for matters of National Environmental Significance	DotE	Within 48 hours of detection
Harm or mortality to EPBC Act Listed terrestrial fauna attributable to the Gorgon Gas Development	DotE	Monthly reporting (with report submitted not later than 14 days after the end of the reporting period).

7.2.4.2 Incident Response Strategy

Responses to fauna incidents will focus on injury or mortality of terrestrial vertebrate fauna for occurrences associated with Project-related activities in the TDF, or mass mortalities or injuries. Management actions may follow.

For each occurrence where an injured or dead animal is found, Chevron Australia will undertake an enquiry to diagnose the cause of the injury or death. The following information will be sought, where known:

- cause of incident
- contributing factor(s)
- location of incident.

Chevron Australia will implement corrective actions in response to fauna casualties as required, and in consultation with the DPaW where appropriate. The results will guide the adaptive management decisions and further actions.

Observations by Barrow Island personnel of environmental occurrences (e.g. mass aggregations of fauna) that are deemed significant by suitably qualified personnel will be considered to determine if a management response is required.

7.3 Review of this Plan

Chevron Australia is committed to conducting activities in an environmentally responsible manner and aims to implement best practice environmental management as part of a program of continuous improvement. This commitment to continuous improvement means that Chevron Australia will review this Plan every five years or more often as required (e.g. in response to new information).

Reviews will address matters such as the overall design and effectiveness of the Plan, progress in environmental performance, changes in environmental risks, changes in business conditions, and any relevant emerging environmental issues.

If the Plan no longer meets the aims, objectives or requirements of the Plan, if works are not appropriately covered by the Plan, or measures are identified to improve the Plan, Chevron Australia will submit an amendment or addendum to the Plan to the State Minister for Environment for approval under Condition 36.2 of Statement No. 800,Condition 21 of Statement No. 769 and Condition 2-3 of Statement No. 965.

If Chevron Australia wishes to carry out an activity other than in accordance with the Plan, Chevron Australia will update the Plan and submit it to the Commonwealth Minister for Environment for approval in accordance with Condition 25 of EPBC Reference: 2003/1294 and 2008/4178 and Condition 6 of EPBC Reference: 2005/2184. The Commonwealth Minister for Environment may also direct Chevron Australia to revise the Plan under Condition 26 of EPBC Reference: 2003/1294 and 2008/4178, and Condition 7 of EPBC Reference: 2005/2184.

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Appendix 1 Compliance Reporting Table

Section No.	Actions	Timing
4.3.2	The key design feature (of the Gas Treatment Plant) to achieve the segregation of the four drainage system classes will be through the use of appropriate paving or concrete (i.e. 'paved areas'). The areas intended to be paved are: • areas required to be load bearing • areas subject to contamination by spillages that could damage natural ground and water systems or exceed site discharge limits for aqueous effluents.	Construction Operations
4.3.2	Paving in areas (of the Gas Treatment Plant) where spillages may occur will be sloped into the appropriate collection systems leading to one of the three segregated drainage systems (Class 1, Class 2 or Class 3) or to a closed bund or sump thus providing a facility for removal by a vacuum truck.	Construction Operations
4.3.3.1	The following requirements are intended to be met by the Class 1 drainage system, where practicable: • An appropriate specification will be applied to all piping and drainage channel design to minimise the risk of leakage to the environment and contamination of soil and groundwater. • Underground piping or drainage system components transporting contaminated run-off will be equipped with adequate leak detection. • The design of the Class 1 drainage system will incorporate a water trap or similar device that will form a barrier to hydrocarbon vapour and liquids, including LNG, entering the drainage system. • Class 1 run-off will pass through a Corrugated Plate Interceptor (CPI) to separate the dispersed oil fraction prior to disposal via the produced water disposal wells. • Remote Class 1 run-off will be collected and disposed of via a vacuum truck to the Oily Water Collection Tank.	Construction Operations
4.3.3.1	The following requirements are intended to be integrated in the design of the Class 2 drainage system (of the Gas Treatment Plant), where practicable: • The Stormwater Holding Pond will be provided with a dispersed hydrocarbon skimming device and its design will allow sediment to settle. • An appropriate specification will be applied to all piping and drainage channel design to minimise the risk of leakage to the environment and contamination of soil and groundwater to as low as reasonably practicable. • Underground piping or drainage system components transporting potentially contaminated run-off will be equipped with adequate leak detection. • The design of the Class 2 drainage system will incorporate a water trap or similar device that will form a barrier to hydrocarbon vapours and liquids, including LNG, entering the drainage system. • Class 2 drainage trenches surrounding process equipment that is capable of spilling flammable liquids, including LNG or refrigerant, will be segregated into fire zones through the use of separation barriers extending up half the depth of the trench such that volumes of LNG or refrigerant exceeding the capacity of that section of trench will flow into the next section of trench rather than	Construction Operations

Section No.	Actions	Timing
	overflowing to adjacent unpaved areas. Each section of trench will incorporate a water trap connection to the Class 2 drainage system header. • Firewater from the Class 2 catchment areas will be collected until volumes exceed the capacity of the Stormwater Holding Pond, at which point firewater will be diverted to the Class 3 drains (Note: the Stormwater Holding Pond and associated Class 2 piping can hold the equivalent volume of firewater used in a four-hour firefighting event associated with a major fire within the Gas Treatment Plant before the water requires diversion). • Bunds within the Class 2 catchment area will be designed and constructed to the requirements outlined in Section 4.3.3.2. • The Stormwater Holding Pond will be equipped with adequate containment and leak detection.	

4.3.3.1	The following requirements are intended to be met by the Class 3 drainage system, where practicable:
	• The Class 3 drainage systems will be an open drain system, which is designed to minimise suspended sediment discharge to the environment.
	• The Class 3 drainage system will mirror the natural hydrological cycle as close as reasonably practicable by:
	  • minimising erosion and sediment carryover both within the Gas Treatment Plant, Butler Park (Construction Village), and the Administration and Operations Complex sites, and at discharge points to the environment through the use of erosion control measures including vegetation cover, jute mesh or geotextile, rip-rap or stone pitching, gabions and grout-filled mattresses, concrete or concrete-filled bags, drop structures and chutes, pipes, 'D' base channels, weirs, ripping or 'moonscaping'.
	  • redistributing clean stormwater collected within the Class 3 drains via infiltration drains to ensure groundwater recharge; and re-distribution trenches to prevent re-distribution through channels or point sources.
	• The Class 3 drain system will accept clean overflow from the Class 2 and Class 4 system.
	• The size, cross-sectional shape and gradient of channels will be designed to avoid scouring and sudden changes in velocity. Channels with high velocities are intended to be lined, while drop structures will be constructed where slopes are steep.
		Construction
		Operations

4.3.3.1	The following requirements are intended to be met by the Class 4 drainage system, where practicable:
	• The size, cross-sectional shape and gradient of the channel will be designed to avoid scouring and sudden changes in velocity. Channels with velocities sufficient to cause significant scour are intended be lined, while drop structures should be constructed where slopes are steep.
	• The Class 4 drainage system will mirror the natural hydrological cycle as close as reasonably practicable by:
	  • diverting and redistributing run-off high in the catchment
	  • minimising sediment carryover to the environment
	• using vegetation cover to ensure that any collection and redistribution of flow minimises erosion. Where there is insufficient vegetation cover, alternatives may include the use of jute mesh or geo-textile, rip-rap or stone pitching, gabions and grout-filled mattresses, concrete or concrete-filled bags, drop structures and
		Construction
		Operations

Section No.	Actions	Timing
	chutes, pipes, base channels, weirs, ripping or 'moonscaping'.	
4.3.3.2	Bunding or curbing is intended to be provided around hazardous liquid material storage. Bunding will be provided in chemical, hydrocarbon, and hazardous waste storage areas and areas where spills of hazardous liquids could occur.	Construction Operations
4.3.3.2	The following is a summary of the key design requirements for temporary and permanent bunds: • Bunding will be provided for hazardous liquid storage volumes equal or greater than 250 litres. Smaller vessels will be stored in chemical storage areas, which also need to be bunded. • Temporary and permanent bunds will be constructed using waterproof, reinforced concrete, steel or an alternative material, which is deemed to be appropriate for the specific application. • Temporary bunding facilities for use during construction will be designed to the same standard as permanent facilities, where practicable. As such it may be advantageous to provide self-bunded tanks for temporary installations where practicable. • Portable bunding may be used. Acceptable forms of portable bunding include self-bunded pallets (stored undercover) and self-bunded tanks. • All components of bunds must be impervious and chemically resistant to the liquid contained. Bunds with the potential to collect flammable and combustible substances will be constructed of fire-resistant materials. • Tanks containing hazardous liquid will incorporate an adequate leak detection system which should be designed to the American Petroleum Institute (API) Standard Welded Steel Tanks for Oil Storage (API 2013). • On-plot bunds will be graded to a sump and drained by gravity via a normally closed locked valve (or similar device) to the relevant class drainage system as identified in Figure 4.1. Where gravity drainage is not practicable, a sump and pump with local pump controls shall be provided to the relevant class drainage system. • Remote bunds (where hard connections to the appropriate drainage system are not possible) will be graded to a sump and be provided with an appropriate connection for a gully sucker or mobile pump system to empty accumulated run-off. • Operating procedures will be developed that will require bund drain valves to be closed at all times, including during a rainfall event, and that will specify water quality testing requirements prior to disposal. If the water is free of contaminants, it will be released outside the bund. Bunds will be graded to a local collection sump equipped with a connection to the appropriate Class 1 or Class 2 Drainage System. • Where practicable, bunding is intended to incorporate fauna protection measures as listed in Section 4.3.3.3.	Construction Operations
4.3.3.3	Pits are intended to be covered with a grating or solid plate where reasonably practicable so as to prevent the ingress of fauna.	Construction Operations
4.3.3.3	Sumps, basins, gutters, trenches, or drains with the potential to trap fauna will be provided with a means of escape, where practicable.	Construction Operations
4.3.3.4	The relevant Class 1 and/ or Class 2 drainage system components associated with chemical storage, chemical loading, diesel loading, diesel transfer, vehicle refuelling, and power generation (temporary) facilities are intended to be constructed as an integral part of the	Construction

Section No.	Actions	Timing
	construction of these facilities. Contaminated run-off from these areas will be collected in sumps or bunds, thus providing a facility for removal by vacuum truck.	
4.3.3.4	Hydrocarbon-contaminated water will be treated and disposed of in line with the requirements of the Solid and Liquid Waste Management Plan.	Construction
4.3.3.4	The drainage from the concrete batching plant and truck washout areas will be reused where safe and practicable. If re-use is not practicable, washout will be collected, treated, and disposed of as per the Solid and Liquid Waste Management Plan.	Construction
4.3.3.4	Additional measures to minimise sediment carry over as a result of civil works will include: • use of erosion barriers, flow diversion devices and sedimentation sumps. Where the installation of sediment sumps is not feasible, sediment flowing off the construction site will be controlled using an alternative method, e.g. silt fencing, geo-textile fabric. • Installation of contour banks to intercept and disperse run-off on steep disturbed slopes, where practicable. • planning and management of clearing earthworks to minimise land clearing requirements and limit the area of exposed topsoil to the minimum required for safe execution of construction activities.	Construction
4.3.4	A closed drain system for the Gas Treatment Plant will be provided to ensure that hydrocarbon liquids drained from vessels, (e.g. during maintenance activities) are collected in a safe and environmentally responsible manner so as to reduce fugitive emissions of volatile hydrocarbons to the atmosphere and avoid flammable hazards. It is intended that hydrocarbon liquids collected in the closed drain system will be recovered to process, or to the condensate storage system for sale with the condensate product. Where hydrocarbon liquids cannot practicably be recovered to process or to the condensate storage system, they will be managed in line with the Solid and Liquid Waste Management Plan.	Construction Operations
4.4	Management of potential impacts of leaks and spills will, where reasonably practicable, include these additional measures: • Wherever practicable, non-hazardous (or least hazardous) materials will be selected for use on site. • Hazardous material storage areas will be designed and engineered in accordance with applicable industry standards to safely handle the volumes and operating conditions required for each substance. • Tanks and machinery will be equipped with appropriate spill and leak protection devices in accordance with applicable design standards and specifications. • Legal requirements pertaining to hazardous materials and substances will be adhered to for packaging, segregating, storing, transporting, transferring and handling. • An inventory of hazardous materials stored at work sites will be maintained on site. • Major maintenance of vehicles and equipment will be conducted at designated maintenance areas. • Bulk transfer lines will be fitted with dry break couplings. These will be fit-for-purpose, not outside design life limits, and regularly checked for damage to prevent leaks. • Personnel will be trained in their roles, functions and responsibilities, including emergency response, prior to refuelling	Construction Operations

Section No.	Actions	Timing
	or fuel transfer. • Relevant personnel will be trained in spill response. • Sufficient and appropriate equipment, materials, and resources will be available, and maintained, to respond to a spill incident. • Upon detection of a spill or leak, the person shall report the incident in accordance with the Gorgon Gas Development Incident Reporting Procedures. • Spills shall be contained and cleaned up immediately and product Material Safety Data Sheets (MSDSs) consulted as applicable to guide clean-up actions.	
4.10	The application of seawater on the Gas Treatment Plant site will be managed by: Establishing a 50 m buffer zone, within the perimeter of the Gas Treatment Plant boundary, to reduce the potential of seawater over-spray or run-off to surrounding vegetation and by only using freshwater or treated grey in the buffer zone Where available and practicable to do so, prioritise using freshwater and treated grey water in preference to seawater Seawater volumes reduced to lowest practicable and technical effective levels and not to exceed 4500 KL/day Designated seawater and freshwater trucks, with seawater trucks to only be used on the Gas Treatment Plant Footprint Additional construction drainage control measures, if required, will be employed to prevent direct surface run-off of seawater beyond the Gas Treatment Plant boundary. Consideration of other potential practicable control measures in detailed execution plans e.g. varying the sequence of locations of application, effective distribution utilising specified vehicles which remain in the Gas Treatment Plant site boundary, volume use monitoring Removal of topsoil prior to applying seawater for construction activities.	Construction
7.1.1	Any document that is required to be implemented under this Plan will be made available to the relevant DPaW/DotE auditor.	All Phases
7.1.2	The findings of external regulatory audits will be recorded and actions and/or recommendations will be addressed and tracked.	All Phases
Table 7.1	Threatened or listed fauna cared for, injured, or killed within the Terrestrial Disturbance Footprint will be reported to the DPaW in the Annual Performance Report.	All Phases
Table 7.1	Report significant impacts detected by the monitoring program for matters of National Environmental Significance to DotE within 48 hours of detection.	All Phases
Table 7.1	Report harm or mortality to EPBC Act Listed terrestrial fauna attributable to the Gorgon Gas Development to DotE in monthly reporting (with report submitted not later than 14 days after the end of the reporting period).	All Phases
7.2.4.2	For each occurrence where an injured or dead animal is found, Chevron Australia will undertake an enquiry to diagnose the cause of the injury or death. The following information will be sought, where known:	All Phases

Section No.	Actions	Timing
	• cause of incident • contributing factor(s) • location of incident.	
7.2.4.2	Chevron Australia will implement corrective actions in response to fauna casualties as required, and in consultation with the DPaW where appropriate.	All Phases
7.2.4.2	Observations by Barrow Island personnel of environmental occurrences (e.g. mass aggregations of fauna) that are deemed significant by suitably qualified personnel will be considered to determine if a management response is required.	All Phases

Appendix 2 Identification and Risk Assessment of Terrestrial Matters of National Environmental Significance (NES)

Appendix 3 Chevron Integrated Risk Prioritization Matrix

Chevron Integrated Risk Prioritization Matrix

For the Assessment of HES & Asset Risks from Event or Activity

Likelihood Descriptions & Index (with confirmed safeguards)

Likelihood Descriptions	Likelihood Indices		Legend					
			Legend applies to identified HES risks (see guidance documents for additional explanations)					
			1, 2 , 3, 4 - Short-term, interim risk reduction required. Long term risk reduction plan must be developed and implemented.					
			5 - Additional long term risk reduction required. If no further action can be reasonably taken, SBU management approval must be sought to continue the activity.					
			6 - Risk is tolerable if reasonable safeguards / management systems are confirmed to be in place and consistent with relevant requirements of the Risk Mitigation Closure Guidelines.					
			7, 8, 9, 10 - Manage risk. No further risk reduction required. Risk reduction at management / team discretion.					
Consequence can reasonably be expected to occur in life of facility	1	Likely	6	5	4	3	2	1
Conditions may allow the consequence to occur at the facility during its lifetime, or the event has occurred within the Business Unit	2	Occasional	7	6	5	4	3	2
Exceptional conditions may allow consequences to occur within the facility lifetime, or has occurred within the OPCO	3	Seldom	8	7	6	5	4	3
Reasonable to expect that the consequence will not occur at this facility. Has occurred several times in industry, but not in OPCO	4	Unlikely	9	8	7	6	5	4
Has occurred once or twice within industry	5	Remote	10	9	8	7	6	5
Rare or unheard of	6	Rare	10	10	9	8	7	6

Decreasing Likelihood

Consequence Descriptions & Index (without safeguards)

Decreasing Consequence/Impact

Consequence Descriptions	Consequence Indices	6 Incidental	5 Minor	4 Moderate	3 Major	2 Severe	1 Catastrophic
Safety		**Workforce:** Minor injury such as a first-aid. *AND* **Public**: No impact	**Workforce:** One or more injuries, not severe. *OR* **Public**: One or more minor injuries such as a first-aid.	**Workforce**: One or more severe injuries including permanently disabling injuries. *OR* **Public**: One or more injuries, not severe.	**Workforce:** (1-4) Fatalities *OR* **Public**: One or more severe injuries including permanently disabling injuries.	**Workforce**: Multiple fatalities (5-50) *OR* **Public**: multiple fatalities (1-10)	**Workforce**: Multiple fatalities (>50) *OR* **Public**: multiple fatalities (>10)
Health (Adverse effects resulting from chronic chemical or physical exposures or exposure to biological agents)		**Workforce:** Minor illness or effect with limited or no impacts on ability to function and treatment is very limited or not necessary *AND* **Public:** No impact	**Workforce**: Mild to moderate illness or effect with some treatment and/or functional impairment but is medically managable *OR* **Public**: Illness or adverse effect with limited or no impacts on ability to function and medical treatment is limited or not necessary.	**Workforce**: Serious illness or severe adverse health effect requiring a high level of medical treatment or management *OR* **Public**: Illness or adverse effects with mild to moderate functional impairment requring medical treatment.	**Workforce** (1-4): Serious illness or chronic exposure resulting in fatality or significant life shortening effects OR **Public**: Serious illness or severe adverse health effect requiring a high level of medical treatment or management.	**Workforce** (5-50): Serious illness or chronic exposure resulting in fatality or significant life shortening effects *OR* **Public** (1-10): Serious illness or chronic exposure resulting in fatality or significant life shortening effects.	**Workforce** (>50): Serious illness or chronic exposure resulting in fatality or significant life shortening effects *OR* **Public** *(>10)*: Serious illness or chronic exposure resulting in fatality or significant life shortening effects.
Environment		Impacts such as localized or short term effects on habitat, species or environmental media.	Impacts such as localized, long term degradation of sensitive habitat or widespread, short-term impacts to habitat, species or environmental media	Impacts such as localized but irreversible habitat loss or widespread, long-term effects on habitat, species or environmental media	Impacts such as significant, widespread and persistant changes in habitat, species or environmental media (e.g. widespread habitat degradation) .	Impacts such as persistant reduction in ecosystem function on a landscape scale or significant disruption of a sensitive species.	Loss of a significant portion of a valued species or loss of effective ecosystem function on a landscape scale.

The above legend applies only to HES risks, where risk levels 1-6 are actionable and mandatory.
For risks that may result in facility damage, business interruption, loss of product, the "Assets" category below should be used.
Asset risk reduction is at the discretion of management. Under no circumstances may a direct or indirect translation of Asset loss to HES consequences, or between any discrete categories of HES consequences be inferred.

Consequence Descriptions & Index (without safeguards)

Consequence Descriptions	Consequence Indices	6 Incidental	5 Minor	4 Moderate	3 Major	2 Severe	1 Catastrophic
Assets (Facility Damage, Business Interruption, Loss of Product)		Minimal damage. Negligible down time or asset loss. Costs < $100,000.	Some asset loss, damage and/or downtime. Costs $100,000 to $1 Million.	Serious asset loss, damage to facility and/or downtime. Costs of $1-10Million.	Major asset loss, damage to facility and/or downtime. Cost >$10 Million but <$100 Million.	Severe asset loss or damage to facility. Significant downtime, with appreciable economic impact. Cost >$100MM but <$1billion.	Total destruction or damage. Potential for permanent loss of production. Costs >$1billion

This matrix is endorsed for use across the Company.
It is not a substitute for, and does not override any relevant legal obligations.
Under no circumstances should any part of this matrix be changed or modified, adapted or customized.
This matrix identifies health, safety, environmental and asset risks and is to be used only by qualified and competent personnel.
Where applicable it is to be used within the Riskman2 structure and governance of an OE Risk Management Process. If applied outside of these Processes, it is also mandatory to manage identified intolerable risks and comply with the Risk Mitigation Closure Guidelines.