



Wheatstone Conservation Significant Marine Fauna Interaction Management Plan

Document ID:	WS0-0000-HES-PLN-CVX-000-00037-000	Revision ID:	7
Revision Date:	11 November 2016		
Information Sensitivity:	Public	Total No. Pages	77

Contents

Terms, definitions and Abbreviations.....	V
1.0 Introduction.....	1
1.1 Objectives of this Plan.....	1
1.2 Approvals.....	1
1.3 Scope.....	7
1.4 Proponent and Operator.....	7
1.5 Hierarchy of Documentation.....	7
2.0 Existing Environment.....	10
3.0 Risk Assessment.....	13
3.1 Key Receptors.....	13
3.2 Proposal-related Stressors.....	14
3.2.1 Potential Stressors to CSMF associated with the Project addressed in other statutory plans.....	15
3.3 Risk Assessment Methodology.....	16
3.4 Outcomes.....	16
4.0 Environmental Performance Standards.....	21
5.0 Management Measures.....	22
5.1 Physical Interaction.....	23
5.2 Solid Waste and Discharges to Sea.....	25
5.3 Noise and Vibration.....	26
5.4 Artificial Light.....	31
6.0 Environmental Monitoring Program.....	32
6.1 Marine turtle monitoring program.....	32
6.1.1 Parameters.....	32
6.1.2 Monitoring Design and Detecting Change.....	33
6.1.3 Management Triggers.....	36
7.0 Reporting.....	38
7.1 Annual Compliance Reporting.....	38
7.2 Non-compliance Reporting.....	38
7.3 Environmental Performance Standard Reporting.....	38
7.4 Incident Reporting.....	38
7.5 Data reporting.....	38
8.0 Review, Approval and Revision of this Plan.....	39
9.0 Stakeholder Consultation and Public Availability.....	40
10.0 References.....	41

Tables

Table 1-1: Condition Requirements addressed in this Plan.....	2
Table 1-2: Project Facilities.....	7
Table 2-1: Conservation Significant Marine Fauna	11
Table 3-1: Potential Key Receptor sensitivities to Project Activities	13
Table 3-2: Potential stressors to CSMF associated with the Project relevant to the Plan	14
Table 3-3: Potential stressors to CSMF habitat associated with the Project and relevant statutory plans	15
Table 3-4: Residual Risk Categories	16
Table 3-5: Summary of Risk Assessment for Construction Activities for the Project	18
Table 3-6: Summary of Risk Assessment for Dredging, Marine Pile Driving and VSP Activities for the Project	18
Table 3-7: Summary of Risk Assessment for Operations Activities for the Project	19
Table 4-1: Environmental Performance Standards.....	21
Table 5-1: Management Measures for Physical Presence	23
Table 5-2: Management Measures for Physical Interaction (Project Vessels)	23
Table 5-3: Management Measures for Physical Interaction (Marine Pile-driving and Dredging).....	24
Table 5-4: Management Measures for Physical Interaction (Dredging).....	24
Table 5-5: Management Measures for Physical Interaction (Recreational Vessels)	25
Table 5-6: Management Measures for Solid Waste and Discharges to Sea.....	25
Table 5-7: Management Measures for Noise and Vibration (Project Vessels).....	26
Table 5-8: Management Measures for Noise and Vibration (Marine Pile-driving and VSP Operations).....	26
Table 5-9: Management Measures for Noise and Vibration (Marine Pile-driving).....	26
Table 5-10: Management Measures for Noise and Vibration (VSP Operations)	28
Table 5-11: Management Measures for Noise and Vibration (Re-strike Testing)	29
Table 5-12: Management Measures for Artificial Lights (Project Vessels)	31
Table 5-13: Management Measures for Artificial Lights (Project Facilities).....	31
Table 6-1: Monitoring Program for Flatback Turtles in the Ashburton Area	34
Table 7-1: CSMF Species Incident Reporting Requirements	38
Table 10-1: References	41

Figures

Figure 1-1: Location of Project	9
Figure 6-1: Ashburton North survey area	35
Figure 6-2: Management Triggers and Response Actions.....	37

Appendices

Appendix A Conservation Significant Marine Fauna: Baseline Summary	44
Appendix B Chevron Integrated Risk Prioritisation Matrix	48
Appendix C Construction Vessel Speed Management	49
Appendix D Vessel Interaction Management Actions	50
Appendix E Dredging Specific Vessel Interaction Management Actions.....	53
Appendix F Vessel Lighting Management.....	55
Appendix G Compliance Reporting Table.....	57

Appendices Tables and Figures

Appendix Figure C-1: Construction Vessel Speed Management.....	49
Appendix Table D-1: CSMF Interaction Guidelines	50
Appendix Figure D-2: Approach Distances Whales, Dugong and Whale Sharks	51
Appendix Figure D-3: Approach Distances for Dolphins and Turtles.....	52
Appendix Figure E-1: Whale, Dolphin and Dugong Dredge Interaction Procedures.....	54
Appendix Figure F-1: Project Vessel Lighting Management	56
Appendix Table G-1: Compliance Reporting Table	57

Terms, 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 4 of the Western Australian Project Ministerial Statement 873.
- Commonwealth Project Ministerial Approvals (EPBC Reference: 2008/4469).

Acronym/Abbreviation	Definition
(The) Plan	Conservation Significant Marine Fauna Interaction Management Plan
ABU	Australasian Business Unit
Adult turtle track	The record of a nest, body pit or u-turn determined by use of track morphological identification methods (Schroeder & Murphy 1999 and Waayers 2010)
Abundance of adult turtle tracks	A relative annual index of marine turtle nester abundance on a nesting beach based on daily adult turtle track count data
Accommodation vessel	An accommodation vessel is defined as a vessel that is engaged for the Project with a primary purpose of providing accommodation for workers
ALARP	As Low As Reasonably Practicable
ANSIA	Ashburton North Strategic Industrial Area
At risk CSMF	CSMF that are at risk of interaction with Project activity
Beach topography	A qualitative description of the cross-section of beach from the nearshore area (within 100 m) to behind the dune
BHD	Backhoe dredge (or grab dredge)
BPPH	Benthic Primary Producer Habitat
CAR	Compliance Assessment Report
CEO	Chief Executive Office of the Office of the Environmental Protection Authority
Chevron Australia	Chevron Australia Pty Ltd
Coastal infrastructure	Coastal infrastructure for the purpose of this Plan refers to permanent infrastructure installed for the Operations of the Port and LNG Plant
Commercial vessel	For the purpose of this plan, a 'commercial vessel' is defined as a vessel used, or intended to be used, for the carrying of bulk cargo or goods. Commercial vessels include supply vessels, bulk carriers, container vessels, oil and LNG tankers, livestock carriers and general cargo ships. All other vessels used on the Wheatstone Project are otherwise classified as Project vessels (non-commercial vessels).
Commonwealth Marine Area	Commonwealth Marine Area means the area in Section 24 of the EPBC Act
Construction	Means construction and commissioning of a Facility and includes any excavation and/or dredging but excludes temporary, minor, preliminary and investigatory works, geotechnical, geophysical, biological and cultural heritage surveys, staging works, baseline surveys, monitoring, technology trials, and works consented to by OEPA.
CPMMP	Coastal Processes Monitoring and Management Plan
CSD	Cutter suction dredge
CSMF	Conservation Significant Marine Fauna – specifically marine mammals, marine turtles, whale sharks and sawfish
CSMFIMP	Conservation Significant Marine Fauna Interaction Management Plan

Acronym/Abbreviation	Definition
Cth	Commonwealth
Daylight hours	0600hrs to 1800hrs
dB	Decibel
DDSPEMMP	Dredging and Dredge Spoil Placement Environmental Monitoring and Management Plan
DEC	Former Department of Environment and Conservation (WA) (as of July 2013 separated into Department of Parks & Wildlife and Department of Environment Regulation)
DER	Department of Environment Regulation (WA) - formerly Department of Environment and Conservation (WA)
DEWHA	Department for the Environment, Water, Heritage and the Arts (Cth) – <i>currently</i> Department of the Environment
Distribution of adult turtle tracks	A relative annual index of marine turtle nesting distribution on a nesting beach based on daily track count data
Domgas	Domestic gas
DOTE	Department of the Environment - formerly Department of Sustainability, Environment, Water, Population and Communities (Cth)
DPaW	Department of Wildlife and Parks (WA) - formerly Department of Environment and Conservation (WA)
Draft EIS/ERMP	The Environmental Impact Statement/Environmental Review and Management Programme
DSPS	Dredge Spoil Placement Site
EAG5	Environment Protection Authority (WA) Environmental Assessment Guidelines No. 5: Environmental Assessment Guideline for Protecting Marine Turtles from Light Impacts (November 2010)
EMP	Environment Management Plan
eNGO	Environmental Non-Government Organisation
Environmental Performance Standard	Environmental performance standards have been developed specifically for assessing performance, not compliance. Failure to meet the environmental performance standards does not represent a breach of this Plan; rather, it indicates that a performance objective may not have been met and there may be a need for management action or review of the environmental performance objectives and standards.
Environmental representative	An environmental representative is defined for the purpose of this Plan as personnel with sufficient knowledge and/or experience to identify conservation significant marine fauna.
EP Act (WA)	<i>Environmental Protection Act 1986</i>
EPA	Environment Protection Authority (WA)
EPBC 2008/4469	The Commonwealth Primary Environmental Approval and conditional requirements for the Project. Commonwealth Government of Australia, Minister for Sustainability, Environment, Water, Populations and Communities, Hon. Tony Burke, 22 September 2011, with variations to EPBC 2008/4469 made pursuant to section 143 of the EPBC Act, as further amended from time to time.
EPBC Act (Cth)	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPS	Environmental Performance Standard
Final EIS/RTS	Final Environmental Impact Statement/Response to Submissions on the

Acronym/Abbreviation	Definition
	Draft EIS/ERMP
GTP	Gas Treatment Plant
ha	hectare(s)
Hatching success	Hatching success is the proportion of hatchlings per clutch that successfully hatched
HES	Health, Environment and Safety
International lighting standard	Lighting standards set out in the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)
Key receptor species	Humpback whales, coastal dolphins, dugongs, marine turtles, sawfish and whale sharks
km	kilometre(s)
LAT	Lowest astronomical tide
LNG	Liquefied Natural Gas
Low visibility	Periods of low visibility are defined as periods when the observation zone cannot be clearly viewed out to the extent of the zone (including night time).
m	metre(s)
mAHD	Metres above Australian Height Datum (approximately the height above mean sea level)
MAMTCPMP	Mangrove, Algal Mat and Tidal Creek Protection Management Plan
Management Triggers	Are quantitative, or if this is demonstrated to be not practicable, qualitative matters above or below whichever relevant additional management measures are to be considered
Marine mammals	Whales, dugongs and coastal dolphins
Marine pile driving	Marine pile driving for the purpose of this plan is defined as mechanically driving infrastructure into the ground on the seaward side of the highest astronomical tide (HAT) mark
MFO	Marine Fauna Observer A suitably trained and dedicated person engaged to be on duty on vessels actively engaged in pile-driving and/or dredging during daylight hours when pile-driving and/or dredging operation are conducted
MOF	Materials Offloading Facility
MS 873	Ministerial Statement No. 873: The State (WA) Primary Environmental Approval, and conditions for the Project. Government of Western Australia, Minister for the Environment; Water, Hon. Bill Marmion MLA, 30 August 2011 as amended by MS 903, MS 922, MS 931 and Attachments 1 to 4 and as further amended from time to time.
MTPA	Million tonnes per annum
MU	Management Unit (Marine Bioregional)
Natural injury or death of CSMF	A natural injury or death of CSMF is defined as an injury or death that is derived from nature and not caused by humankind
Nearshore	Marine habitat from the 20 m contour to the shoreline
NES	National Environmental Significance
Nesting success	Nesting success is determined by use of track morphological identification techniques to establish the relative abundance and distribution of body pits, u-turns and nests.

Acronym/Abbreviation	Definition
Non-commercial vessel	Non-commercial vessels are defined for this Plan as a broad set of varied craft including, but not limited to, the following: barges and dredges; bunkering vessels; cable ships; heavy lift vessels; crane ships lighters (including oil recovery vessels); research vessels; trailered vessels; charter boats; pilot boats; ferries; tugs and line handling boats; water taxis
OE	Operational Excellence
OEPA	Office of the Environmental Protection Authority (WA)
Offset and spread angles	Nest fan offset angle: the degree of deflection of marine turtle hatchling tracks from the most direct line to the ocean, often referred to as hatchling misorientation. Nest fan spread angle: the range of dispersion of marine turtle hatchling tracks from the emergence point, often referred to as hatchling disorientation.
Offshore	Marine habitat beyond the 20 m contour from the shoreline
POFWWDP	Permanent Onshore Facilities Waste Water Discharge Plan
Operations	In respect of a particular Facility, commences when Construction and commissioning end and steady state Operations start
PIN	Pilbara Inshore bioregion
PIO	Pilbara Offshore bioregion
PLF	Product Loading Facility
Practicable	Means reasonably practicable having regard to, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge (<i>taken from the EP Act</i>)
Project	Nearshore and offshore marine facilities, trunkline, and Onshore Facility as per schedule 1
Project Attributable	The determination of whether impact to CSMF is Project attributable (or natural) will be based on multiple lines of evidence including, but not limited to: location and time of sighting of impacted CSMF, evident physical impact to CSMF, nearby activities (both Project activities and other human activities), time and location of recorded sightings of other CSMF (e.g. vessel logs)
Project stressor	Project activities that have been identified to have the potential to cause negative impacts to CSMF
Project vessels	Project vessels refers to non-commercial vessels for the purpose of this Plan
Proponent	Chevron Australia Pty Ltd (Chevron Australia)
Recreational vessels	A vessel operated by a Chevron employee, contractor or subcontractor engaged to work for the Construction or Operation of the Project outside their working hours
SD	Standard Deviation
SIC	Shared Infrastructure Corridor
SME	Subject Matter Experts
Suitably trained and dedicated person	The person has demonstrated knowledge (detailed in MS 873 Condition 10-1) in CSMF observation, distance estimation and reporting and must not have any other duties while engaging in visual observations for CSMF
TIEMMP	Trunkline Installation Environmental Monitoring and Management Plan
Trained crew member	A crew member trained in CSMF observations and mitigation measures,

Acronym/Abbreviation	Definition
	including the requirements of the <i>Wildlife Conservation (Close Season for Marine Mammals) Notice 1998</i> , as amended from time to time. The trained crew member will be on duty on Project vessels actively engaged in Construction and may have other vessel duties
TSHD	Trailing suction hopper dredge
TTS	Temporary Threshold Shift
Turtle nesting season	Turtle nesting season refers to both the period of nesting and the period when hatchlings emerge from nests: defined for the Project as the months of October to April (inclusive) each year
VSP	Vertical Seismic Profiling
WA	Western Australia
WEPC	Wheatstone Environment Protection Code of Conduct
Work shift	The time period worked by the set of crew members within a 24 hour period

1.0 Introduction

Chevron Australia Pty Ltd (Chevron Australia) will operate a multi-train Liquefied Natural Gas (LNG) and domestic gas (Domgas) plant near Onslow on the Pilbara Coast, Western Australia. The Wheatstone Development (the Project) processes gas from various offshore fields in the West Carnarvon Basin. Ashburton North Strategic Industrial Area (ANSIA) is the approved site for the LNG and Domgas plants.

The initial Project produces gas from Production Licences WA-46-L, WA-47-L and WA-48-L, 145 km offshore from the mainland, approximately 100 km north of Barrow Island and 225 km north of Onslow. Figure 1-1 shows the location of the Project.

The ANSIA site is approximately 12 km south-west of Onslow along the Pilbara coast within the Shire of Ashburton. The initial Project consists of two LNG processing trains, each with a capacity of approximately 5 million tonnes per annum (MTPA). Environmental approval was granted for a 25 MTPA plant to allow for the expected further expansions. The Domgas plant is a separate but co-located facility and forms part of the Project. The Domgas plant ties-in to the existing Dampier-to-Bunbury Natural Gas Pipeline infrastructure via third party DBP Development Group Pty Ltd Domgas pipeline.

1.1 Objectives of this Plan

The objective of the Conservation Significant Marine Fauna Interaction Management Plan (the Plan) is:

- To ensure that Chevron Australia constructs and operates the nearshore and offshore marine facilities, trunkline and Onshore Facility so as to:
 - detectand
 - avoid, or where this is not practicable, mitigate, impacts upon Conservation Significant Marine Fauna (CSMF), from Construction and Operations of nearshore and offshore marine facilities, trunkline and onshore facilities, including impacts from vessels

For the purposes of this plan, and as noted in Ministerial Statement No. 873 (MS 873), CSMF specifically refers to:

- Marine mammals (i.e. whales, dugongs and coastal dolphins)
- Marine turtles
- Whale sharks
- Sawfish.

1.2 Approvals

The Project was approved by the WA Minister for Environment; Water on 30 August 2011 by way of MS 873 and as amended by Ministerial Statement No.903 (MS 903), Ministerial Statement No.922 (MS 922), Ministerial Statement No.931 (MS 931) and Attachments 1 to 4.

The WA Minister for Environment by way of letter dated 30/01/2013 approved revised Environmental Protection Outcomes under Condition 8-7 in respect for trunkline installation.

The Commonwealth Minister for Sustainability, Environment, Water, Population and Communities approved the Project on 22 September 2011 (EPBC 2008/4469) with variations to EPBC 2008/4469 made pursuant to section 143 of the *Environment*

Protection and Biodiversity Conservation Act 1999 (EPBC Act). Other amendments may be made from time to time and if so will be reflected in the next revision of this Plan.

State and Commonwealth condition requirements of this plan and the sections that fulfil them are detailed in Table 1-1.

Table 1-1: Condition Requirements addressed in this Plan

Approval Decision	Condition No.	Condition Requirement	Section in this Plan
Commonwealth Condition EPBC 2008/4469			
EPBC 2008/4469	26 a	The CSMFIMP must include the following: a. Measures to manage the risk of vessel strike to marine fauna, including as a result of the use of recreational vessels by employees or contractors.	5.1
EPBC 2008/4469	26 b	b. Monitoring, environmental performance standards and management measures for hatchling and adult marine turtles to manage any exceedence of the predicted impacts from both construction and operational lighting.	3.0, 0 and 6.0
EPBC 2008/4469	26 c	c. Measures to be undertaken during marine piling activities to avoid physical impacts, including temporary threshold shift to whales, marine turtles, dugongs and dolphins. These must include: i. Pre-start-up visual observations: Visual observations of whales, marine turtles, dugongs and dolphins must be undertaken to the extent of the marine piling observation zone by a suitably trained crew member for at least 30 minutes before the commencement of piling activities.	5.3
EPBC 2008/4469	26 c	ii. Operating procedures: While marine piling is undertaken, the following procedures must be implemented: 1. Visual observations of a 1500 m radius from the pile hammer must be maintained continuously to identify if there are any whales, dugongs or dolphins present.	5.3
EPBC 2008/4469	26 c	2. Visual observations of a 300 m radius from the pile hammer must be maintained continuously to identify if there are any marine turtles present.	5.3
EPBC 2008/4469	26 c	3. Exclusion zones must be implemented so as to ensure that whales, dolphins and dugongs are not exposed to Sound Exposure Levels greater than or equal to 183 dB re 1 μ Pa ² .s and must be no less than a 1250 m radius for whales, and no less than a 100 m radius for marine turtles.	5.3

EPBC 2008/4469	26 c	4. If whales, marine turtles, dugongs or dolphins are sighted within the relevant exclusion zone, action to cease all piling within the relevant zone, within 2 minutes or as soon as safely possible.	5.3
EPBC 2008/4469	26 c	5. Piling activities must not recommence until whales, marine turtles, dugongs or dolphins are observed to move outside the exclusion zone or 30 minutes have passed since the last sighting.	5.3
EPBC 2008/4469	26 c	6. Soft 'fairy taps' start procedures: Piling activities must be initiated at the soft 'fairy taps' start level and then build up to full operating force. The soft 'fairy taps' start procedures may only commence if no whales, marine turtles dugongs or dolphins have been sighted within the exclusion zone during the pre-start-up visual observations.	5.3
EPBC 2008/4469	26 c	7. No marine pile driving operations shall occur between the hours of sunset and sunrise during the peak southern migration of mother and calf humpback whale pods defined as 10 August to 10 October in any year.	5.3
EPBC 2008/4469	26 c	8. Marine pile driving commenced prior to sunset or prior to a period of low visibility can continue between the hours of sunset and sunrise, unless marine pile driving is suspended for more than 15 minutes.	5.3
EPBC 2008/4469	26 d	d. A commitment to implement the following measures when utilising the Vertical Seismic Profiling (VSP) acoustic source: <ul style="list-style-type: none"> i. Pre-start-up Visual Observations: Visual observations for whales must be undertaken to the extent of the observation zone by a suitably trained crew (see EPBC Act Policy Statement 2.1) member for at least 30 minutes before the commencement of the soft start procedure. The crew member must be suitably trained and/or have proven experience in whale observation, distance estimation and reporting. The soft start procedures outlined in Condition 26 (d)(ii) may only commence if no whales have been sighted within the shutdown zone during the pre-start up visual observations. 	5.3
EPBC 2008/4469	26 d	ii. Soft start procedures: The VSP acoustic source must be initiated at the lowest power setting, with a gradual ramp-up of the acoustic source over a 20 minute period until the full operating power level is reached.	5.3

EPBC 2008/4469	26 d	<p>iii. Operating procedures: While the VSP acoustic source is operating, both during soft start procedures and survey operations, the following procedures must be implemented:</p> <ol style="list-style-type: none"> 1. Visual observation of the observation zone must be maintained continuously to identify if there are any whales present. 	5.3
EPBC 2008/4469	26 d	<ol style="list-style-type: none"> 2. If a whale is sighted within the observation zone the operator of the acoustic source must be placed on standby to power down the acoustic source. 	5.3
EPBC 2008/4469	26 d	<ol style="list-style-type: none"> 3. If a whale is sighted within the shutdown zone the acoustic source must be shut down completely. 	5.3
EPBC 2008/4469	26 d	<p>iv. Low visibility operating procedures: During periods of low visibility (where the observation zone cannot be clearly viewed out to 3 kilometres), including night time, the VSP source may be utilised as described in Conditions 26 (d)(i) and 26 (d)(ii) and 26(d)(iii) provided that during the preceding 24 hour period:</p> <ol style="list-style-type: none"> 1. There have not been three or more whale instigated shut-down situations, and 2. A 2 hour period of continual observations was undertaken in good visibility (to the extent of the observation zone) and no whales were sighted. 	5.3
EPBC 2008/4469	26 e	e. Reporting within one business day to the Minister when injury to, or mortality of, an EPBC Act listed threatened or migratory species occurs.	7.4
State Condition MS 873			
MS 873	10-3	The Proponent shall within six months of completing pile driving operations, lodge cetacean records with the National Cetacean Sighting and Stranding's Database at the Australian Antarctic Division and with DEC and OEPA.	Complete
MS 873	10-3	At least one member of the crew on each vessel undertaking construction activities will be trained in marine fauna observations and mitigation measures, including the requirements of the Wildlife Conservation (Closed Season for Marine Mammals) Notice 1998, as amended or replaced from time to time, and maintain a log of fauna observed during transit and construction activity consisting of: GPS coordinates; species (if known); and behaviour. Logs are to be submitted to the DEC on an annual basis at the same time as submitting the compliance assessment report required by condition 4-6 to the CEO.	5.1 and 7.5

MS 873	10-4	Vessels speeds of vessels while engaged in construction of the nearshore or offshore marine facilities or trunkline shall not exceed those speeds specified in the Conservation Significant Marine Fauna Interaction Management Plan required under Condition 10-11 or a speed designated by the Department of Transport or relevant Port Authority, whichever is lesser.	5.1 and Appendix C
MS 873	10-11	Prior to the commencement of construction and operation of nearshore and offshore marine facilities, trunkline and onshore facilities, unless otherwise approved by the CEO, in consultation with the DEC and Commonwealth DOTE, the Proponent shall prepare a Conservation Significant Marine Fauna Interaction Management Plan in consultation with the DEC and Commonwealth DOTE, which is to be approved of by the CEO.	Complete, as reported in the Compliance Assessment Report (CAR)
MS 873	10-11	The objective of this Conservation Significant Marine Fauna Interaction Management Plan is to ensure that the Proponent constructs and operates the nearshore and offshore marine facilities, trunkline and Onshore Facility so as to: <ul style="list-style-type: none"> i. detect; and ii. avoid, or where this is not practicable, mitigate, impacts upon conservation significant marine fauna, from construction and operation of nearshore and offshore marine facilities, including impacts from vessels. Note: for the purpose of this condition the term 'conservation significant marine fauna' includes marine mammals, marine turtles, whale sharks and sawfish.	1.1
MS 873	10-12A	The Proponent shall provide relevant stakeholders with a draft copy of the Conservation Significant Marine Fauna Interaction Management Plan required under Conditions 10-10 and 10-11, and provide those stakeholders a reasonable opportunity to comment on the plan before it is submitted to the CEO for approval under Condition 10-11.	Complete
MS 873	10-12	The Proponent shall include the following in the Conservation Significant Marine Fauna Interaction Management Plan: <ul style="list-style-type: none"> i. a description of the environmental stressors relating to the construction and operation of nearshore and offshore marine facilities, trunkline and Onshore Facility which are likely to impact on marine fauna. (environmental stressors may include, but are not limited to, noise, vibration, light spill and glow, vessel strike, dredge entrainment, and changes to coastal processes with the potential to impact on important marine fauna habitats) 	3.0

MS 873	10-12	ii. a description of design features and management actions which the Proponent will implement to avoid, or where this is not practicable, mitigate impacts of the environmental stressors relating to the construction and operation of nearshore and offshore marine facilities, trunkline and Onshore Facility on conservation significant marine fauna (for example, darkness strategies that avoid, or where this is not practicable, the impact of lights or light glow from the construction and operations of the Proposal, vessels and offshore accommodation vessel, interfering with female turtles and hatchlings);	5.0
MS 873	10-12	iii. environmental performance standards to determine whether the design features and management actions are achieving the plan objectives referred to in Condition 10-11; and	0
MS 873	10-12	iv. a process (including a monitoring programme) to determine that the environmental performance standards are being achieved.	6.0 and 7.0
MS 873	10-16	The Proponent shall report to: i. the CEO any non-achievement of the environmental performance standards referred to in Condition 10-12(iii) within 21 days of it having determined non-achievement and its recommendations as to how the plan should be amended to ensure standards are achieved; and ii. the DEC any natural or Proposal attributable injury or mortality of conservation significant marine fauna within 24 hours of the observation.	7.0

The sections in this Plan that are noted (Table 1-1) to meet the Conditions of EPBC 2008/4469 shall be read and interpreted as only requiring implementation of EPBC 2008/4469 for managing the impacts of the Project on, or protecting, the EPBC Act matters listed in Table 2-1.

The implementation of matters required only to meet the requirements of MS 873 are not the subject of EPBC 2008/4469. Similarly, the implementation of matters required only to meet the requirements of EPBC 2008/4469 are not the subject of MS 873.

Project characteristics may be amended from time to time, for example under Section 45C of the *Environmental Protection Act 1986* (WA) (EP Act). The key Project characteristics, which are detailed in this Plan, should therefore be read as subject to any project amendments, which are made from time to time. Activities are generally undertaken as part of Construction or Operations.

1.3 Scope

This Plan is applicable to the facilities listed in Table 1-2. This Plan does not apply to:

- The operation of any port facilities under the operational control of the Pilbara Port Authority
- Activities and impacts related to decommissioning stages; these will be addressed in other plans
- Emergency response activities.

Table 1-2: Project Facilities

Project Facilities
Nearshore Marine Facilities:
• Shipping Channel
• Product Loading Facility (PLF)
• Materials Offloading Facility (MOF)
• Dredge Spoil Disposal Site A
• [Wastewater] Discharge Lines
Offshore Marine Facilities:
• Shipping Channel
• Dredge Spoil Disposal Sites, B, C, D & E
• Produced Water Outfall
• Trunkline
• Platform
• Offshore wells and subsea infrastructure
Onshore Facilities:
• LNG Plant
• Domgas Plant
• Accommodation Village

1.4 Proponent and Operator

Chevron Australia is the proponent and the person taking action for the Project on behalf of its current joint venture participants Woodside Petroleum Limited, and PE Wheatstone Pty Ltd a company part owned by:

- JERA;
- Kuwait Foreign Petroleum Exploration Company, and
- Kyushu Electric Power Company.

1.5 Hierarchy of Documentation

This Plan will be implemented for the Project 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 Chevron Australia 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 2004).

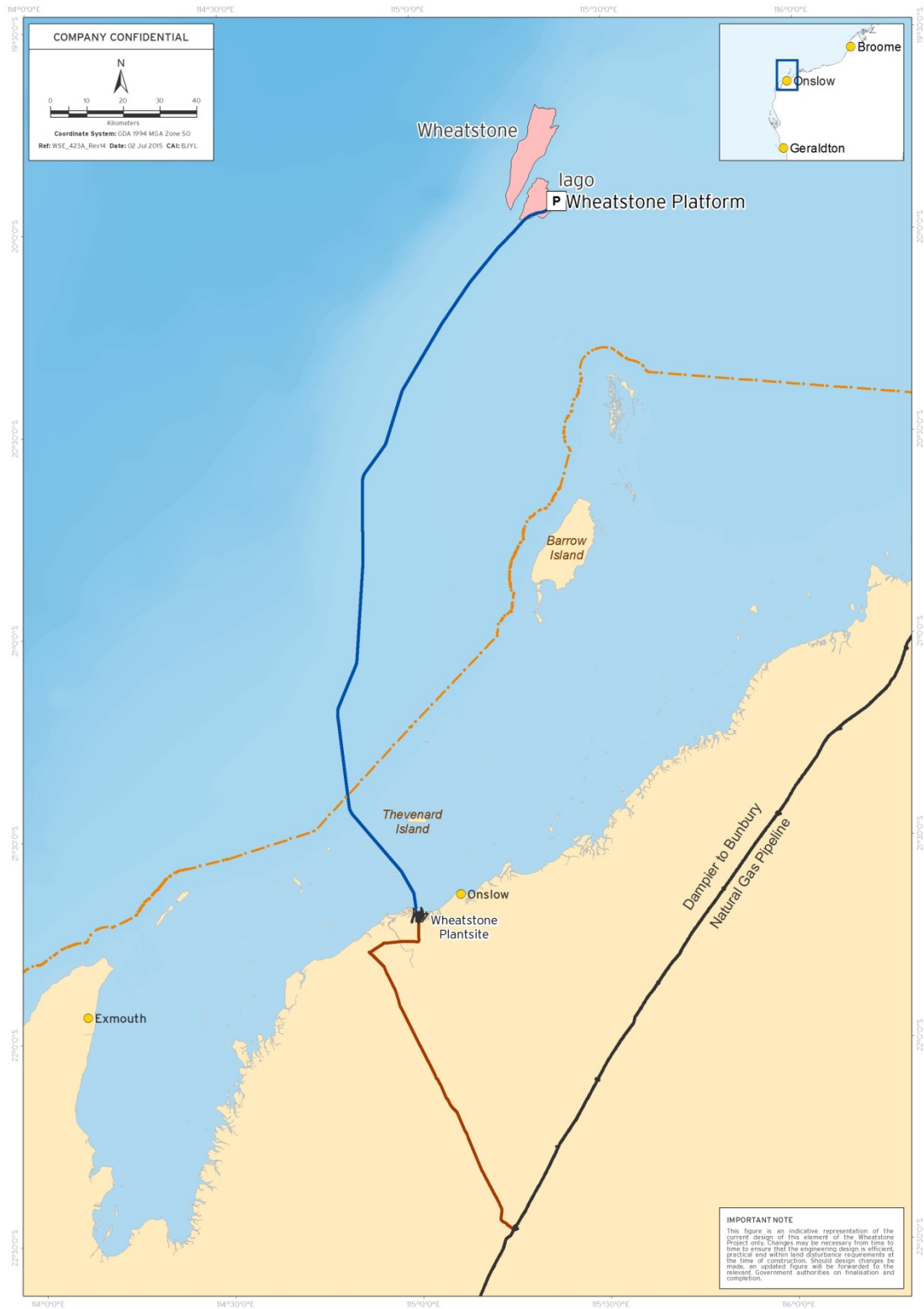


Figure 1-1: Location of Project

2.0 Existing Environment

The Project's upstream components are primarily situated in open ocean on the steep outer edge of the continental slope in water depths of approximately 70 m to 300 m. The undulating terrain of the area contributes to upwelling of more nutrient rich waters from greater depths (Ref. 1). Such areas support zooplankton and demersal fish and squid communities, which in turn attract baleen whales, oceanic dolphins and sperm whales (Ref. 1).

The subsea pipeline route and LNG carriers will traverse the continental shelf, in the Pilbara Offshore Bioregion (PIO). This area is characterised by clear oceanic waters and contains many nearshore islands. Wide intertidal sand flats occur on the leeward sides of most of the islands, often over rock pavements, and mangal communities generally occur in patches. Burrowing invertebrate fauna of the island sand flat habitats are diverse and abundant and many of the Pilbara islands are important nesting sites for turtles and seabirds (Ref. 2). Key species of the Indo-West Pacific oceanic coral reef invertebrate assemblages occur here; notably the baseline coral reef surveys, conducted on a quarterly basis for the Project between November 2010 and March 2012 documented a decline in coral cover over the time period with total hard coral cover of less than 10% at the majority of the sites surveyed in 2012 (Ref. 3).

The nearshore marine infrastructure is situated within 10 km of the coast, in the Pilbara Inshore Bioregion (PIN). A range of coastal habitats are supported here including sandy substrate, seagrasses, rocky coastline, mangroves and algal mats. The nearshore area supporting Project infrastructure is broadly characterised by silt and sand sheets overlying limestone. The onshore area is in the Ashburton River Catchment where the surface water environment is characterised by local rainfall, runoff from upstream catchments and tidal variation. The Ashburton River is a significant natural system that influences the coastal habitat.

All benthic habitats in the area are widespread, and found throughout the nearshore and offshore Pilbara marine environment (PIN and PIO). Benthic Primary Producer Habitat (BPPH) include: reefs and shoals supporting hard corals and macroalgae; patchy and low cover seagrass beds and mangrove stands fringing creeks and lagoons. The dominant habitat, in terms of spatial extent, is unconsolidated sediment without vegetation cover.

Table 2-1 provides an overview of marine fauna of conservation significance with ranges overlapping with the nearshore and offshore Project area addressed in this Plan. Fauna listed and conservation status is correct at time of drafting this Plan but maybe subject to amendment from time to time. A summary of baseline information on CSMF in relation to the location of Project facilities are presented in Appendix A.

Table 2-1: Conservation Significant Marine Fauna

Common Name	Scientific Name	Conservation Status	
		EPBC Act (Cth)	Wildlife Conservation Act 1950 (WA)
Humpback whale	<i>Megaptera novaeangliae</i>	Vulnerable	Special conservation need as conservation dependent fauna ¹
Pygmy Blue whale (Blue whale)	<i>Balaenoptera musculus</i>	Endangered, Listed cetacean, Listed Migratory (listed as <i>Balaenoptera musculus</i>)	Rare or is likely to become extinct as endangered fauna ²
Australian Humpback dolphin (formerly referred to as Indo-Pacific Humpback Dolphin)	<i>Sousa sahalensis</i> (formerly referred to as <i>Sousa chinensis</i>)	Listed cetacean, Listed migratory	-
Australian Snubfin dolphin	<i>Orcaella heinsohni</i>	Listed cetacean, Listed migratory (listed as <i>Orcaella brevirostris</i>)	-
Bottlenose dolphin	<i>Tursiops</i> sp.	Listed cetacean	-
Fraser's dolphin	<i>Lagenodelphis hosei</i>	Listed cetacean	-
Pantropical Spotted dolphin	<i>Stenella attenuata</i>	Listed cetacean	-
Risso's dolphin	<i>Grampus griseus</i>	Listed cetacean	-
Rough-toothed dolphin	<i>Steno bredanensis</i>	Listed cetacean	-
Long-snouted Spinner dolphin	<i>Stenella longirostris</i>	Listed cetacean	-
Striped dolphin	<i>Stenella coeruleoalba</i>	Listed cetacean	-
Dugong	<i>Dugong dugon</i>	Listed marine, Listed migratory	Other specially protected fauna ³
Australian Sea Lion	<i>Neophoca cinerea</i>	Vulnerable, Listed marine	Rare or likely to become extinct ⁴
Flatback turtle	<i>Natator depressus</i>	Vulnerable, Listed marine, Listed migratory	Rare or likely to become extinct ⁵
Green turtle	<i>Chelonia mydas</i>	Vulnerable, Listed marine, Listed migratory	Rare or likely to become extinct ⁵

¹ Fauna specified in Schedule 6, Division 1

² Fauna specified in Schedule 2, Division 1

³ Fauna specified in Schedule 7, Division 1

⁴ Fauna specified in Schedule 3, Division 1

⁵ Fauna specified in Schedule 3, Division 3

Common Name	Scientific Name	Conservation Status	
		EPBC Act (Cth)	Wildlife Conservation Act 1950 (WA)
Hawksbill turtle	<i>Eretmochelys imbricate</i>	Vulnerable, Listed marine, Listed migratory	Rare or likely to become extinct ⁵
Loggerhead turtle	<i>Caretta caretta</i>	Endangered, Listed marine, Listed migratory	Rare of likely to become extinct ⁵
Sawfish	<i>Pristis</i> sp.	Vulnerable, Listed migratory	Rare or likely to become extinct ⁵
Whale shark	<i>Rhincodon typus</i>	Vulnerable, Listed migratory	Other specially protected fauna ⁶

⁶ Fauna specified in Schedule 7, Division 4

3.0 Risk Assessment

3.1 Key Receptors

The Plan focuses on 'key receptors' which have been identified during the risk assessment process. The key receptors and sensitivities of the key receptors are summarised in Table 3-1.

Table 3-1: Potential Key Receptor sensitivities to Project Activities

Key Receptor	Potential Sensitivities
Whales	<p>Physical interaction:</p> <ul style="list-style-type: none"> • Susceptible to vessel strike when vessels are present in large numbers. <p>Noise and vibration:</p> <ul style="list-style-type: none"> • Susceptible to acoustic impacts from piling activities in nearshore areas.
Dolphins	<p>Physical presence:</p> <ul style="list-style-type: none"> • Sensitive to habitat degradation and possible population fragmentation due to coastal developments. <p>Physical interaction:</p> <ul style="list-style-type: none"> • Susceptible to vessel strike when large numbers of fast-moving vessels are present in coastal areas. <p>Noise and vibration:</p> <ul style="list-style-type: none"> • Susceptible to acoustic impacts from piling activities in nearshore areas.
Dugongs	<p>Physical interaction:</p> <ul style="list-style-type: none"> • Susceptible to vessel strike when large numbers of fast-moving vessels are present in coastal areas. <p>Noise and vibration:</p> <ul style="list-style-type: none"> • Susceptible to acoustic impacts from piling activities in nearshore areas.
<p>Marine turtles (Green, Flatback, Hawksbill, Loggerhead)</p>	<p>Physical presence:</p> <ul style="list-style-type: none"> • Potentially susceptible to entrainment in seawater intakes (hatchlings) <p>Physical interaction:</p> <ul style="list-style-type: none"> • Potentially sensitive to the effects of dredging (e.g. entrainment). • Susceptible to vessel strike when large numbers of fast-moving vessels are present in coastal areas. <p>Solid waste discharges to sea:</p> <ul style="list-style-type: none"> • Susceptible to injury or death from entanglement or ingestion of solid waste (marine debris) <p>Noise and vibration:</p> <ul style="list-style-type: none"> • Susceptible to acoustic impacts from piling activities in nearshore areas. <p>Artificial light:</p> <ul style="list-style-type: none"> • Sensitive to artificial lights from flaring and infrastructure during nesting (adult) and hatching (hatchling) activities
<p>Sawfish (green and freshwater species identified)</p>	<p>Physical presence:</p> <ul style="list-style-type: none"> • Susceptible to changes to hydrodynamics of lagoons and tidal creek systems.

3.2 Proposal-related Stressors

Table 3-2 lists the potential stressors relevant to the Plan.

Table 3-2: Potential stressors to CSMF associated with the Project relevant to the Plan

Stressor	Sources
Physical presence of infrastructure	<p>Operations Offshore: permanent presence of MOF, PLF and Platform Offshore: seawater intake lines</p>
Physical interaction	<p>Dredging Offshore: dredging vessels (maintenance or clean-up)</p>
	<p>Construction Offshore: vessels (general Construction) Offshore: vessels (recreational)</p>
	<p>Operations Offshore: vessels (e.g. tugs, barges, pilot vessels, maintenance vessels) Offshore: vessels (recreational)</p>
Solid and liquid waste discharges to sea	<p>Operations Offshore, onshore: uncontained (e.g. windblown) solid waste</p>
Noise and vibration	<p>Dredging Offshore: dredges and associated equipment (maintenance or clean-up)</p>
	<p>Marine Pile Driving Offshore: piling barges (including minor rectification works)</p>
	<p>VSP Offshore: VSP vessels</p>
	<p>Construction Offshore: vessels (general Construction)</p>
Artificial light	<p>Construction Offshore: vessel lighting (e.g. Construction vessels, barges), lighting associated with constructing the MOF and PLF Onshore: lighting (including mobile task lighting) Onshore: flaring during commissioning</p>
	<p>Operations Offshore: vessel lighting (e.g. tugs, barges, pilot vessels, maintenance vessels), LNG carrier and Condensate tanker lighting, lighting associated with operation of the MOF and PLF Onshore: lighting (including mobile task lighting) Onshore: flaring</p>

3.2.1 Potential Stressors to CSMF associated with the Project addressed in other statutory plans

Potential stressors, management and mitigation measures for CSMF habitat, including marine turtle and sawfish habitat, from the Construction and Operations of nearshore Project Facilities are not addressed in this Plan. These issues are addressed in the plans outlined in Table 3-3.

Table 3-3: Potential stressors to CSMF habitat associated with the Project and relevant statutory plans

Stressor	Sources	Relevant Statutory Plan
Physical presence	Construction Nearshore: MOF and PLF Construction	Coastal Processes Monitoring and Management Plan (CPMMP)
	Operations Nearshore: permanent presence of MOF and PLF Offshore: permanent presence of the Platform	CPMMP Start-Up and Operations Environment Plan
Loss of containment	Construction Nearshore: loss of containment (refuelling) Offshore: loss of containment (refuelling) Offshore, onshore: loss of containment (refuelling)	Relevant Environment Plan for activity Mangrove, Algal Mat and Tidal Creek Protection Monitoring Plan (MAMTCPMP)
	Operations Offshore: loss of containment (product loading) Offshore, onshore: loss of containment (refuelling)	Start Up and Operations Environment Plan MAMTCPMP
Solid and liquid waste discharges to sea	Construction Onshore wastewater discharge to the marine environment Offshore: wastewater discharge to the marine environment	Construction Onshore Facilities Waste Water Discharge Plan (COFWWDP) Relevant Environment Plan for activity
	Operations Onshore wastewater discharge to the marine environment Offshore: wastewater discharge to the marine environment	Permanent Onshore Facilities Waste Water Discharge Plan (POFWWDP) Start-Up and Operations Environment Plan.

3.3 Risk Assessment Methodology

The main components of the internal Chevron Australia risk assessment methodology include:

- **Specify causes:** Identify possible causes or conditions resulting in a stressor.
- **Determine potential consequences:** Determine the level of harm that could be associated with the stressor.
- **Identify and evaluate safeguards:** Identify design and operating practices that either contain the stressor or otherwise prevent exposures that can result in harm.
- **Apply the Integrated Risk Prioritization Matrix:** Using the Chevron Integrated Risk Prioritization Matrix (Appendix B), assign consequence magnitude and likelihood indices to obtain the residual risk (Table 3-4), a risk priority ranking:
 - **Consequence magnitude index:** Maximum level of harm that could be associated with the stressor – safeguards *are not* taken into account.
 - **Likelihood index:** Expected frequency of the consequence magnitude occurring – safeguards *are* taken into account.
- **Recommend further study or risk mitigation:** Apply qualitative risk criteria and risk management guiding principles to guide further risk reduction actions, if required.

Table 3-4: Residual Risk Categories

Residual Risk Level	Residual Risk Category	Further Risk Reduction
1, 2, 3, 4	Intolerable	Short-term, interim risk reduction required. Long-term risk reduction plan to be developed and implemented
5	Tolerable (if ALARP and long-term risk reduction)	Risk is tolerable if reasonable safeguards/management systems are confirmed to be in place and additional long-term risk reduction is undertaken.
6	Tolerable (if ALARP)	Risk is tolerable if reasonable safeguards/management systems are confirmed to be in place.
7, 8, 9, 10	Tolerable	No further risk reduction necessary.

Risk-ranking categories were used in the development of this Plan to determine whether the stressors are considered ALARP, or whether further mitigation and safeguards are required. Where it is demonstrated that the cost of implementing further control measures is disproportionate to the benefit gained, the risk is considered to be ALARP.

3.4 Outcomes

A detailed assessment of potential stressors to CSMF related to the Project was undertaken prior to Construction and presented in previous revisions of this Plan as well as the Draft EIS/ERMP (Ref. 10; Ref 13). A review of the assessment was undertaken in a one-day workshop of the 14th of January 2016 for the Operations phase (including any remaining simultaneous Construction related activities) of the Project. A summary of the risk assessment is provided in Table 3-5 (Construction), Table 3-6 (dredging, marine pile driving and VSP operations) and Table 3-7 (Operations).

The January 2016 risk assessment assigned updated residual risk levels after incorporating the additional environmental information gained during the Construction period (Table 3-6) as well as new information relevant to commissioning activities. Overall, the risk assessment showed a reduced risk profile from that identified previously. This change reflects greater certainty regarding Project design features, commissioning and Operations activities, and improved understanding of impacts provided by four years of monitoring the effects of key stressors during Construction. Specific factors influencing the changes to identified risks include:

- Incident records during Construction show impacts to CSMF from dredging and vessel movements (strike) were fewer than initially expected.
- Incident records during Construction show no detected impacts to CSMF from recreational vessel use associated with the Project.
- Monitoring of flatback turtle population parameters indicate that stressors during Construction have not had an adverse impact on flatback turtles at the population level (Ref. 39; Ref. 40).

Two stressors to CSMF were identified for Operations (Table 3-7) as having a Residual Risk Category of Tolerable (if ALARP and long-term risk reduction) (i.e. below a Risk Ranking Level of 7). For all other sources of risk to CSMF during Operations, the risk assessment found that the residual risk category was Tolerable (i.e. the residual risk level was seven or above) (refer to Table 3-7). Safeguards, including design features and management measures and monitoring results were considered when determining the risk ranking.

Table 3-5: Summary of Risk Assessment for Construction Activities for the Project

Stressor	Facility	Potential Environmental Impact without Safeguards	Residual Risk Ranking			Environmental Performance Standard Reference
			Consequence	Likelihood	Residual Risk	
Physical interaction	Vessels (general Construction)	<ul style="list-style-type: none"> Injury to or fatality of CSMF due to interactions with vessels Changes to migratory patterns, foraging, breeding behaviour of CSMF as a result of disturbance 	4	3	6	F2
Physical interaction	Vessels (recreational)	<ul style="list-style-type: none"> Injury to or fatality of CSMF due to interactions with vessels Changes to migratory patterns, foraging, breeding behaviour of CSMF as a result of disturbance 	5	6	10	F3
Artificial light	Onshore infrastructure	<ul style="list-style-type: none"> Attraction of marine turtle hatchlings Interference with marine turtle nesting behaviour Attraction of seabirds creating potential for increased predation of turtle hatchlings 	4	3	6	F6
Artificial light	GTP start-up flaring	<p>Nesting Adult Turtles:</p> <ul style="list-style-type: none"> Behaviour: Potential displacement and/or relocation of nesting events. New recruits may be displaced to other beaches Abundance: Potential decrease in nesting events, reduction in quality of nesting events Population Viability: Potential reduction in overall reproductive output (exhibited either as fewer nests laid or lowered hatch success due to selection of alternate, less suitable nesting sites), altered primary sex-ratios <p>Turtle Hatchlings:</p> <ul style="list-style-type: none"> Behaviour: Potential dis- or misorientation due to artificial light glow (no direct spill onto beach) onto the beach Abundance: Potential for reduced survival rates due to increase in predation from terrestrial predators and lowered fitness (if misoriented) <p>EIS/ERMP</p> <ul style="list-style-type: none"> Modification of CSMF foraging behaviour around nearshore infrastructure due to light spill on the water 	6	2	7	F5

Table 3-6: Summary of Risk Assessment for Dredging, Marine Pile Driving and VSP Activities for the Project

Stressor	Facility	Potential Environmental Impact without Safeguards	Residual Risk Ranking			Environmental Performance Standard Reference
			Consequence	Likelihood	Residual Risk	
Physical interaction	Vessels (clean-up or maintenance dredging)	<ul style="list-style-type: none"> Loss of or disturbance to critical habitat used by CSMF Disturbance of CSMF causing avoidance of area by CSMF 	5	4	8	F2
Noise and Vibration	Pile driving, VSP, dredging (clean-up or maintenance dredging)	<ul style="list-style-type: none"> Altered distribution of CSMF due to avoidance of area during noisy Construction activities Behavioural effects to CSMF 	4	3	6	F5

Table 3-7: Summary of Risk Assessment for Operations Activities for the Project

Stressor	Facility	Potential Environmental Impact without Safeguards	Residual Risk Ranking			Environmental Performance Standard Reference
			Consequence	Likelihood	Residual Risk	
Physical Presence of Infrastructure	PLF and MOF (seawater intake lines)	<ul style="list-style-type: none"> Potential for juvenile turtles and hatchlings to be entrained in seawater intakes resulting in injury or death 	6	5	10	F1
Physical interaction	Vessels (general vessel operations)	<ul style="list-style-type: none"> Injury to, or fatality of, protected CSMF due to interactions with vessels. Changes to migratory patterns, foraging, breeding behaviour of CSMF as a result of disturbance 	6	5	10	F2
Physical interaction	Vessels (recreational)	<ul style="list-style-type: none"> Injury to, or fatality of, protected CSMF due to interactions with vessels. Changes to migratory patterns, foraging, breeding behaviour of CSMF as a result of disturbance 	5	6	10	F3
Solid Waste Discharges to Sea	Vessels (general vessel operations) and Platform	<ul style="list-style-type: none"> Potential injury or death of turtles from entanglement or ingestion of marine debris 	6	5	10	F4
Artificial light	GTP routine lighting	<p>Nesting Adult Turtles:</p> <ul style="list-style-type: none"> Behaviour: Potential displacement and/or relocation of nesting events. New recruits may be displaced to other beaches Abundance: Potential decrease in nesting events, reduction in quality of nesting events Population Viability: Potential reduction in overall reproductive output (exhibited either as fewer nests laid or lowered hatch success due to selection of alternate, less suitable nesting sites), altered primary sex-ratios <p>Turtle Hatchlings:</p> <ul style="list-style-type: none"> Behaviour: Potential dis- or misorientation due to artificial light glow (no direct spill onto beach) onto the beach Abundance: Potential for reduced survival rates due to increase in predation from terrestrial predators and lowered fitness (if misoriented) <p>General CSMF:</p> <ul style="list-style-type: none"> Modification of CSMF foraging behaviour around nearshore infrastructure due to light spill on the water 	5	4	8	F5
Artificial light	GTP major maintenance	<p>Nesting Adult Turtles:</p> <ul style="list-style-type: none"> Behaviour: Potential displacement and/or relocation of nesting events. New recruits may be displaced to other beaches Abundance: Potential decrease in nesting events, reduction in quality of nesting events Population Viability: Potential reduction in overall reproductive output (exhibited either as fewer nests laid or lowered hatch success due to selection of alternate, less suitable nesting sites), altered primary sex-ratios <p>Turtle Hatchlings:</p> <ul style="list-style-type: none"> Behaviour: Potential dis- or misorientation due to artificial light glow (no direct spill onto beach) onto the beach Abundance: Potential for reduced survival rates due to increase in predation from terrestrial predators and lowered fitness (if misoriented) <p>General CSMF:</p> <ul style="list-style-type: none"> Modification of CSMF foraging behaviour around nearshore infrastructure due to light spill on the water 	6	5	10	F5
Artificial light	GTP Operations flaring	<p>Nesting Adult Turtles:</p> <ul style="list-style-type: none"> Behaviour: Potential short term displacement and/or relocation of nesting events. New recruits may be displaced to other beaches <p>Turtle Hatchlings:</p> <ul style="list-style-type: none"> Behaviour: Potential dis- or misorientation due to artificial light glow (no direct spill onto beach) onto the beach Abundance: Potential for reduced survival rates due to increase in predation from terrestrial predators and lowered fitness (if misoriented) 	6	3	8	F5

Artificial light	PLF and MOF routine lighting	<p>Nesting Adult Turtles:</p> <ul style="list-style-type: none"> • Behaviour: Potential displacement and/or relocation of nesting events. New recruits may be displaced to other beaches • Abundance: Potential decrease in nesting events, reduction in quality of nesting events • Population Viability: Potential reduction in overall reproductive output (exhibited either as fewer nests laid or lowered hatch success due to selection of alternate, less suitable nesting sites), altered primary sex-ratios <p>Turtle Hatchlings:</p> <ul style="list-style-type: none"> • Behaviour: Potential dis- or misorientation due to artificial light glow (no direct spill onto beach) onto the beach • Abundance: Potential for reduced survival rates due to increase in predation from terrestrial predators and lowered fitness (if misoriented) <p>EIS/ERMP</p> <ul style="list-style-type: none"> • Modification of CSMF foraging behaviour around nearshore infrastructure due to light spill on the water 	5	2	6	F5
Artificial light	LNG carrier and condensate tanker lighting	<p>Nesting Adult Turtles:</p> <ul style="list-style-type: none"> • Behaviour: Potential displacement and/or relocation of nesting events. New recruits may be displaced to other beaches • Abundance: Potential decrease in nesting events, reduction in quality of nesting events • Population Viability: Potential reduction in overall reproductive output (exhibited either as fewer nests laid or lowered hatch success due to selection of alternate, less suitable nesting sites), altered primary sex-ratios <p>Turtle Hatchlings:</p> <ul style="list-style-type: none"> • Behaviour: Potential dis- or misorientation due to artificial light glow (no direct spill onto beach) onto the beach • Abundance: Potential for reduced survival rates due to increase in predation from terrestrial predators and lowered fitness (if misoriented) <p>General CSMF:</p> <ul style="list-style-type: none"> • Modification of CSMF foraging behaviour around nearshore infrastructure due to light spill on the water 	5	2	6	F5

4.0 Environmental Performance Standards

Table 4-1 contains the environmental performance objectives and standards that have been developed to enable Chevron Australia to assess environmental performance for CSMF.

Table 4-1: Environmental Performance Standards

Objective	Activity/ Stressor	Environmental Performance Standards	Reference
To avoid, or minimise, impacts to CSMF from Project infrastructure during Construction and Operations of the Project.	Physical presence: seawater intakes	No recorded entrainment of CSMF in seawater intakes of nearshore infrastructure.	F1
To avoid, or minimise, impacts to CSMF from movement of vessels engaged in the Construction and Operations of the Project.	Physical interaction: Vessels	No recorded strike or death of CSMF from movement of vessels engaged in the Construction and Operations of the Project.	F2
To avoid, or minimise, impacts to CSMF from Project personnel engaged in recreational activities	Physical interaction: Vessels (recreational)	Personnel engaged in the Construction and Operations of the Project will be required to attend environmental inductions as part of their Project site inductions.	F3
To avoid, or minimise, impacts to CSMF from solid waste and discharges during Construction and Operations of the Project.	Solid waste and discharges to sea	No recorded injury or death of CSMF from solid waste or discharges attributable to the Project during Construction and Operations of the Project.	F4
To avoid, or minimise, impacts to CSMF from noise and vibration from marine Construction and Operations activities.	Noise and vibration	No marine pile driving or VSP will be undertaken when CSMF are within the exclusion (or shut-down) zone.	F5
To avoid, or minimise, impacts to marine turtles from artificial light from Construction and Operations activities.	Artificial light	No recorded Project attributable exceedences of Project predictions (no population level impacts) in relation to artificial light impacts to marine turtles.	F6

5.0 Management Measures

Chevron Australia has committed to a number of design features and management actions to detect and avoid, or where this is not practicable, mitigate, impacts upon CSMF. This section of the Plan presents the environmental design features and management actions that will be implemented for the applicable work scopes during Construction and Operations of the Project. The management actions have been developed for the Project to fulfil the environmental protection outcomes required under MS 873 and EPBC 2008/4469. The management actions are divided into three categories of potential Project stressors (impacts).

The timing of most management actions in this Plan are clearly linked to the commencement and cessation of a specific activity and in a readily definable location. For example, marine pile driving management actions need only occur when piles at the PLF/MOF location(s) are being driven into the seabed by a pile hammer or similar device. In other situations, such as vessel/CSMF interaction management, it is important to define when management action should commence or cease in relation to a vessel mobilising to, or demobilising from, its location of work (e.g. MOF and PLF sites, dredge channel, trunkline and the Wheatstone Platform). The reason for this is that large numbers of Project vessels will be transiting long distances between their ports of origin and the location of work, typically via deep water, an environment usually characterised by low densities of CSMF. Consequently, there is little benefit in having Wheatstone specific CSMF management for the full transit.

For this reason, three spatially discrete areas have been defined to determine when a vessel mobilising to, or demobilising from, work for the Project should commence or cease Wheatstone specific CSMF management action. The areas are:

1. The combined Onslow and Ashburton Port Boundaries
2. Production Licences WA-46-L, WA-47-L, WA-48-L and WA-49-L
3. Pipeline Licence TPL/25 and WA 25-PL including 500 m to each side of the licence area.

Adoption of these boundaries is appropriate because they are legally recognised administrative boundaries, Ports allow for specific regulations pertaining to vessel activity; and these areas will encompass areas of highest predicted vessel activity during the Wheatstone Construction and Operations phases. The above listed boundaries only apply to vessels mobilising to, or demobilising from, their work area as described above. Vessels undertaking activities that require a Marine Fauna Observer (MFO) may enter the Onslow/Ashburton Port Boundary on first arrival to pick up a MFO before commencing Construction activities. Vessels engaged in the Construction and/or Operations of the Project that conduct routine trips between the above listed areas and local ports and destinations (e.g. Exmouth, Dampier and Port Hedland) still need to undertake Wheatstone specific management, where applicable. The management actions in this Plan do not apply to commercial vessels.

5.1 Physical Interaction

Table 5-2 to Table 5-5 detail the key management measures for mitigating the environmental stressors, relevant to potential impacts to CSMF associated with physical interaction, identified in Section 3.2.

Laist et al (Ref. 42) found a significant increase in the risk of vessel collision between marine mega fauna and vessels at speeds above 10 knots. More severe and lethal injuries were found to be caused by vessels travelling at speeds above 14 knots. Based on the findings by Laist et al (Ref. 42) and the reduction in the risk profile of these activities, Chevron considers the proposed Construction vessel speed management (Appendix C) to afford protection of a broad range of sensitive marine fauna from potential impact from vessels, vessel strike, while allowing for the safe and timely execution of remaining Construction activities.

Table 5-1: Management Measures for Physical Presence

EPS Reference	Management Measures	Timing
F1	Seawater intakes for nearshore permanent infrastructure will have a flow velocity of approximately 0.15 m/sec to reduce the potential for marine fauna entrainment.	Construction and Operations

Table 5-2: Management Measures for Physical Interaction (Project Vessels)

EPS Reference	Management Measures	Timing
F2	Vessels engaged in Construction of the Project (excluding any vessels engaged in emergency response situations or exercises) will adhere to speed limits presented in Appendix C or any speed limit designated by the Department of Transport or relevant Port Authority; whichever is lesser (MS 873 Condition 10-4).	When operating Project vessels during Construction
F2	Crew transfer vessels are exempt from speed restrictions when travelling within the crew transfer vessel speed restriction exemption zone (Appendix C)	When operating Project vessels during Construction
F2	At least one member of the vessel crew (on vessels other than those with an MFO on active duty), trained in marine fauna observation and mitigation measures, will be on active duty during daylight hours. The trained crew member may have other vessel duties. 'Other duties' include duties that do not inhibit the trained crew in undertaking the CSMF observation duties.	Daylight hours when operating Project vessels during Construction
F2	Trained crew members on active duty will report observations of at risk CSMF to the vessel master (or their delegate), as soon as it is safe to do so.	Daylight hours when operating Project vessels during Construction
F2	The MFO, or trained crew member (as applicable) will record all observations of CSMF.	Daylight hours when operating Project vessels during Construction
F2	Relevant personnel will be made aware of CSMF interaction management actions (Appendix D).	When operating Project vessels during Construction and Operations

F2	Observations of any injured or dead CSMF reported as detailed in Table 7-1.	When operating Project vessels during Construction and Operations
----	---	---

Table 5-3: Management Measures for Physical Interaction (Marine Pile-driving and Dredging)

EPS Reference	Management Measures	Timing
F2	At least one MFO to be on active duty during daylight hours on vessels actively engaged in dredging ⁷ and pile-driving. The MFO will have no other duties (MS 873 Condition 10-1) and will maintain watch for CSMF during active dredging or pile-driving operations.	Daylight hours during active pile-driving and dredging

Table 5-4: Management Measures for Physical Interaction (Dredging)

EPS Reference	Management Measures	Timing
F2	A trained crew member will maintain watch, during daylight hours, for CSMF while any dredge is on route to and from the dredge area to DSPSs. If sighted, direction/speed will be adjusted to avoid impact (within the safety constraints of the vessel).	Daylight hours when Project vessels engaged for dredging transit between dredging locations and DSPSs
F2	Prior to commencement of dredging and dredge spoil placement, selected crew will receive training in marine fauna observations, including procedures in the event of injury or death.	During active dredging and dredge spoil placement
F2	Whale and dugong observations and response procedures including application of ~300 m observation zone and ~100 m exclusion zone will be implemented during dredging and dredge spoil placement works as outlined in Appendix E. If calves are present the exclusion zone will be extended to ~300 m.	During active dredging and dredge spoil placement
F2	Dolphin observations and response procedures including application of ~150 m observation zone will be implemented during dredging and dredge spoil placement works (Appendix E).	During active dredging and dredge spoil placement
F2	The presence of CSMF in or near exclusion zones established for key dredging activities will be recorded.	During active dredging and dredge spoil placement
F2	All sightings of CSMF that result in any management measures being implemented will be recorded.	During active dredging and dredge spoil placement

⁷ For the purposes of this plan 'actively engaged in dredging' only refers to Cutter Suction Dredges (CSDs) and Trailing Suction Hopper Dredges (TSHDs) and therefore a Backhoe Dredge (BHD) does not require an MFO. This is due to the low risk to CSMF posed by the stationary BHD or grab dredge. Note though that a BHD/ grab dredge will have a trained crew member to monitor and ensure management is implemented as required, including recording observed CSMF.

F2	When operating with less than 5 m under-keel clearance, the dredge will initially move slowly through the area before commencing dredging so that the noise and vibration alerts marine turtles in the vicinity and encourages them to leave. This will only be applied on dredging in new areas and not once the work area has been established.	During active dredging
F2	Dredge pumps will be stopped as soon as practically possible, within safe operating limits, after completion of dredging and where practical the drag head will remain as close as practicable to the seabed until the dredge pump is stopped.	During active dredging
F2	When initiating dredging, suction through drag heads will be initiated just long enough to prime the pumps, prior to drag heads engaging the seabed.	During active dredging
F2	Tickler chains and/or deflector devices on the drag head of the THSD will be used as a management mitigation approach to reduce turtle entrainment, where safety and logistical constraints permit.	During active dredging
F2	Overflow screens will be used on TSHDs to visually assess for turtles and turtle remains associated with entrainment during dredging after each load.	During active dredging

Table 5-5: Management Measures for Physical Interaction (Recreational Vessels)

EPS Reference	Management Measures	Timing
F3	In the event that a Chevron employee, contractor or subcontractor engaged to work for the Construction of the Project chooses to operate a recreational vessel, outside their working hours, the contractor or subcontractor are bound to the Wheatstone Environment Protection Code of Conduct (WEPC) (EPBC 2008/4469 Condition 26a).	During Construction
F3	Environmental awareness covering the risk to CSMF from recreational vessel activities will be provided to relevant members of the Operational workforce.	During Operations

5.2 Solid Waste and Discharges to Sea

Table 5-6 details the key management measures for mitigating the environmental stressors, relevant to potential impacts to CSMF associated with solid waste and discharges to sea, identified in Section 3.2.

Table 5-6: Management Measures for Solid Waste and Discharges to Sea

EPS Reference	Management Measures	Timing
F4	Vessels engaged for the Construction or operation of the Project, including the Platform, will adhere to a waste management plan.	During Construction and Operations

5.3 Noise and Vibration

Table 5-7 to Table 5-11, detail the key management measures for mitigating the environmental stressors, relevant to potential impacts to CSMF associated with noise and vibration, identified in Section 3.2.

Table 5-7: Management Measures for Noise and Vibration (Project Vessels)

EPS Reference	Management Measures	Timing
F5	Project vessels will be maintained in accordance with their maintenance system to avoid increasing noise transference into the water.	During Construction

Table 5-8: Management Measures for Noise and Vibration (Marine Pile-driving and VSP Operations)

EPS Reference	Management Measures	Timing
F5	At least one MFO to be on active duty during daylight hours when actively engaged in marine pile-driving or VSP operation. The MFO will have no other duties (MS 873 Condition 10 1)	During active marine pile-driving and VSP operation
F5	The MFO on active duty to ensure observation and exclusion zones are adhered to, including the requirement to shut down relevant pile driving activity if CSMF are sighted within the exclusion zones	During active marine pile-driving and VSP operation
F5	Observations of any injured or dead CSMF reported as detailed in Table 7-1.	During active marine pile-driving and VSP operation

Table 5-9: Management Measures for Noise and Vibration (Marine Pile-driving)

EPS Reference	Management Measures	Timing
F5	<p>The following definitions are used for management zones for marine pile driving:</p> <p>Observation Zones:</p> <ul style="list-style-type: none"> • A radius around the pile hammer that is no less than 1500 m applies for whales, dugongs and dolphins • A radius around the pile hammer that is no less than 300 m applies for marine turtles <p>Exclusion Zones:</p> <ul style="list-style-type: none"> • A radius around the pile hammer that is no less than 1250 m, applies for whales, dolphins and dugongs • A radius around the pile hammer that is no less than 100 m applies for marine turtles 	During active marine pile-driving

F5	<p>Pre-start-up Visual Observations:</p> <p>During daylight hours the MFO will conduct pre-start-up visual observations for CSMF to the extent of the marine pile driving Observation Zones for at least 30 minutes prior to start-up to identify if there are any whales, dugongs, dolphins or marine turtles present</p>	During active marine pile-driving
F5	<p>The following observation procedures will be implemented by the MFO during pile driving operation:</p> <ul style="list-style-type: none"> • Visual observations of the marine pile driving Observation Zones will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Visual observations of the marine pile driving Exclusion Zone will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Piling will be suspended using the safe shutdown procedure, within two minutes or as soon as safely possible, if any whales, dugongs, dolphins or marine turtles are observed within the applicable marine pile driving Exclusion Zones 	During active marine pile-driving
F5	<p>Soft Start Procedure:</p> <p>Piling operation will be initiated at the soft 'fairy taps' start level (partial strike) and then build up to full operating impact force to encourage any whales, dugongs, dolphins or marine turtles to leave the area as noise intensity increases over a 15 minute period</p> <p>The start-up procedure may only commence if no whales, dugongs, dolphins or marine turtles have been sighted within the marine pile driving Exclusion Zones during pre-start-up visual observations</p> <p>The soft start-up 'fairy taps' procedures will be conducted by slowly increasing the intensity of noise emissions over a period of no less than 15 minutes prior to commencement of full power marine pile driving</p>	During active marine pile-driving
F5	<p>Concurrent Piling Operations:</p> <p>If concurrent pile driving is taking place, ensure each activity applies the Observation and Exclusion Zones independently</p>	During active marine pile-driving

F5	<p>Re-starting a Suspended Marine Pile Driving Operations: If marine pile driving operation have ceased due to any whales, dugongs, dolphins or marine turtles observations within the applicable marine pile driving Exclusion Zone, the marine pile driving operation may only recommence if:</p> <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have been observed outside the applicable marine pile driving Observation Zone <p>Or</p> <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have not been observed within the marine pile driving Exclusion Zone for a period of 30 minutes since the last sighting <p>If marine pile driving operations have been ceased for more than 15 minutes for any reason, the Pre-start-up Visual Observations and Soft Start Procedure will be implemented</p>	During active marine pile-driving
F5	<p>Re-starting a Suspended Marine Pile Driving Operations: When re-starting a pile driving operation that has been suspended for more than 15 minutes, in the event that visual observation was maintained continuously during the period of suspension, the Soft Start may commence if:</p> <ul style="list-style-type: none"> • observed whale, dugong, dolphin or marine turtle was observed to move outside the relevant Observation Zone, or • 30 minutes have passed since the last sighting 	During active marine pile-driving
F5	<p>Piling Operations After Sunset or Periods of Low Visibility: No marine pile driving to occur between the hours of sunset and sunrise during the peak southern migration of mother and calf humpback whale pods defined as 10 August to 10 October in any year</p> <p>If marine pile driving operation commenced prior to sunset or prior to a period of low visibility, outside the peak southern migration defined above, the activity may continue between the hours of sunset and sunrise, unless the marine pile driving is suspended for more than 15 minutes</p>	During active marine pile-driving

Table 5-10: Management Measures for Noise and Vibration (VSP Operations)

EPS Reference	Management Measures	Timing
F5	<p>The MFO on active duty to ensure observation and shut-down zones are adhered to, including the requirement to shut down VSP activity if any whales are sighted within the shut-down zone:</p> <ul style="list-style-type: none"> • Observation zone: the 3 km horizontal radius from the VSP acoustic source • Shut-down zone: the 500 m horizontal radius from the VSP acoustic source 	During active VSP operation

F5	Conduct pre-start-up visual observations out to the extent of the observation zone for a period of at least 30 minutes before commencing the soft start	During operation	active	VSP
F5	A soft-start up procedure may commence if no whales have been sighted within the shutdown zone during the pre-start-up visual observations	During operation	active	VSP
F5	The soft start-up will include initiation of the VSP acoustic source at the lowest setting, with a gradual ramp-up of the acoustic source over a 20 minute period until the full operating power level is reached	During operation	active	VSP
F5	The following procedures will be implemented while the VSP acoustic source is operating: <ul style="list-style-type: none"> • Continuous visual observations of the extent of the observation zone from the VSP acoustic source to identify if any whales are present • If a whale is sighted within the observation zone, the operator of the acoustic source will be placed on stand-by to power down the acoustic source • If a whale is sighted within the shut-down zone the acoustic source will be shut down completely 	During operation	active	VSP
F5	During periods of low visibility, where the observation zone cannot be clearly viewed out to the extent of the observation zone (including night time), the VSP source should be utilised as described above, provided that during the preceding 24 hour period: <ul style="list-style-type: none"> • There have not been three or more whale instigated shut down situations • A two-hour period of continual observations was undertaken in good visibility (to the extent of the observation zone) and no whales were sighted 	During operation	active	VSP
F5	If the prescribed conditions for VSP operation are not satisfied then the VSP will not be utilised	During operation	active	VSP
F5	Observations of any injured or dead CSMF reported as detailed in Table 7-1.	During operation	active	VSP

Table 5-11: Management Measures for Noise and Vibration (Re-strike Testing)

EPS Reference	Management Measures	Timing		
F5	At least one MFO must be on active duty during daylight hours when actively engaged in re-strike tests. The MFO will have no other duties (MS 873 Condition 10-1). Additionally, two trained crew members will assist the MFO on active duty in undertaking pre-start-up visual observations and operating procedures for re-strike testing operation.	During testing	active	re-strike
F5	Mobile in-water observations will be undertaken by utilisation of a vessel, with a trained crew member on-board, to assist in monitoring the Observation Zone for 30 minutes prior to commencement, and during, the re-strike testing operation.	During testing	active	re-strike

F5	The MFO on active duty to ensure observation and exclusion zones are adhered to, including the requirement to shut down relevant re-strike testing operation if CSMF are sighted within the exclusion zones	During testing	active	re-strike
F5	The following definitions are used for management zones for re-strike testing: Observation Zones: A radius around the pile hammer that is no less than 1500 m applies for whales, dugongs and dolphins A radius around the pile hammer that is no less than 300 m applies for marine turtles Exclusion Zones: A radius around the pile hammer that is no less than 1250 m, applies for whales, dolphins and dugongs A radius around the pile hammer that is no less than 100 m applies for marine turtles.	During testing	active	re-strike
F5	Pre-start-up Visual Observations: The MFO will conduct pre-start-up visual observations for CSMF to the extent of the re-strike testing Observation Zones for at least 30 minutes prior to start-up to identify if there are any whales, dugongs, dolphins or marine turtles present	During testing	active	re-strike
F5	Operating Procedures while re-strike testing is undertaken: The following observation procedures will be implemented by the MFO: <ul style="list-style-type: none"> • Visual observations of the relevant Observation Zones will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Visual observations of the relevant Exclusion Zone will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Re-strike testing will be suspended using the safe shutdown procedure, within two minutes or as soon as safely possible, if any whales, dugongs, dolphins or marine turtles are observed within the applicable re-strike testing Exclusion Zones 	During testing	active	re-strike
F5	Re-starting a Suspended Re-strike Testing Operations: If re-strike testing operation have ceased due to any whales, dugongs, dolphins or marine turtles observations within the applicable Exclusion Zone, the re-strike testing operation may only recommence if: <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have been observed outside the applicable Observation Zone or <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have not been observed within the applicable Exclusion Zone for a period of 30 minutes since the last sighting 	During testing	active	re-strike
F5	If re-strike testing operation have been ceased for more than 15 minutes for any reason, the Pre-start-up Visual Observations will be implemented	During testing	active	re-strike

F5	No re-strike testing shall occur between the hours of sunset and sunrise	During active re-strike testing
----	--	---------------------------------

5.4 Artificial Light

Table 5-12 and Table 5-13 detail the key management measures for mitigating the identified environmental stressors, relevant to potential impacts to CSMF associated with artificial light, identified in Section 3.2. The management measures are only applicable during the turtle nesting season (October through to April each year).

Table 5-12: Management Measures for Artificial Lights (Project Vessels)

EPS Reference	Management Measures	Timing
F6	Visiting LNG carriers and condensate tankers will follow international lighting standards and will, under normal operating conditions, only be present for the duration of the loading of the ship.	At night during Construction and Operations
F6	Project vessel light spill will be reduced at night, where reasonably practicable	At night when operating Project vessels during Construction and Operations
F6	Project vessel lighting is not to be continuously 'on'; lighting should be 'off' when not required	At night when operating Project vessels during Construction and Operations
F6	No lit Project vessel to be moored within the 1.5 km nesting beach buffer zones shown in Appendix F.	At night when operating Project vessels during Construction and Operations

Table 5-13: Management Measures for Artificial Lights (Project Facilities)

EPS Reference	Management Measures	Timing
F6	Coastal Construction or temporary lighting will be focused onto work areas and directed away from the water and the beach, when safe and possible to do so.	At night during Construction and Operations
F6	LNG Plant and permanent coastal infrastructure, subject to the need to meet safety requirements, will employ light management strategies including: <ul style="list-style-type: none"> • No decorative lighting • No use of metal halides, mercury vapour fixtures, white or ultraviolet lights • Focus on downward lighting design to reduce overhead glow • Jetty lighting will be focused onto work surfaces. 	At night during Operations
F6	Planned flaring events (e.g. planned flaring during maintenance activities) will occur during daylight hours as far as practicable; however, the timing will depend upon personnel availability and consideration for the least interruption to ongoing operation and safety of the overall plant facility.	At night during Operations

6.0 Environmental Monitoring Program

Reporting of CSMF observations, and records of injury or death, form the primary process to determine that the environmental performance standards are being achieved for impacts to CSMF from physical presence, Project vessels and noise and vibration (Section 5.1, 5.2 and 5.3). Determination of achievement of the performance standard relevant to impacts to marine turtles from artificial light (Section 5.4) will be based on outcomes from the marine turtle monitoring program (Section 6.1). Relevant reporting requirements are set out in Section 9.0.

6.1 Marine turtle monitoring program

The monitoring program defined in this section, measures and detects changes to the flatback turtle population in the vicinity of Ashburton North (Figure 6-1). Monitoring prior to, and during, Construction has identified that flatback turtles are the only turtle species known to nest on beaches potentially affected by artificial light spill and glow from the Project. The monitoring program includes, but is not limited to, the monitoring scopes summarised in Table 6-1. The monitoring program will be implemented to measure the accuracy of Project predictions in relation to potential light impacts to marine turtles, as required by EPBC2008/4469 Condition 26(b) and MS 873 Condition 10-12 (iv) and to verify achievement of environmental performance standards specified in Table 4-1.

6.1.1 Parameters

The monitoring program provides data for the following key demographic parameters:

- Hatching success
- Beach topography
- Abundance of adult tracks
- Distribution of adult tracks
- Identification of light sources
- Light intensity measures
- Offset and spread angles

Data for these key demographic parameters are identified as necessary for understanding the population dynamics and viability of flatback turtle nesting in the vicinity of Ashburton North (Ref. 38; Ref. 39). Other demographic and biophysical parameters may also be collected as part of the monitoring program. These may include, but not be limited to:

- Flipper tagging
- Evidence of predation (e.g. fox digging or footprints)
- Stranding data
- Evidence of disease (e.g. fibropapillomatosis) in nesting or stranded turtles

The monitoring program will be implemented in a way that meets the objectives defined in Table 6-1 while retaining operational flexibility such that abnormal events (e.g. extreme weather events), that are beyond Chevron Australia's control, can be accommodated. In the event that circumstances (e.g. extreme weather or safety concerns) prevent the implementation of one or more monitoring scopes (or a component of a scope), Chevron Australia will take measures to ensure the objectives of the monitoring program continue to be met.

6.1.2 Monitoring Design and Detecting Change

The monitoring program is described in Table 6-1.

Table 6-1: Monitoring Program for Flatback Turtles in the Ashburton Area

Objective	Monitoring Aim	Parameters, Indicators and Criteria	Methods	Frequency	Environmental Performance Standard
Identify changes in the health of the nesting habitat	Monitor the health of the nesting habitat	Beach topography Hatching success	Describe the features of the beach that may potentially affect the productivity of clutches and the orientation of adults and hatchlings.	Annual during peak nesting	F6
Determine changes in the abundance and distribution of adult tracks on relevant nesting beaches	Quantify abundance and distribution of adult tracks	Abundance of adult tracks Distribution of adult tracks Nesting success	Identify and record tracks to species and determine the activity (e.g. nest or false crawl) based on track morphological identification techniques.	Annual during peak nesting	F6
Measure changes in the intensity and extent of light sources visible from relevant nesting beaches	Quantify artificial light levels	Identification of light sources Light intensity measurements Environmental conditions that affect light intensity	Record the intensity of artificial light sources including glow on the horizon and natural light sources (e.g. ambient and moonlight).	Annual during peak hatchling emergence	F6
Measure changes in hatchling orientation.	Quantify hatchling orientation	Offset and spread angles	Fan map hatchling tracks from nest locations to ascertain disorientation or misorientation of hatchlings.	Annual during peak hatchling emergence	F6

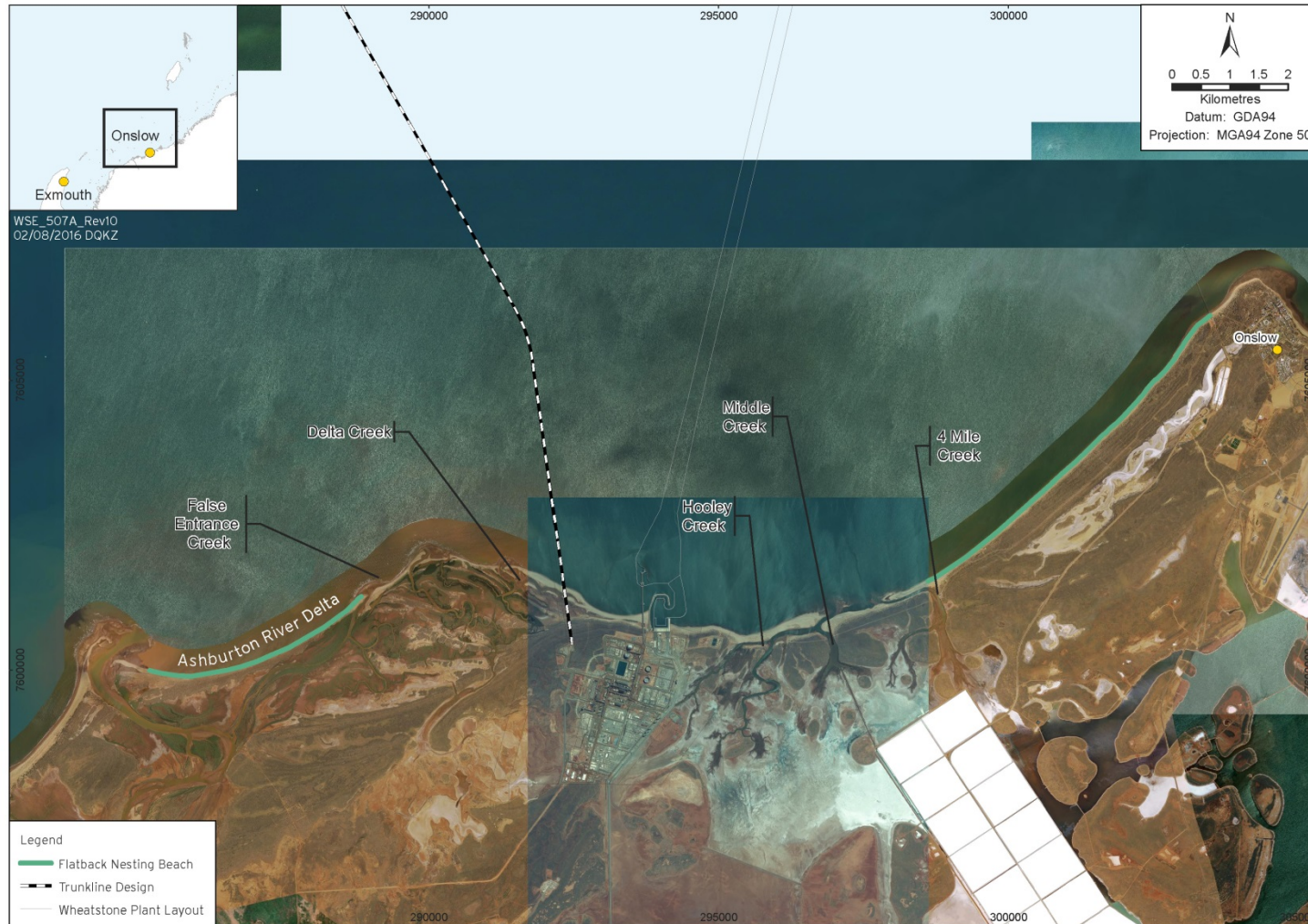


Figure 6-1: Ashburton North survey area

6.1.3 Management Triggers

Stressors to marine turtles are relatively well understood and the information currently available provides sufficient understanding of stressors to adequately manage their potential risks and impacts. Figure 6-2 sets out the response actions Chevron will take in the unlikely event that a management trigger has been met; these include further analysis or monitoring if necessary to confirm actual or potential risk of significant adverse impacts.

Control charts are used to track changes in flatback turtle key demographic parameters listed in Section 6.0. Trends identified in control charts act as early warning signals to guide a tiered management approach (Figure 6-2). Management triggers were established based on statistical deviations from the baseline conditions for each demographic parameter. Each trigger is represented as a trend towards, or change beyond, a ± 1 , ± 2 or ± 3 statistical deviation (standard deviation SD) or standard error (SE) from baseline conditions (Figure 6-2):

- Alert: A trend towards the ± 1 statistical deviation limit for two consecutive years, or, a change beyond ± 1 statistical deviation from baseline conditions
- Review: The measured parameter deviates outside a ± 2 limit n from baseline conditions
- Action: The measured parameter deviates outside a ± 3 limit from baseline conditions

Demographic data is compared against the management triggers. The aim of the initial response to activation of any management trigger is to determine whether the cause is Project attributable. If deemed Project attributable, Chevron Australia will initiate the associated response actions defined in Figure 6-2 according to the level of trigger activated. Activation of an Action level management trigger initiates an immediate investigation into the cause.

The tiered approach described in Figure 6-2 does not preclude early management action if a trigger is determined to be attributable to a stressor from the Project and represents a significant threat to the viability of the turtle population.

Triggers are reviewed prior to the next performance reporting period and prior to the next nesting season. If response actions are required, these are implemented prior to and/or during the subsequent nesting season.

For example, in a trigger scenario – A 'Review' trigger (deviation below the -2 trigger limit) of the 'hatchling emergence rate' would require a desktop investigation of the trigger, including review of the incubation dataset with consideration given to other monitored parameters (e.g. egg hatching rate); and other field results, climate data, relevant operational activities and regional results (e.g. Barrow Island) to determine if the trigger is a result of a Project related stressor. If yes, does the deviation represent a threat to population viability? If yes, Chevron will take response actions for further analysis, monitoring or studies and where necessary a review of existing management measures and implementation of additional management measures.

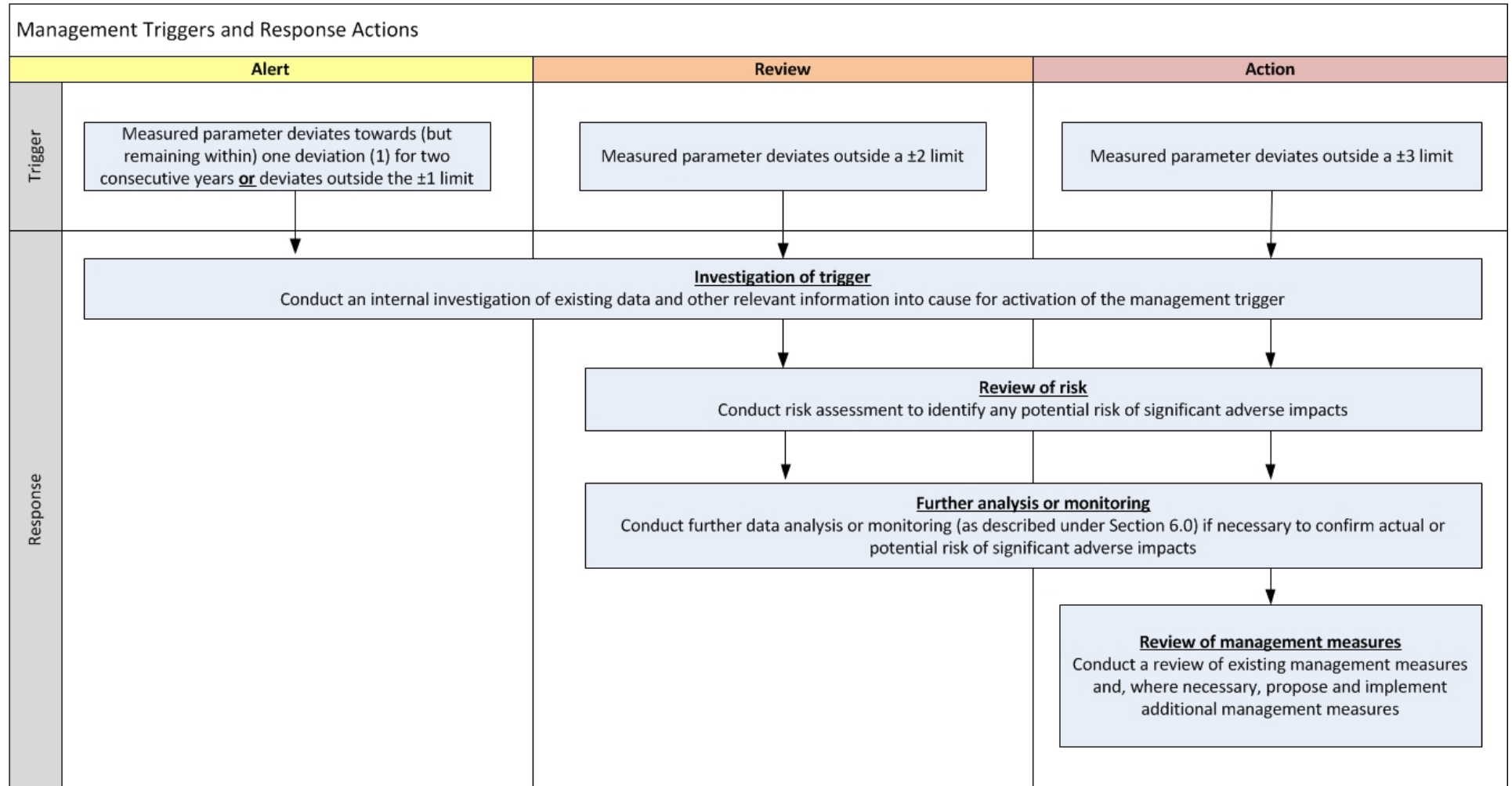


Figure 6-2: Management Triggers and Response Actions

7.0 Reporting

7.1 Annual Compliance Reporting

Both a State and Commonwealth annual Compliance Assessment Report (CAR) are required by MS 873 Condition 4 and EPBC 2008/4469 Condition 3 respectively. Both reports assess compliance against Ministerial Conditions within the compliance reporting period being 31 August to 30 August of each compliance year, with each CAR due by the 30 November of each year. As part of the preparation of the annual CARs, Chevron Australia will assess its compliance status against this Plan, which will be guided by the action table provided in Appendix G.

7.2 Non-compliance Reporting

MS 873 condition 4-5 requires that any potential non-compliance, relevant to this Plan, will be reported to the CEO of the EPA within seven days of that potential non-compliance being known. EPBC 2008/4469 condition 3 requires non-compliance with this Plan to be reported to DOTE at the time the CAR is published on Chevron Australia's website.

7.3 Environmental Performance Standard Reporting

MS 873 Condition 10-16i requires that any non-achievement of environmental performance standards (Table 4-1) be reported to the CEO of the OEPA within 21 days of having determined that a non-achievement has occurred.

7.4 Incident Reporting

Table 7-1 lists the environmental incident reporting requirements, including timing, specific to this Plan.

Table 7-1: CSMF Species Incident Reporting Requirements

Incident	Report to	Timing
Injury to, or mortality of, an EPBC Act Listed Threatened or Migratory Species ⁸	Department of the Environment	Within one business day as required by EPBC 2008/4469 Condition 26e (or as amended)
Any natural or Proposal attributable injury or mortality of CSMF ⁹	Department of Parks and Wildlife	Within 24 hours as required by MS 873 Condition 10-16ii (or as amended)

7.5 Data reporting

MS 873 Condition 10-3 requires that data from CSMF observation logs be submitted to DPaW on an annual basis during Construction or when marine pile-driving or dredging activities are undertaken for the Project. The logs will be submitted in an agreed format at the same time as the compliance assessment report. Whale and dolphin sighting records, from observation logs maintained by Project vessels during Construction (MS 873 Condition 10-1 and 10-3) will also be submitted to the DOTE in an agreed format on an annual basis.

⁸ Refers to CSMF as detailed within the Plan

⁹ CSMF include marine mammals [whales, dugongs and coastal dolphins], marine turtles, whale sharks and sawfish

8.0 Review, Approval and Revision of this Plan

Chevron Australia is committed to conducting activities in an environmentally responsible manner and aims to implement reviews of its environmental management actions as part of a programme of continuous improvement. This commitment to continuous improvement means that the Proponent will review the Plan to address matters such as the overall effectiveness, environmental performance, changes in environmental risks and changes in business conditions on an as needed basis (e.g. in response to new information).

MS 873 Condition 24-1 requires that Chevron Australia may only implement an amendment to this Plan from the date of the amendment. Significant amendments may only be implemented from the date of approval of the amendment by the CEO.

Significant amendments are those amendments, which alter the obligations of the Proponent, that is, are not minor or administrative.

Chevron Australia will submit a proposed revision of this Plan as a result of the following:

- when a new activity, or significant modification, change, or new stage of the existing activity, not provided for in the Plan is proposed;
- before, or as soon as practicable after, the occurrence of any significant new environmental risks or impacts, or significant increases in an existing environmental risk or impact not provided for in the Plan.

Minor administrative changes to this Plan, may be required from time to time. Such changes are defined as

- where an assessment of the environmental risks and impacts is not required (e.g. document references, contact details, etc.), will be considered a 'minor change'.
- where a review of the activity and the environmental risks and impacts of the activity does not alter the environmental risk, will also be considered a 'minor change'.

Minor changes as defined above will be made to this Plan using Chevron Australia's document control process and will not be submitted for formal assessment.

EPBC 2008/4469 Conditions 5 and 6 require that Chevron Australia may only implement the Project otherwise than in accordance with the provisions of this Plan, which regulate the matters of NES relevant to this Plan from the date of approval of any variation to this Plan by the Commonwealth Minister.

9.0 Stakeholder Consultation and Public Availability

In accordance with Condition 10-11 of MS 873, An initial Plan was developed in consultation with the WA Department of Environment and Conservation (DEC), currently Department of Parks and Wildlife (DPaW), and the Department of Sustainability, Environment, Water, Population and Communities (Cth)—currently the Department of the Environment (DOTE). Additionally, in accordance with Condition 10 12A of MS 873 (Table 1.1), Chevron Australia provided an opportunity for the following relevant stakeholders to comment on the initial draft version of the plan, as agreed with the Office of Environmental Protection Authority (OEPA):

- The Wilderness Society
- Cape Conservation Group.

This condition is considered complete and further reviews for revisions of the Plan have not been undertaken.

The approved Plan will be made publicly available on Chevron Australia's website within one month of approval (EPBC2008/4469 Condition 8) and in a manner approved by the CEO of the OEPA (MS 873 Condition 10-14).

10.0 References

The following documentation is either directly referenced in this document or is a recommended source of background information.

Table 10-1: References

Ref. No.	Description
1.	DEWHA, 2008. The north-west marine bioregional plan: Bioregional profile: a description of the ecosystems, conservation values and uses of the north-west marine region. Australian Government Department of the Environment, Water, Heritage and the Arts.
2.	Commonwealth of Australia, 2006. A Guide to the Integrated Marine and Coastal Regionalisation of Australia Version 4.0. Department of the Environment and Heritage, Canberra, Australia.
3.	Chevron Australia Pty Ltd, 2012. Coral and BPPH ROV Post Cyclone Survey: BPPH Distribution and Coral Community Report. Unpublished report prepared by Sinclair Knight Merz for Chevron Australia Pty Ltd.
4.	Chevron Australia Pty Ltd, 2015. Wheatstone Project Dugong Research Program: Phase 3 2015 Final Report-excerpt. Unpublished report prepared by Murdoch University Cetacean Research Unit for Chevron Australia Pty Ltd.
5.	Department of Sustainability, Environment, Water, Population and Communities. 2012. Species Group Report Card – Cetaceans. Supporting the marine bioregional plan for the North-west marine region. Australian Government, Canberra.
6.	Fitzsimmons, N.N. and Limpus, C.J. 2014. Marine turtle genetic stocks of the indo-pacific identifying boundaries and knowledge gaps. Indian Ocean Turtle Newsletter, 20: 2–18.
7.	Bjorndal, K.A. 1997. Foraging Ecology and Nutrition in Sea Turtles. In: P.L. Lutz and J.A. Musick (eds) The Biology of Sea Turtles, Vol. 1: 199–231. CRC Press, Boca Raton, Florida.
8.	Limpus, C.J. 2009. A Biological Review of Australian Marine turtles. State of Queensland, Environmental Protection Agency.
9.	Pendoley Environmental. 2008. Gorgon Project: Satellite Tracking Of Flatback Turtles From Barrow Island And Mundabullangana Station. Unpublished report for Chevron Australia, Perth, Western Australia.
10.	Chevron Australia Pty Ltd, 2010. Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Wheatstone Project. Chevron Australia Pty Ltd.
11.	Limpus, C.J., Couper, P.J. and Couper, K.L.D. 1993. Crab Island revisited: reassessment of the world's largest Flatback Turtle rookery after twelve years. Memoirs of the Queensland Museum, 33: 277–289.
12.	Imbricata 2013. Wheatstone Project Technical Baseline Report: Marine Turtle Baseline Studies and Lighting Assessment in the Ashburton Area, Western Australia (2013). Unpublished report prepared for Chevron Australia.
13.	Chevron Australia Pty Ltd, 2010. Final Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Wheatstone Project. Chevron Australia Pty Ltd.
14.	Chevron Australia Pty Ltd, 2016. <i>Gorgon Gas Development and Jansz Feed Gas Pipeline: Long-term Marine Turtle Management Plan</i> . Chevron Australia, Perth, Western Australia. (GOR-COP-01728)
15.	Pendoley Environmental. 2010. Five Year Analysis Of The Flatback Tagging Program At Barrow Island And Mundabullangana (2005/06–2009/10). Unpublished report for Chevron Australia, Perth, Western Australia.
16.	Pendoley, K., Bell, C., McCracken, R., Ball, K., Sherborne, J., Oates, J., Becker, P., Vitenbergs, A., Whittock, P. 2014. Reproductive biology of the Flatback Turtle <i>Natator depressus</i> in Western Australia. <i>Endangered Species Research</i> , 23: 115–123.

Ref. No.	Description
17.	Parmenter, C.J. 1994. Species Review: The Flatback Turtle – <i>Natator depressa</i> . In: R. James (ed) Proceedings of the Australian Marine Turtle Conservation Workshop, Gold Coast 14–17 November 1990. Queensland Department of Environment and Heritage. Australian Nature Conservation Authority, Canberra, Australian Capital Territory.
18.	Chevron Australia Pty Ltd, 2015. <i>Gorgon Gas Development and Jansz Feed Gas Pipeline: Five-year Environmental Performance Report (August 2010–August 2015)</i> . Chevron Australia, Perth, Western Australia. (G1-NT-REPX0007517)
19.	Whittock, P.W, Pendoley, K.L.P, Hamann, M. 2014. Internesting distribution of Flatback Turtles (<i>Natator depressus</i>) and industrial development in Western Australia. <i>Endangered Species Research</i> , 26: 25–38.
20.	Hewavisenthi, S. and Parmenter, C.J. 2002. Incubation environment and nest success of the Flatback Turtle (<i>Natator depressus</i>) from a natural nesting beach. <i>Copeia</i> 2002: 302–312
21.	Howard, R. Bell, I. and Pike, D.A. 2014 Thermal tolerances of sea turtle embryos: current understanding and future directions. <i>Endangered Species Research</i> . 26: 75–86.
22.	Mortimer, J.A. 1990. The influence of beach sand characteristics on the nesting behavior and clutch survival of Green Turtles (<i>Chelonia mydas</i>). <i>Copeia</i> , 1990, 802–817.
23.	Blamires, S.J. and Guinea, M.L. 2003. Emergence success of Flatback sea turtles (<i>Natator depressus</i>) at Fog Bay, Northern Territory, Australia. <i>Chelonian Conservation and Biology</i> , 4: 548–556.
24.	Peters, A., Verhoeven, K.J.F. and Strijbosch, H. 1994. Hatching and emergence in the Turkish Mediterranean Loggerhead Turtle, <i>Caretta caretta</i> : Natural causes for egg and hatchling failure. <i>Herpetologica</i> , 50: 369–373
25.	Miller, J.D. 1997. Reproduction in sea turtles. In: P.L. Lutz and J.A. Musick (Eds). <i>The Biology of Sea Turtles</i> . p51–81. CRC Press, Boca Raton, Florida.
26.	Lohmann, K.J., Witherington, B.E., Lohmann, C.M.F. and Salmon, M. 1996. Orientation navigation and natal beach homing in sea turtles. In: P.L. Lutz and J.A. Musick (eds) <i>The Biology of Sea Turtles</i> , Vol. 1: 107–135. CRC Press, Boca Raton, Florida.
27.	Tuxbury, S.M. and Salmon, M. 2005. Competitive interactions between artificial lighting and natural cues during seafinding by hatchling marine turtles. <i>Biological Conservation</i> , 121: 311–316.
28.	Salmon, M., Wyneken, J., Fritz, E. and Lucas, M. 1992. Ocean-finding by hatchling sea turtles: role of brightness, silhouette and beach slope orientation cues. <i>Behaviour</i> , 122(1–2): 55–77.
29.	Pendoley, K.L., and Kamrowski, R. 2015. Influence of horizon elevation on the sea-finding behaviour of hatchling Flatback turtles exposed to artificial light glow. <i>Marine Ecology Progress Series</i> , 529: 279–288.
30.	Tuxbury, S.M. and Salmon, M. 2005. Competitive interactions between artificial lighting and natural cues during seafinding by hatchling marine turtles. <i>Biological Conservation</i> , 121: 311–316.
31.	Salmon, M., Wyneken, J., Fritz, E. and Lucas, M. 1992. Ocean-finding by hatchling sea turtles: role of brightness, silhouette and beach slope orientation cues. <i>Behaviour</i> , 122(1–2): 55–77.
32.	Colman, J. G. (1997), A review of the biology and ecology of the whale shark. <i>Journal of Fish Biology</i> , 51: 1219–1234. doi: 10.1111/j.1095-8649.1997.tb01138.x
33.	Chevron Australia. 2008. Compliance Assurance ASBU – Standardized OE Process. Chevron Australia, Perth, Western Australia.
34.	Morga, D., Whitty, J., Keleher, J., Allend, M., and Beatty, S. 2015. Impacts of barriers and fishways on Sawfish – Wheatstone Sawfish Offset May 2015 Annual Update. Report prepared for WAMSI and Chevron Australia
35.	Pendoley, K. 2005. Sea Turtles and Industrial Activity on the North West Shelf, Western Australia.

Ref. No.	Description
	PhD thesis, Murdoch University, Perth, Western Australia
36.	Musick, J.A. and Limpus, C.J. 1996. Habitat utilisation and migration in juvenile sea turtles. In: P.L. Lutz and J.A. Musick (eds) <i>The Biology of Sea Turtles</i> , Vol. 1: 137–163. CRC Press, Boca Raton, Florida.
37.	Walker, T.A. and Parmenter, J. 1990. Absence of a pelagic phase in the life cycle of the Flatback Turtle, <i>Natator depressa</i> (Garman). <i>Journal of Biogeography</i> , 17: 275–278.
38.	Campbell, R. 2005. Historical distribution and abundance of the Australian sea lion (<i>Neophoca cinerea</i>) on the west coast of Western Australia (Fisheries Research Report No. 148, 2005. Published by Department of Fisheries, Perth, Western Australia. March 2005. ISSN: 1035 – 45 – 49. ISBN: 1 877098 63 9
39.	Imbricata 2014. Wheatstone Project Marine Turtle Monitoring Program 2013/2014 Final Report. Prepared for Chevron Australia.
40.	Imbricata 2015. Wheatstone Project Marine Turtle Monitoring Program 2014/2015 Final Report. Prepared for Chevron Australia.
41.	Norman, B.M. 1999. Aspects of the biology and ecotourism industry of the Whale Shark <i>Rhincodon typus</i> in north-western Australia. MPhil. Thesis (Murdoch University, Western Australia).
42.	Laist, D. W., A. R Knowlton, J. G. Mead, A. S. Collet and M. Podesta 2001. Collisions between ships and great whales. <i>Marine mammal Science</i> 17(1):35-75

Appendix A Conservation Significant Marine Fauna: Baseline Summary

Marine mammals

Marine mammals with ranges overlapping the nearshore and offshore Project infrastructure locations (Figure 1-1) include whales, dolphins and dugongs. Each species group uses the region for different purposes. All the marine mammals in the area are of conservation significance and as such are identified under the EPBC Act as matters of National Environmental Significance (NES).

The deep offshore waters of north-west WA is an important migratory pathway for two EPBC Act listed whale species: the Humpback and Pygmy Blue whales. The Pygmy Blue whale uses waters of the north-west WA as a key migratory route between summer foraging grounds off south-west WA and breeding grounds in equatorial regions but rarely occur in waters overlapping with Project infrastructure locations. The Humpback whale, however, uses north-west WA as a key migratory route between calving areas off the Kimberley coastline and feeding grounds in the Southern Ocean and is known to travel closer to shore within coastal waters on their southern migration. There are numerous important resting areas for Humpback whales and their calves; these resting areas usually occur in protected embayments such as Exmouth Gulf during the southern migration back to their feeding grounds (Ref. 4).

Coastal and pelagic dolphin species occur regularly throughout the north-west WA. Dolphins regularly seen in the coastal waters of the North-west Marine Region include the Australian Snubfin Dolphin (*Orcaella heinsohni*), the Australian Humpback Dolphin (*Sousa sahalensis*), two types of bottlenose dolphin (the inshore form of the Common Bottlenose Dolphin [*Tursiops truncatus*] and the Indo-West Pacific or Spotted Bottlenose Dolphin [*Tursiops aduncus*]), and spinner dolphins (*Stenella* spp.). All three tropical inshore dolphin species (Australian Snubfin, Australian Humpback, and Indo-West Pacific Bottlenose) can be found together, and are associated with nearshore coastal waters (Ref. 4).

Many species of pelagic dolphin are known to occur in the North-west Marine Region. Pelagic dolphin species include the Common Bottlenose Dolphin (*Tursiops truncatus*), Fraser's Dolphin (*Lagenodelphis hosei*), Risso's Dolphin (*Grampus griseus*), Rough-toothed Dolphin (*Steno bredanensis*), Pantropical Spotted Dolphin (*Stenella attenuata*), Striped Dolphin (*Stenella coeruleoalba*), and Long-snouted Spinner Dolphin (*Stenella longirostris*) (Ref. 5).

The dugong (*Dugong dugon*) is present throughout the year in nearshore waters overlapping the Project area in low densities (0.036 - 0.265 dugong / km²) (Ref. 4). Dugongs have predominantly been sighted in shallow waters (<10 m deep) and near coastal islands. Satellite tagging studies undertaken for the Project indicate that dugong distribution is closely related to available foraging habitat (Ref. 4).

An Australian sea lion was observed near Onslow in June 2015, however no other sighting records are known. The sea lion is the only pinniped endemic to Australia and its breeding range is known to extend from Houtman Abrolhos (WA) to the Pages Island, east of Kangaroo Island in South Australia (SA). Lone or small numbers of animals occasionally visit other locations. No known haul-out sites are found in the vicinity of the Project (Ref. 1; Ref. 38).

Whale sharks

Whale sharks have a broad distribution in tropical and warm temperate seas and are known to inhabit both deep and shallow coastal waters and the lagoons of coral atolls and reefs (Ref. 1). Whale sharks are found in offshore waters of the north-west WA, including the area surrounding the Platform and subsea infrastructure, and may be

present in the area but only in low numbers. Ningaloo reef is the nearest identified important area for whale sharks (Ref. 32). Annual aggregations at the Ningaloo Marine Park are generally associated with mass coral spawning events around March/April each year followed by a northerly migration (Ref. 44).

Sawfish

Sawfish occur in tidal creeks near the Onshore Facility and the Ashburton River mouth has been identified as a potential nursery ground (Ref. 34). Passive acoustic tracking revealed that green sawfish (*P. zijsron*) are present in most tidal creeks in the Onslow area with high site fidelity, with larger fish moving greater distances. The presence of two large freshwater sawfish (*P. microdon*) in the Ashburton River mouth during a flood event also suggests a likely presence of juveniles in the freshwaters of the Ashburton River (Ref. 34).

Marine turtles

Six marine turtle species occur in Australian waters:

- Flatback turtle (*Natator depressus*)
- Green turtle (*Chelonia mydas*)
- Hawksbill turtle (*Eretmochelys imbricate*)
- Leatherback (*Dermochelys coriacea*)
- Loggerhead (*Caretta caretta*), and
- Olive Ridley (*Lepidochelys olivacea*)

All six species have conservation significance and are identified under the EPBC Act as matters of NES. Of the six marine turtle species documented in Australia Flatback, green and hawksbill turtles have nesting and foraging ranges overlapping the Project area (Ref. 12). Only Flatback turtles nest on beaches in the vicinity of the nearshore Project infrastructure (Ref. 12). This section summarises the baseline information for Flatback turtles with a focus on the nearest nesting beach at Ashburton Delta (Figure 6-1).

Flatback turtles

Flatback turtles are endemic to Australia's continental shelf. Five genetically distinct stocks have been identified: Eastern Australia, Arafura Sea, Joseph Bonaparte Gulf, Southwest Kimberley, and Pilbara Coast (Ref. 6). The North West Shelf Flatback turtle populations fall within the Pilbara Coast genetic stock, with breeding areas ranging from Exmouth to the Lacepede Islands and across the Pilbara coast; including the Ashburton area Flatback turtle population¹⁰.

Foraging and Mating Behaviour

The locations of mating, post-hatching, and juvenile foraging grounds for Flatback turtles are not well understood. Juvenile and adult Flatback turtles are thought to favour soft sediment habitat that supports communities of benthic invertebrates (Ref. 7; Ref. 8). Therefore, the intertidal to nearshore zone at mainland beaches and coastal islands may support foraging assemblages of juvenile and adult Flatback turtles, where suitable communities of invertebrates are known to occur (Ref. 12). Satellite tracking of adult female Flatback turtles indicates that they move large distances between multiple

¹⁰ Inclusion of a rookery in the North West Shelf Management Unit is based on limited genetic analysis, or known summer breeding activity (Ref. 8; Ref. 6).

geographically distinct areas ranging from the Pilbara coast to the Gulf of Carpentaria (Ref. 9, Ref. 10).

When reproductively active, marine turtles typically migrate to mating grounds offshore from their nesting beach. Mating may also occur along migratory corridors en route to the natal area. After mating, male turtles often return to foraging areas, while females remain at the nesting area (Ref 8; Ref. 11). The location and timing of mating for the Ashburton area Flatback turtle population is unknown. However, based on records of Flatback turtle nesting activity at Ashburton Delta beach and Ashburton Island, mating activity likely occurs between September and January (Ref. 12).

Nesting Behaviour and Distribution

Known major rookeries for Flatback turtles in Western Australia from the North West Shelf MU include Barrow Island, Montebello Islands, Thevenard Island, Varanus Island, Rosemary Island and the Dampier Archipelago (Ref. 13). However, Flatback turtle nesting occurs on a smaller scale at other beaches located on both offshore islands and mainland beaches elsewhere in the Pilbara. Ashburton Delta is the nearest Flatback nesting beach to the Project infrastructure (refer to Figure 6-1). Typically, Flatback turtle nesting in the Ashburton area occurs between October and February, with peak nesting activity in December. Nesting activity generally occurs on sandy, low-sloped, low-energy beaches with wide, shallow intertidal zones (Ref. 12).

Marine turtles do not reproduce every year. The remigration interval¹¹ for Flatback turtles varies between 1.7 ± 0.8 years, as recorded at Barrow Island (Ref. 14), up to two to three years (Ref. 15; Ref. 16). This variation in remigration interval between rookeries may reflect variation in other parameters such as the location, quality, and quantity of foraging grounds (Ref. 16). There is evidence that some Flatback turtles engage in long-distance migrations between foraging grounds and nesting beaches (Ref. 17). Satellite tracking has shown that post-nesting female Flatback turtles migrate to foraging grounds up to 1800 km from the Ashburton area nesting beaches (Ref. 10).

The internesting interval¹² of Flatback turtles in the Ashburton area (13 to 17 days) is similar to that of recorded at Barrow Island. Chevron Australia (Ref. 18) reported an internesting interval of seven to 22 days at Barrow Island, with a mean internesting interval of 14.1 ± 2.3 days.

Satellite tracking at Barrow Island has shown that internesting Flatback turtles travel distances between 35 km and 242 km, predominately residing in shallow waters (mean seabed depth of 9.9 ± 4.2 m) off the east coast of Barrow Island and nearshore waters of the WA mainland and surrounding islands (Ref. 18). This pattern of nearshore or long-distance internesting movement is similar to other Flatback turtle rookeries within the Pilbara region (Ref. 19).

Clutch Characteristics

Generally, Flatback turtle clutches comprise approximately 45-50 eggs with an incubation period of approximately 46 days (Ref. 12). The prevailing temperature within the clutch during the middle third of incubation determines the hatchling sex ratio. Generally, warmer temperatures produce a higher proportion of female hatchlings and cooler temperatures produce a higher proportion of male hatchlings. Sex ratio and thermal tolerance ranges have been determined for other species of marine turtle. However, these ranges are largely unknown for Flatback turtles (Ref. 20; Ref. 21). The mean Flatback turtle clutch temperature recorded for the baseline survey in 2012/2013

¹¹ The frequency at which marine turtles return to the nesting ground to reproduce.

¹² Duration between a successful nest and subsequent nest or nesting attempt

was 36.7 °C at Ashburton Delta and 35.1 °C at Ashburton Island (Ref. 12). The temperature at the Delta was greater than the Thermal Tolerance Range due to shallow clutches resulting from sand erosion from a storm-surge associated with cyclonic activity. Incubation and hatching success at Ashburton Delta was low compared with the island and other rookeries in the Pilbara at the baseline period (Ref. 12).

Hatching and Emergence Success

Incubation success (determined by measures of egg hatching and hatchling emergence success) depends on many biological and biophysical parameters, including sediment characteristics, predation, disturbance, salinity, inundation and erosion, thermal conditions, and microbial/fungal conditions within the nest (Ref. 11; Ref. 22 Ref. 23; Ref. 24).

The Ashburton area reproductive data at the baseline show that mean egg hatching success (Ashburton Delta: 35 %, Ashburton Island 74 %) and mean hatchling emergence success (Ashburton Delta: 32 %, Ashburton Island 69 %) was low. This was consistent with other reproductive biology studies of mainland rookeries in the Pilbara that have, at times, recorded lower rates of hatching and emergence success, related to the presence of additional predators, higher incubation temperatures, or other variables, such as inundation from storm-surge associated with cyclonic activity (Ref. 16).

Hatchling Orientation and Dispersal

Marine turtle hatchlings generally emerge from the nest at night, leave their natal beaches, and migrate to nursery habitats (Ref. 29). The period of Flatback turtle hatchling emergence varies between rookeries and depends on the time of peak nesting and factors influencing incubation. In the Ashburton area, Flatback turtle hatchling emergence usually occurs between December and April, with a peak emergence period in January and February (Ref. 12).

Following emergence from the nest, sea-finding in marine turtle hatchlings is influenced by several cues, including light, beach morphology, and lunar phase. Light is considered the primary cue for sea-finding behaviour; hatchlings use visual cues to crawl away from a tall dark horizon (dunes) towards a lower and lighter seaward horizon (Ref. 27; Ref. 28; Ref. 29). Monitoring of Flatback turtle hatchling orientation in the Ashburton area showed a natural orientation for the majority of the emerged hatchlings. Notably, some hatchling tracks at Ashburton Delta showed minor diversions towards artificial light sources on the mainland and some tracks on Ashburton Island showed disorientation circles and tracks crawling parallel to the ocean. It was unclear what influenced these behaviours; however, all hatchling tracks eventually reached the ocean (Ref. 12).

On leaving the beach, hatchlings use wave cues to orient and disperse in an offshore direction (Ref. 28). Little is known about the swimming behaviour of Flatback turtle hatchlings once they leave their natal beaches. An investigation of hatchling dispersal and survivorship at Barrow Island demonstrated that immediately offshore, Flatback turtle hatchlings exhibit the same frenzied swimming period as hatchlings from other turtle species, taking them away from shallow water where they are vulnerable to predators (Ref. 18).

Unlike other marine turtle species, Flatback turtles do not have a known oceanic development phase; instead, hatchlings are considered to develop in shallow coastal waters without leaving the Australian continental shelf (Ref. 30; Ref. 31). Their precise age at sexual maturity is not known, but is estimated at approximately 20 years (Ref. 8), which coincides with a range of between five and 30 years observed in most marine turtle species (Ref. 40).

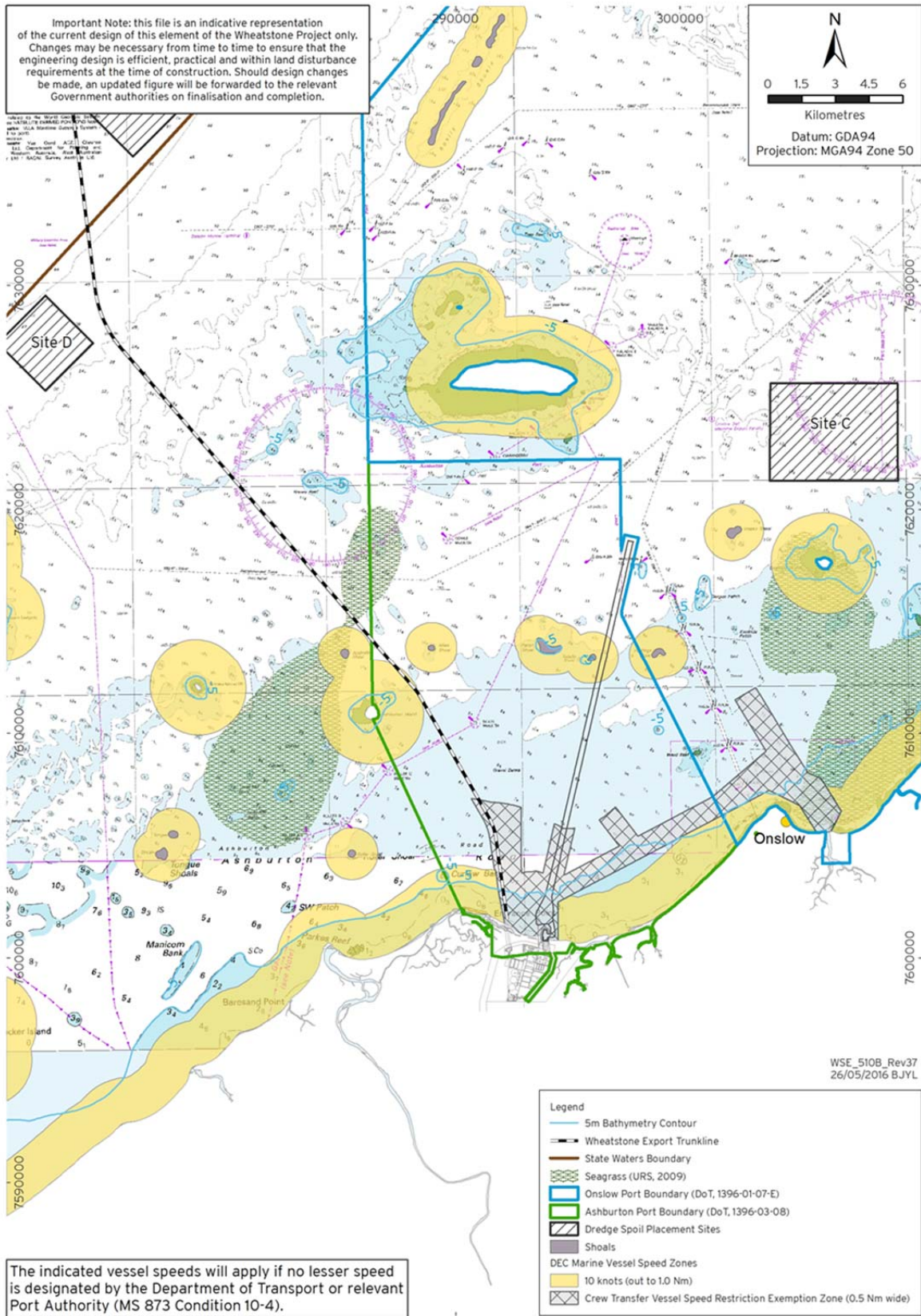
Appendix B Chevron Integrated Risk Prioritisation Matrix

Appendix Figure B-1: Chevron Integrate Risk Prioritisation Matrix

Likelihood Descriptions & Index (with confirmed safeguards)		Legend						
Likelihood Descriptions	Likelihood Indices	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	Decreasing Likelihood	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
Consequence Descriptions & Index (without safeguards)	Consequence Indices		Decreasing Consequence/Impact					
			6	5	4	3	2	1
			Incidental	Minor	Moderate	Major	Severe	Catastrophic
	Consequence Descriptions		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 manageable 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 requiring 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 persistent changes in habitat, species or environmental media (e.g. widespread habitat degradation).	Impacts such as persistent 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 Indices		6	5	4	3	2	1
	Consequence Descriptions		Incidental	Minor	Moderate	Major	Severe	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.								

Appendix C Construction Vessel Speed Management

Appendix Figure C-1: Construction Vessel Speed Management



Appendix D Vessel Interaction Management Actions

Should a vessel crew member sight any at risk CSMF, including injured CSMF, the following actions will be implemented:

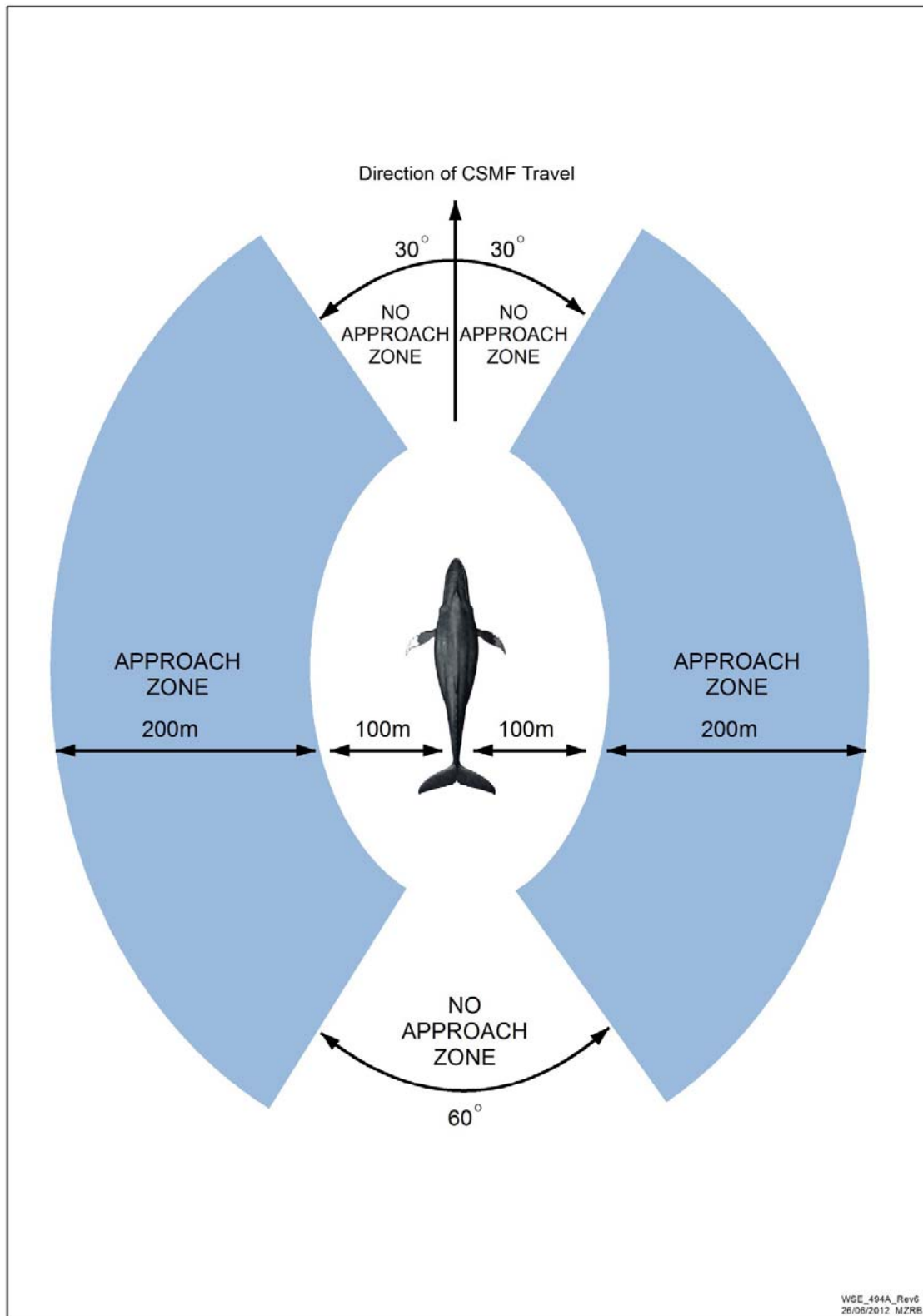
- The observing person will report the sighting of at risk CSMF to the vessel master (or their delegate), as soon as it is safe to do so.
- A log will be maintained by trained crew members or MFOs, as determined by MS 873 Conditions 10-1 and 10-3, documenting use of any management actions, incidents and observations of CSMF.
- If the vessel is approaching CSMF, or if CSMF are approaching the vessel, the actions in Table C-1 will be followed, within safety limits.

Appendix Table D-1: CSMF Interaction Guidelines

Vessel is Approaching CSMF	Vessel is Approached by CSMF
Do not intercept the path of travel or approach head-on, and do not pursue CSMF	Take all care necessary to avoid collisions when safe to do so. This may include stopping, slowing down and/or steering away from the CSMF
Do not enter the 'approach zone' (Figure D1 and Figure D2) if CSMF are stranded, entangled, distressed or a whale mother/calf pair is present	If CSMF approach the vessel, entering the 'approach zone', vessels will reduce speed to 5 knots
If CSMF are sighted within the 'approach zone' of a vessel, a maximum vessel speed of 5 knots will be applied to that vessel	If CSMF are observed within the no-approach zone the vessels maintain low speed (no more than 5 knots) and not change course or speed suddenly
When leaving the 'approach zone', vessels should move off at a speed of 5 knots gradually increasing speed when reaching the limit of the approach zone from the closest CSMF	If CSMF approach the vessel, entering the no-approach zone, vessels maintain low speed (no more than 5 knots) and not change course or speed suddenly
Do not enter the no-approach zone (Figure D1 and Figure D2)	When CSMF are bow riding: Do not change course or speed suddenly If there is a need to stop, reduce speed gradually

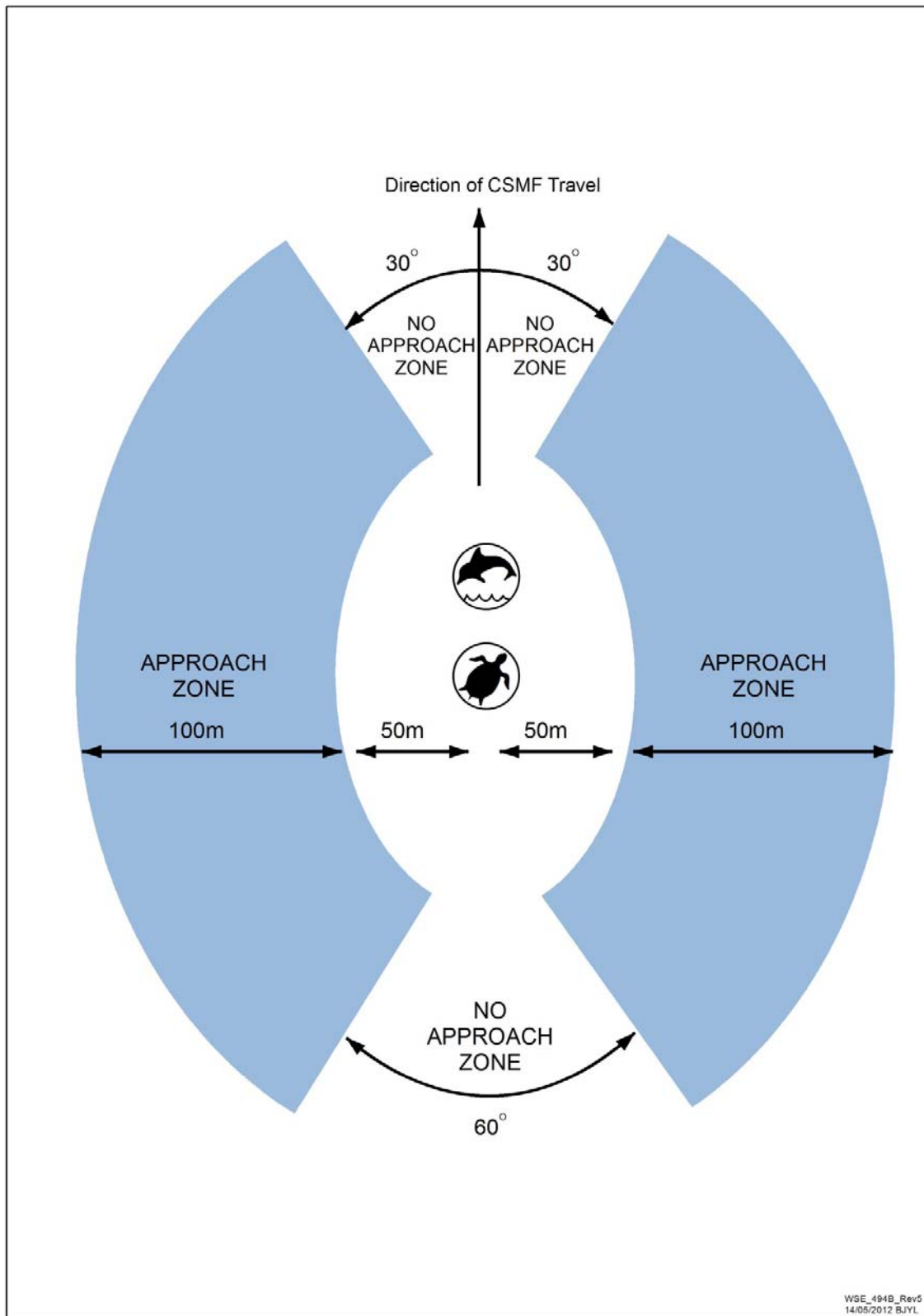
Source: *Wildlife Conservation (Close Season for Mammals) Notice 1998 and Part 8 of the EPBC Act*

Appendix Figure D-2: Approach Distances Whales, Dugong and Whale Sharks



Source: *Wildlife Conservation (Close Season for Mammals) Notice 1998*

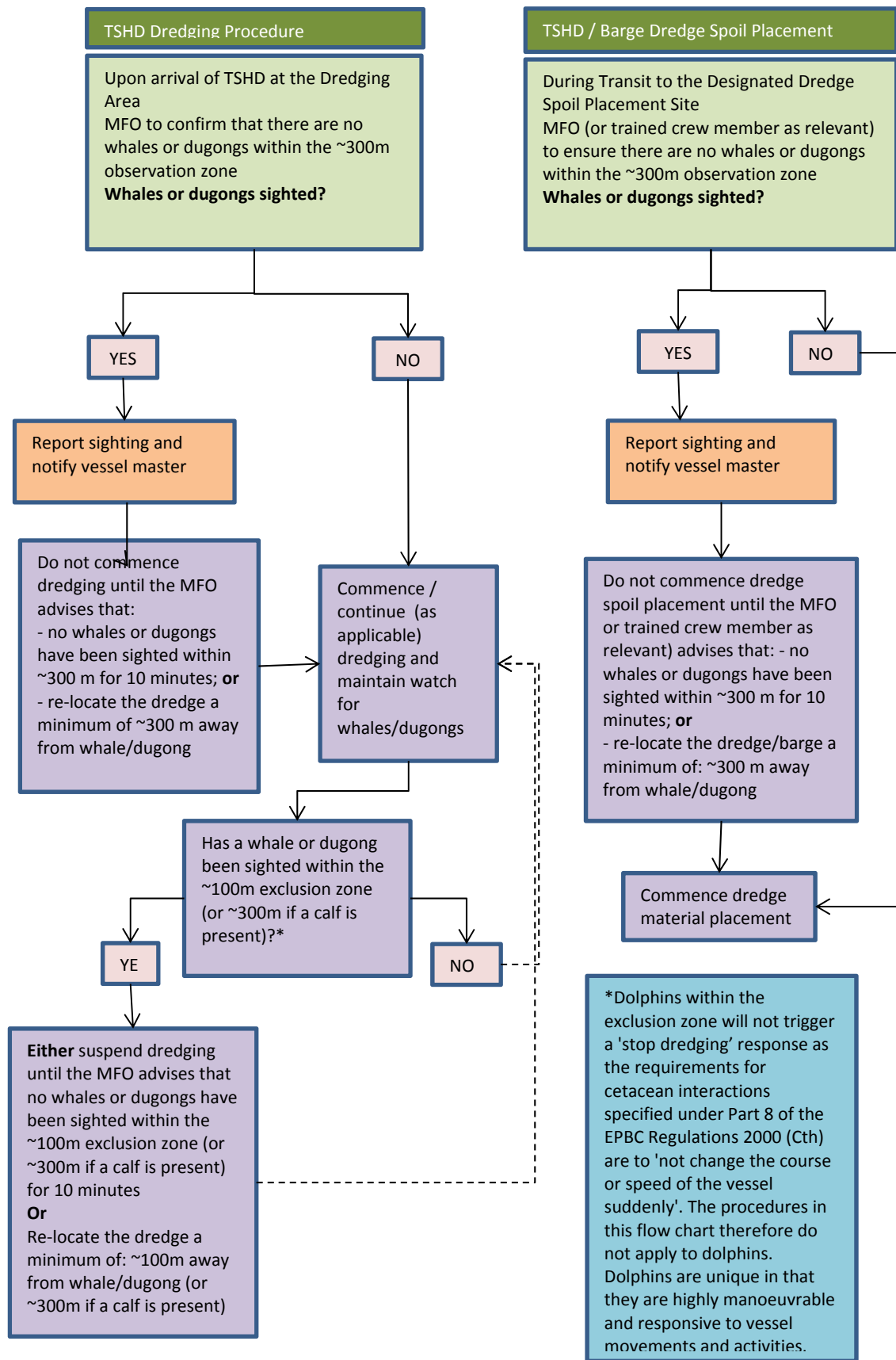
Appendix Figure D-3: Approach Distances for Dolphins and Turtles



Source: Part 8 of the EPBC Act

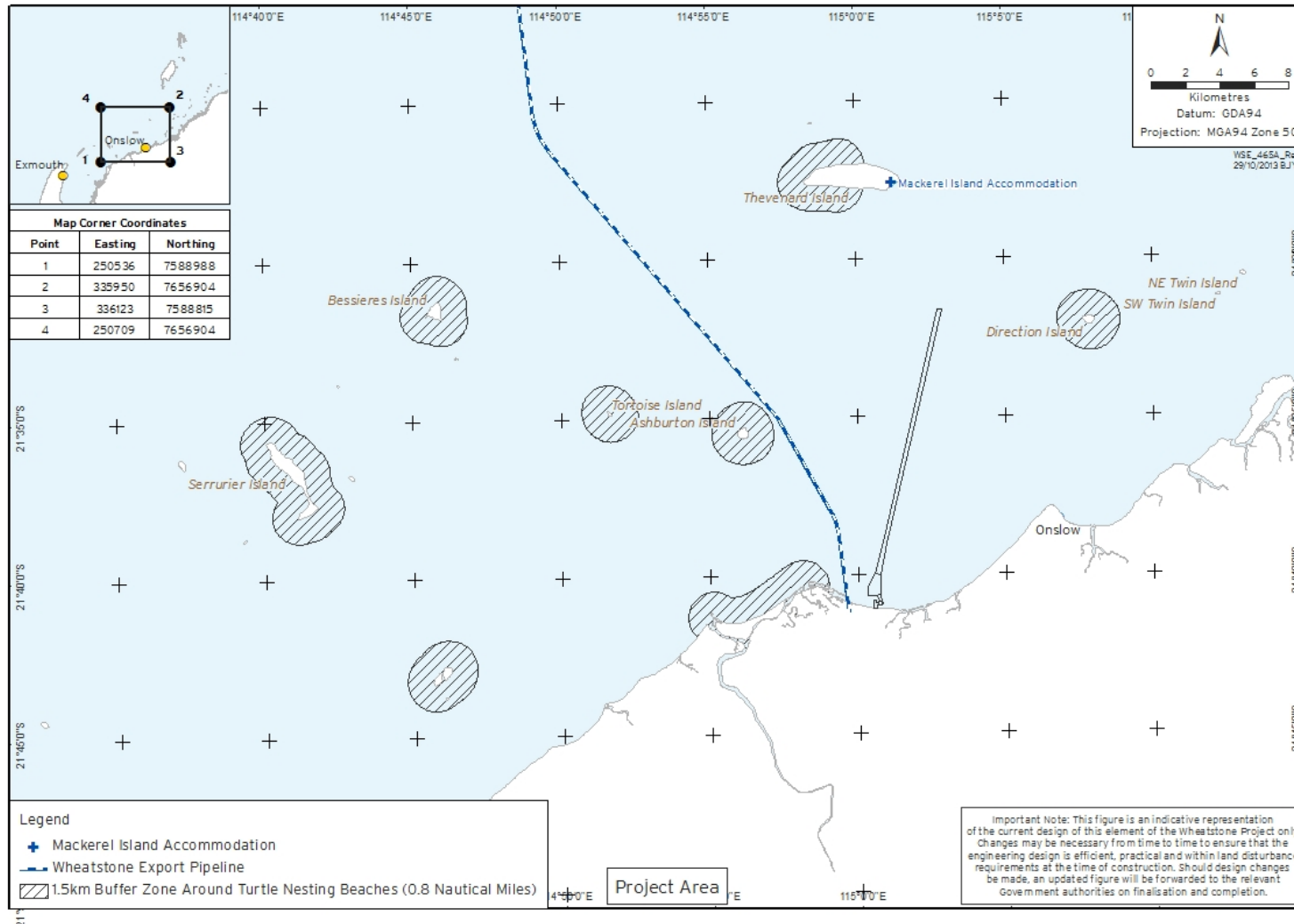
Appendix E Dredging Specific Vessel Interaction Management Actions

Appendix Figure E-1: Whale, Dolphin and Dugong Dredge Interaction Procedures



Appendix F Vessel Lighting Management

Appendix Figure F-1: Project Vessel Lighting Management



Appendix G Compliance Reporting Table

Appendix Table G-1: Compliance Reporting Table

Document Ref.	Action	Timing
Section 1.2	<p>The Project was approved by the WA Minister for Environment; Water on 30 August 2011 by way of MS 873 and as amended by Ministerial Statement No.903 (MS 903), Ministerial Statement No.922 (MS 922), Ministerial Statement No.931 (MS 931) and Attachments 1 to 4.</p> <p>The WA Minister for Environment by way of letter dated 30/01/2013 approved revised Environmental Protection Outcomes under Condition 8-7 in respect for trunkline installation.</p> <p>The Commonwealth Minister for Sustainability, Environment, Water, Population and Communities approved the Project on 22 September 2011 (EPBC 2008/4469) with variations to EPBC 2008/4469 made pursuant to section 143 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Other amendments may be made from time to time and if so will be reflected in the next revision of this Plan.</p>	Construction and Operations
Section 1.2	The sections in this Plan which are noted (Table 1 1) to meet the Conditions of EPBC 2008/4469 shall be read and interpreted as only requiring implementation of EPBC 2008/4469 for managing the impacts of the Project on, or protecting, the EPBC Act matters listed in Table 2 1.	Construction and Operations
Table 5-1	Seawater intakes for nearshore permanent infrastructure will have a flow velocity of approximately 0.15 m/sec to reduce the potential for marine fauna entrainment.	Construction and Operations
Table 5-2	Vessels engaged in Construction of the Project (excluding any vessels engaged in emergency response situations or exercises) will adhere to speed limits presented in Appendix C or any speed limit designated by the Department of Transport or relevant Port Authority; whichever is lesser (MS 873 Condition 10-4).	When operating Project vessels during Construction
Table 5-2	Crew transfer vessels are exempt from speed restrictions when travelling within the crew transfer vessel speed restriction exemption zone (Appendix C)	When operating Project vessels during Construction
Table 5-2	At least one member of the vessel crew (on vessels other than those with an MFO on active duty), trained in marine fauna observation and mitigation measures, will be on active duty during daylight hours. The trained crew member may have other vessel duties. 'Other duties' include duties that do not inhibit the trained crew in undertaking the CSMF observation duties.	Daylight hours when operating Project vessels during Construction
Table 5-2	Trained crew members on active duty will report observations of at risk CSMF to the vessel master (or their delegate), as soon as it is safe to do so.	Daylight hours when operating Project vessels during Construction

Document Ref.	Action	Timing
Table 5-2	All observations of CSMF will be recorded by the MFO, or trained crew member (as applicable).	Daylight hours when operating Project vessels during Construction
Table 5-2	Relevant personnel will be made aware of CSMF interaction management actions (Appendix D).	When operating Project vessels during Construction and Operations
Table 5-2	Observations of any injured or dead CSMF reported as detailed in Table 7-1.	When operating Project vessels during Construction and Operations
Table 5-3	At least one MFO to be on active duty during daylight hours on vessels actively engaged in dredging ¹³ and pile-driving. The MFO will have no other duties (MS 873 Condition 10-1) and will maintain watch for CSMF during active dredging or pile-driving operations.	Daylight hours during active pile-driving and dredging
Table 5-4	A trained crew member will maintain watch, during daylight hours, for CSMF while any dredge is on route to and from the dredge area to DSPSs. If sighted, direction/speed will be adjusted to avoid impact (within the safety constraints of the vessel).	Daylight hours when Project vessels engaged for dredging transit between dredging locations and DSPSs
Table 5-4	Prior to commencement of dredging and dredge spoil placement, selected crew will receive training in marine fauna observations, including procedures in the event of injury or death.	During active dredging and dredge spoil placement
Table 5-4	Whale and dugong observations and response procedures including application of ~300 m observation zone and ~100 m exclusion zone will be implemented during dredging and dredge spoil placement works as outlined in Appendix E. If calves are present the exclusion zone will be extended to ~300 m.	During active dredging and dredge spoil placement
Table 5-4	Dolphin observations and response procedures including application of ~150 m observation zone will be implemented during dredging and dredge spoil placement works (Appendix E).	During active dredging and dredge spoil placement

¹³ For the purposes of this plan 'actively engaged in dredging' only refers to Cutter Suction Dredges (CSDs) and Trailing Suction Hopper Dredges (TSHDs) and therefore a Backhoe Dredge (BHD) does not require an MFO. This is due to the low risk to CSMF posed by the stationary BHD or grab dredge. Note though that a BHD/ grab dredge will have a trained crew member to monitor and ensure management is implemented as required, including recording observed CSMF.

Document Ref.	Action	Timing
Table 5-4	The presence of CSMF in or near exclusion zones established for key dredging activities will be recorded.	During active dredging and dredge spoil placement
Table 5-4	All sightings of CSMF that result in any management measures being implemented will be recorded.	During active dredging and dredge spoil placement
Table 5-4	When operating with less than 5 m under-keel clearance, the dredge will initially move slowly through the area before commencing dredging so that the noise and vibration alerts marine turtles in the vicinity and encourages them to leave. This will only be applied on dredging in new areas and not once the work area has been established.	During active dredging
Table 5-4	Dredge pumps will be stopped as soon as practically possible, within safe operating limits, after completion of dredging and where practical the drag head will remain as close as practicable to the seabed until the dredge pump is stopped.	During active dredging
Table 5-4	When initiating dredging, suction through drag heads will be initiated just long enough to prime the pumps, prior to drag heads engaging the seabed.	During active dredging
Table 5-4	Tickler chains and/or deflector devices on the drag head of the THSD will be used as a management mitigation approach to reduce turtle entrainment, where safety and logistical constraints permit.	During active dredging
Table 5-4	Overflow screens will be used on TSHDs to visually assess for turtles and turtle remains associated with entrainment during dredging after each load.	During active dredging
Table 5-5	In the event that a Chevron employee, contractor or subcontractor engaged to work for the Construction of the Project chooses to operate a recreational vessel, outside their working hours, the contractor or subcontractor are bound to the Wheatstone Environment Protection Code of Conduct (WEPC) (EPBC 2008/4469 Condition 26a).	During Construction
Table 5-5	Environmental awareness covering the risk to CSMF from recreational vessel activities will be provided to relevant members of the Operational workforce.	During Operations
Table 5-6	Vessels engaged for the Construction or operation of the Project, including the Platform, will adhere to a waste management plan.	During Construction and Operations
Table 5-7	Project vessels will be maintained in accordance with their maintenance system to avoid increasing noise transference into the water.	During Construction
Table 5-8	At least one MFO to be on active duty during daylight hours when actively engaged in marine pile-driving or VSP operation. The MFO will have no other duties (MS 873 Condition 10 1)	During active marine pile-driving and VSP operation

Document Ref.	Action	Timing
Table 5-8	The MFO on active duty to ensure observation and exclusion zones are adhered to, including the requirement to shut down relevant pile driving activity if CSMF are sighted within the exclusion zones	During active marine pile-driving and VSP operation
Table 5-8	Observations of any injured or dead CSMF reported as detailed in Table 7-1.	During active marine pile-driving and VSP operation
Table 5-9	<p>The following definitions are used for management zones for marine pile driving:</p> <p>Observation Zones:</p> <ul style="list-style-type: none"> • A radius around the pile hammer that is no less than 1500 m applies for whales, dugongs and dolphins • A radius around the pile hammer that is no less than 300 m applies for marine turtles <p>Exclusion Zones:</p> <ul style="list-style-type: none"> • A radius around the pile hammer that is no less than 1250 m, applies for whales, dolphins and dugongs • A radius around the pile hammer that is no less than 100 m applies for marine turtles 	During active marine pile-driving
Table 5-9	<p>Pre-start-up Visual Observations:</p> <p>During daylight hours the MFO will conduct pre-start-up visual observations for CSMF to the extent of the marine pile driving Observation Zones for at least 30 minutes prior to start-up to identify if there are any whales, dugongs, dolphins or marine turtles present</p>	During active marine pile-driving
Table 5-9	<p>The following observation procedures will be implemented by the MFO during pile driving operation:</p> <ul style="list-style-type: none"> • Visual observations of the marine pile driving Observation Zones will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Visual observations of the marine pile driving Exclusion Zone will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Piling will be suspended using the safe shutdown procedure, within two minutes or as soon as safely possible, if any whales, dugongs, dolphins or marine turtles are observed within the applicable marine pile driving Exclusion Zones 	During active marine pile-driving

Document Ref.	Action	Timing
Table 5-9	<p>Soft Start Procedure:</p> <p>Piling operation will be initiated at the soft 'fairy taps' start level (partial strike) and then build up to full operating impact force to encourage any whales, dugongs, dolphins or marine turtles to leave the area as noise intensity increases over a 15 minute period</p> <p>The start-up procedure may only commence if no whales, dugongs, dolphins or marine turtles have been sighted within the marine pile driving Exclusion Zones during pre-start-up visual observations</p> <p>The soft start-up 'fairy taps' procedures will be conducted by slowly increasing the intensity of noise emissions over a period of no less than 15 minutes prior to commencement of full power marine pile driving</p>	During active marine pile-driving
Table 5-9	<p>Concurrent Piling Operations:</p> <p>If concurrent pile driving is taking place, ensure each activity applies the Observation and Exclusion Zones independently</p>	During active marine pile-driving
Table 5-9	<p>Re-starting a Suspended Marine Pile Driving Operations:</p> <p>If marine pile driving operation have ceased due to any whales, dugongs, dolphins or marine turtles observations within the applicable marine pile driving Exclusion Zone, the marine pile driving operation may only recommence if:</p> <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have been observed outside the applicable marine pile driving Observation Zone <p>Or</p> <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have not been observed within the marine pile driving Exclusion Zone for a period of 30 minutes since the last sighting <p>If marine pile driving operations have been ceased for more than 15 minutes for any reason, the Pre-start-up Visual Observations and Soft Start Procedure will be implemented</p>	During active marine pile-driving
Table 5-9	<p>Re-starting a Suspended Marine Pile Driving Operations:</p> <p>When re-starting a pile driving operation that has been suspended for more than 15 minutes, in the event that visual observation was maintained continuously during the period of suspension, the Soft Start may commence if:</p> <ul style="list-style-type: none"> • observed whale, dugong, dolphin or marine turtle was observed to move outside the relevant Observation Zone, or • 30 minutes have passed since the last sighting 	During active marine pile-driving

Document Ref.	Action	Timing
Table 5-9	<p>Piling Operations After Sunset or Periods of Low Visibility: No marine pile driving to occur between the hours of sunset and sunrise during the peak southern migration of mother and calf humpback whale pods defined as 10 August to 10 October in any year</p> <p>If marine pile driving operation commenced prior to sunset or prior to a period of low visibility, outside the peak southern migration defined above, the activity may continue between the hours of sunset and sunrise, unless the marine pile driving is suspended for more than 15 minutes</p>	During active marine pile-driving
Table 5-10	<p>The MFO on active duty to ensure observation and shut-down zones are adhered to, including the requirement to shut down VSP activity if any whales are sighted within the shut-down zone:</p> <ul style="list-style-type: none"> • Observation zone: the 3 km horizontal radius from the VSP acoustic source • Shut-down zone: the 500 m horizontal radius from the VSP acoustic source 	During active VSP operation
Table 5-10	Conduct pre-start-up visual observations out to the extent of the observation zone for a period of at least 30 minutes before commencing the soft start	During active VSP operation
Table 5-10	A soft-start up procedure may commence if no whales have been sighted within the shutdown zone during the pre-start-up visual observations	During active VSP operation
Table 5-10	The soft start-up will include initiation of the VSP acoustic source at the lowest setting, with a gradual ramp-up of the acoustic source over a 20 minute period until the full operating power level is reached	During active VSP operation
Table 5-10	<p>The following procedures will be implemented while the VSP acoustic source is operating:</p> <ul style="list-style-type: none"> • Continuous visual observations of the extent of the observation zone from the VSP acoustic source to identify if any whales are present • If a whale is sighted within the observation zone, the operator of the acoustic source will be placed on stand-by to power down the acoustic source • If a whale is sighted within the shut-down zone the acoustic source will be shut down completely 	During active VSP operation
Table 5-10	<p>During periods of low visibility, where the observation zone cannot be clearly viewed out to the extent of the observation zone (including night time), the VSP source should be utilised as described above, provided that during the preceding 24 hour period:</p> <ul style="list-style-type: none"> • There have not been three or more whale instigated shut down situations • A two-hour period of continual observations was undertaken in good visibility (to the extent of the observation zone) and no whales were sighted 	During active VSP operation
Table 5-10	If the prescribed conditions for VSP operation are not satisfied then the VSP will not be utilised	During active VSP operation
Table 5-10	Observations of any injured or dead CSMF reported as detailed in Table 7-1.	During active VSP operation

Document Ref.	Action	Timing
Table 5-11	At least one MFO must be on active duty during daylight hours when actively engaged in re-strike tests. The MFO will have no other duties (MS 873 Condition 10-1). Additionally, two trained crew members will assist the MFO on active duty in undertaking pre-start-up visual observations and operating procedures for re-strike testing operation.	During active re-strike testing
Table 5-11	Mobile in-water observations will be undertaken by utilisation of a vessel, with a trained crew member on-board, to assist in monitoring the Observation Zone for 30 minutes prior to commencement, and during, the re-strike testing operation.	During active re-strike testing
Table 5-11	The MFO on active duty to ensure observation and exclusion zones are adhered to, including the requirement to shut down relevant re-strike testing operation if CSMF are sighted within the exclusion zones	During active re-strike testing
Table 5-11	The following definitions are used for management zones for re-strike testing: Observation Zones: A radius around the pile hammer that is no less than 1500 m applies for whales, dugongs and dolphins A radius around the pile hammer that is no less than 300 m applies for marine turtles Exclusion Zones: A radius around the pile hammer that is no less than 1250 m, applies for whales, dolphins and dugongs A radius around the pile hammer that is no less than 100 m applies for marine turtles.	During active re-strike testing
Table 5-11	Pre-start-up Visual Observations: The MFO will conduct pre-start-up visual observations for CSMF to the extent of the re-strike testing Observation Zones for at least 30 minutes prior to start-up to identify if there are any whales, dugongs, dolphins or marine turtles present	During active re-strike testing
Table 5-11	Operating Procedures while re-strike testing is undertaken: The following observation procedures will be implemented by the MFO: <ul style="list-style-type: none"> • Visual observations of the relevant Observation Zones will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Visual observations of the relevant Exclusion Zone will be maintained continuously to identify if there are any whales, dugongs, dolphins or marine turtles present • Re-strike testing will be suspended using the safe shutdown procedure, within two minutes or as soon as safely possible, if any whales, dugongs, dolphins or marine turtles are observed within the applicable re-strike testing Exclusion Zones 	During active re-strike testing

Document Ref.	Action	Timing
Table 5-11	<p>Re-starting a Suspended Re-strike Testing Operations: If re-strike testing operation have ceased due to any whales, dugongs, dolphins or marine turtles observations within the applicable Exclusion Zone, the re-strike testing operation may only recommence if:</p> <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have been observed outside the applicable Observation Zone <p>or</p> <ul style="list-style-type: none"> • The previously observed whales, dugongs, dolphins or marine turtles have not been observed within the applicable Exclusion Zone for a period of 30 minutes since the last sighting 	During active re-strike testing
Table 5-11	If re-strike testing operation have been ceased for more than 15 minutes for any reason, the Pre-start-up Visual Observations will be implemented	During active re-strike testing
Table 5-11	No re-strike testing shall occur between the hours of sunset and sunrise	During active re-strike testing
Table 5-12	Visiting LNG carriers and condensate tankers will follow international lighting standards and will, under normal operating conditions, only be present for the duration of the loading of the ship.	At night during Construction and Operations
Table 5-12	Project vessel light spill will be reduced at night, where reasonably practicable	At night when operating Project vessels during Construction and Operations
Table 5-12	Project vessel lighting is not to be continuously 'on'; lighting should be 'off' when not required	At night when operating Project vessels during Construction and Operations
Table 5-12	No lit Project vessel to be moored within the 1.5 km nesting beach buffer zones shown in Appendix F.	At night when operating Project vessels during Construction and Operations
Table 5-13	Coastal Construction or temporary lighting will be focused onto work areas and directed away from the water and the beach, when safe and possible to do so.	At night during Construction and Operations
Table 5-13	<p>LNG Plant and permanent coastal infrastructure, subject to the need to meet safety requirements, will employ light management strategies including:</p> <ul style="list-style-type: none"> • No decorative lighting • No use of metal halides, mercury vapour fixtures, white or ultraviolet lights • Focus on downward lighting design to reduce overhead glow • Jetty lighting will be focused onto work surfaces. 	At night during Operations

Document Ref.	Action	Timing
Table 5-13	Planned flaring events (e.g. planned flaring during maintenance activities) will occur during daylight hours as far as practicable; however, the timing will depend upon personnel availability and consideration for the least interruption to ongoing operation and safety of the overall plant facility.	At night during Operations
Section 6.0	The monitoring program will be implemented to measure the accuracy of Project predictions in relation to potential light impacts to marine turtles, as required by EPBC2008/4469 Condition 26(b) and MS 873 Condition 10-12 (iv) and to verify achievement of environmental performance standards specified in Table 4-1.	Construction and Operations
Section 6.1.1	The monitoring program will be implemented in a way that meets the objectives defined in Table 6-1 while retaining operational flexibility such that abnormal events (e.g. extreme weather events), that are beyond Chevron Australia's control, can be accommodated.	Construction and Operations
Section 6.1.1	In the event that circumstances (e.g. extreme weather or safety concerns) prevent the implementation of one or more monitoring scopes (or a component of a scope), Chevron Australia will take measures to ensure the objectives of the monitoring program continue to be met.	Construction and Operations
Section 6.1.3	Figure 6-2 sets out the response actions Chevron will take in the unlikely event that a management trigger has been met; these include further analysis or monitoring if necessary to confirm actual or potential risk of significant adverse impacts.	Construction and Operations
Section 6.1.3	Triggers are reviewed prior to the next performance reporting period and prior to the next nesting season. If response actions are required, these are implemented prior to and/or during the subsequent nesting season.	Construction and Operations
Section 6.3	Demographic data is compared against the management triggers. The aim of the initial response to activation of any management trigger is to determine whether the cause is Project attributable. If deemed Project attributable, Chevron Australia will initiate the associated response actions defined in Figure 6-2 according to the level of trigger activated. Activation of an Action level management trigger initiates an immediate investigation into the cause.	Construction and Operations
Section 7.2	MS 873 Condition 4-5 requires that any potential non-compliance, relevant to this Plan, will be reported to the CEO of the EPA within seven days of that potential non-compliance being known.	Construction and Operations
Section 7.2	EPBC 2008/4469 Condition 3 requires non-compliance with this Plan to be reported to DOTE at the time the CAR is published on Chevron Australia's website.	Construction and Operations

Document Ref.	Action	Timing		
Section 7.2	MS 873 Condition 10-16i requires that any non-achievement of environmental performance standards (Table 4-1) be reported to the CEO of the OEPA within 21 days of having determined that a non-achievement has occurred.	Construction and Operations		
Table 7-1	Incident	Report to	Timing	Construction and Operations
	Injury to, or mortality of, an EPBC Act Listed Threatened or Migratory Species ¹⁴	Department of the Environment		
	Any natural or Proposal attributable injury or mortality of CSMF ¹⁵	Department of Parks and Wildlife	Within 24 hours as required by MS 873 Condition 10-16ii (or as amended)	
Section 7.4	MS 873 Condition 10-3 requires that data from CSMF observation logs are submitted to DPaW on an annual basis during Construction or when marine pile-driving or dredging activities are undertaken for the Project. The logs will be submitted in an agreed format at the same time as the compliance assessment report.	Construction or when marine pile-driving or dredging activities are undertaken for the Project		
Section 7.4	Whale and dolphin sighting records, from observation logs maintained by Project vessels during Construction (MS 873 Condition 10-1 and 10-3) will also be submitted to the DOTE in an agreed format on an annual basis.	Construction		
Section 8.0	The Plan will be reviewed as required by MS 873.	Construction and Operations		
Section 8.0	Chevron Australia will submit a proposed revision of this Plan as a result of the following: <ul style="list-style-type: none"> • when a new activity, or significant modification, change, or new stage of the existing activity, not provided for in the Plan is proposed; • before, or as soon as practicable after, the occurrence of any significant new environmental risks or impacts, or significant increases in an existing environmental risk or impact not provided for in the Plan. 	Construction and Operations		
Section 8.0	Minor changes as defined above will be made to this Plan using Chevron Australia's document control process and will not be submitted for formal assessment.	Construction and Operations		

¹⁴ Refers to CSMF as detailed within the Plan

¹⁵ CSMF include marine mammals [whales, dugongs and coastal dolphins], marine turtles, whale sharks and sawfish

Document Ref.	Action	Timing
Section 9.0	The approved Plan will be made publicly available on Chevron Australia's website within one month of approval (EPBC2008/4469 Condition 8) and in a manner approved by the CEO of the OEPA (MS 873 Condition 10-14).	Construction and Operations



Wheatstone Project

Addendum 1 to the Conservation
Significant Marine Fauna Interaction
Management Plan (Rev 7)

Document ID:	WS0-0000-HES-PLN-CVX-000-00130-000	Revision ID:	0
Revision Date:	18 August 2017		
Information Sensitivity:	Public		

OVERVIEW

This addendum to the Wheatstone Project Conservation Significant Marine Fauna Interaction Management Plan (CSMFIMP) [WSO-0000-HES-PLN-CVX-000-00037-000 Rev 7] addresses amendments associated with the removal of temporary jetty piles that are located adjacent to the Materials Offloading Facility (MOF), refer to Figure 1 below.

The CSMFIMP defines 'marine pile driving' as *mechanically driving infrastructure into the ground on the seaward side of the highest astronomical tide (HAT) mark*. EPBC Approval 2008/4469 defines marine piling as *driving structural supports into the ground below the waterline*. Given these definitions, the method to remove the temporary jetty piles is considered a component associated with the marine pile driving scope of work for the Wheatstone Project and therefore implementation of the CSMFIMP is required.

The removal of the temporary jetty piles requires the use of a drilling auger and a Rotopile drill to completely extract the piles from the seabed. This addendum amends Table 3-2 of the CSMFIMP to include the potential stressors associated with the activity of removing the piles and also provides a brief description of the activity as a footnote (refer to revised Table 3-2 on page 3).

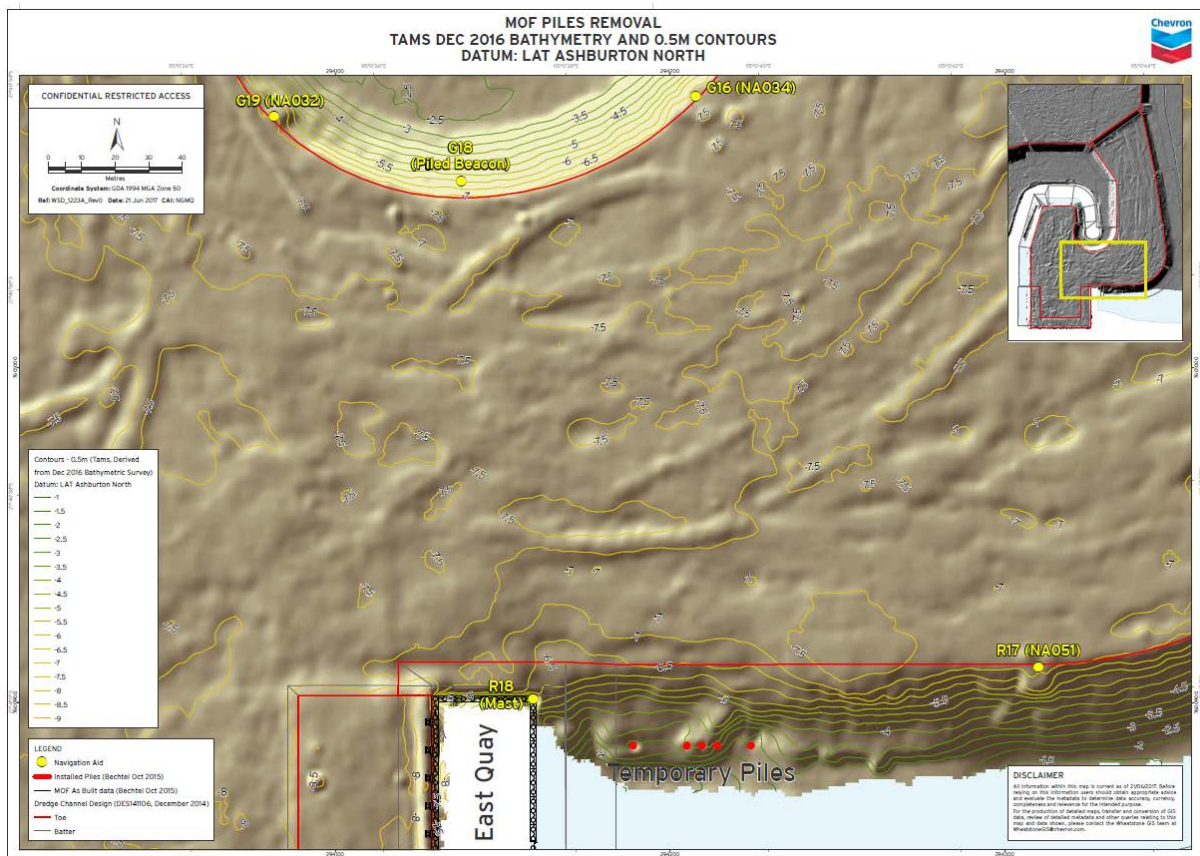


Figure 1: Location and water depth of the temporary jetty piles

ENVIRONMENTAL RISK

Sediment and benthic habitats

The removal of the temporary jetty piles will be conducted within the dredging Zone of High Impact. The activities will generate small, localised plumes of turbidity and small deposits of naturally occurring material at the base of each pile. The turbidity is not anticipated to reach areas beyond the dredging Zone of High Impact and as a result

there are no anticipated additional environmental risks to benthic primary producer habitat. This activity is not considered to be classified as a 'turbidity-generating activity' as defined under Schedule 4 of Ministerial Statement 873 or 'dredging' as defined by EPBC 2008/4469. The seabed materials in this area have been analysed and the sediment assessment determined that there were no contaminant concentrations of potential concern (Wheatstone Draft EIS/ERMP Appendix Q5).

Underwater noise

The noise generated from the removal of the temporary jetty piles is expected to be of a low level compared to noise from previous offshore construction activities, such as pile installation and dredging. Technical advice regarding underwater noise was previously received from Curtin University Centre for Marine Science and Technology for a pile installation scope utilising Reverse Circulation (RC) drilling. Given that forthcoming scope uses similar Rotopile drilling, this advice can be referenced.

The technical advice from Curtin University and conclusions as set out below, was based on a larger pile installation scope with a worst-case scenario of 40 piles requiring the installation of rock sockets using RC drilling. Therefore, whilst the technical advice from Curtin University can be applied to this smaller scope due to the similar methodology utilised, the estimates of potential environmental impact associated with noise are highly conservative. The technical advice from Curtin University concluded that the maximum distances of potential physical injury and Temporary Threshold Shift onset associated with RC drilling for rock socket installation was conservatively estimated to be less than 10 m for whales, dolphins and dugongs. Based on this understanding it is Chevron Australia Pty Ltd (Chevron Australia) view that noise generated from the removal of the temporary jetty piles is likely to fall within the hearing range of Conservation Significant Marine Fauna (CSMF), however the potential impacts from these sounds are unlikely to cause physical damage.

Noise generated from the previous RC piling activity at the Wheatstone project was considered likely to cause some behavioural response in the immediate vicinity but the peak pressure, as compared to the noise generated from pile driving activities, was much lower and as a result present a reduced risk to CSMF. The same conclusions can be conservatively applied to the Rotopile drilling to be undertaken for pile removal. Furthermore, water depth at the location of the five piles is 3.5 m or less and therefore limits the potential for noise transmission / attenuation into deeper water.

MANAGEMENT AND MITIGATION

The use of auger drilling and Rotopile drilling for the removal of temporary jetty piles does not result in any additional risk or increase environmental risks previously identified for the Wheatstone Project. As such, Chevron Australia proposes that the environmental management for the Project currently in place for construction activities, as defined in the CSMFIMP, adequately manages potential risks to matters of National Environmental Significance and EPBC Listed Threatened or Migratory Species. No additional management of mitigation measures are required to implement activities associated with removal of the piles. Specific pile driving observations and exclusion zones that are detailed in the CSMFIMP will not be implemented due to the works occurring in the nearshore environment at the MOF, relatively low noise levels and associated negligible risk profile.

Amendment to Table 3-2 of the CSMFIMP

This addendum amends Table 3-2 of the CSMFIMP to include the potential stressors associated with the activity of removing the temporary jetty piles. The amended table is shown below.

Table 3-2: Potential stressors to CSMF associated with the Project relevant to the Plan

Stressor	Sources
Physical presence of infrastructure	<p>Operations</p> <p>Offshore: permanent presence of MOF, PLF and Platform</p> <p>Offshore: seawater intake lines</p>
Physical interaction	<p>Dredging</p> <p>Offshore: dredging vessels (maintenance or clean-up)</p>
	<p>Construction</p> <p>Offshore: vessels (general Construction & removal of temporary jetty piles¹)</p> <p>Offshore: vessels (recreational)</p>
	<p>Operations</p> <p>Offshore: vessels (e.g. tugs, barges, pilot vessels, maintenance vessels)</p> <p>Offshore: vessels (recreational)</p>
Solid and liquid waste discharges to sea	<p>Operations</p> <p>Offshore, onshore: uncontained (e.g. windblown) solid waste</p>
Noise and vibration	<p>Dredging</p> <p>Offshore: dredges and associated equipment (maintenance or clean-up)</p>
	<p>Marine Pile Driving</p> <p>Offshore: piling barges (including minor rectification works)</p> <p>Offshore: elevated work platform (removal of temporary jetty piles¹)</p> <p>Offshore: auger and Rotopile drilling (removal of temporary jetty piles¹)</p> <p>Offshore: vibratory tool (removal of temporary jetty piles¹)</p>
	<p>VSP</p> <p>Offshore: VSP vessels</p>
	<p>Construction</p> <p>Offshore: vessels (general Construction)</p>
Artificial light	<p>Construction</p> <p>Offshore: vessel lighting (e.g. Construction vessels, barges), lighting associated with constructing the MOF and PLF</p> <p>Onshore: lighting (including mobile task lighting)</p> <p>Onshore: flaring during commissioning</p>
	<p>Operations</p> <p>Offshore: vessel lighting (e.g. tugs, barges, pilot vessels, maintenance vessels), LNG carrier and Condensate tanker lighting, lighting associated with operation of the MOF and PLF</p> <p>Onshore: lighting (including mobile task lighting)</p> <p>Onshore: flaring</p>

⁽¹⁾ The removal of the temporary jetty piles is a one-off activity to extract five piles from the seabed that were installed during the early construction phase of the Wheatstone

Project to support a temporary jetty structure. The piles are required to be removed, as directed by the Pilbara Port Authority, to aid safe navigation. The five piles are located at the north-east end of the east quay of the Material Offloading Facility (MOF) within the Port of Ashburton. The Project proposes to remove the piles via auger drilling and Rotopile drilling. The 1.6 m of concrete filled section of pile will be removed by oxy cutting carried out from an Elevated Work Platform. The material within the pile, to design depth, will be brought to the surface via a drilling auger. Water will be pumped through the hollow stem, loosening and flushing this material from the pile. Rotopile drilling will be used to remove the piles. A barge mounted pile drilling rig will drive and lower the Rotopile cutting sleeve into the seabed whilst a water pump will be used to continually pump seawater down the centre of the pile to ensure the cutting teeth are flushed to prevent binding. The Rotopile cutting sleeve will be drilled to the toe level of the existing pile being removed. A crane will then either lift the pile out or if there is still some residual resistance, the crane will lift the vibratory tool onto the top of the existing pile and vibrate out of the seabed. All piles will be stored on the deck of the barge for removal and subsequent disposal. No drilling muds are to be utilised in the Rotopile removal process.



Wheatstone Project

Chevron Australia Pty Ltd
ABN 29 086 197 757
L24, QV1, 250 St George's Tce
Perth WA 6000, Australia
GPO Box S1580, Perth WA 6845
Tel 61 8 9216 4000
Fax 61 8 9485 5088

21 August 2017

James Barker
Assistant Secretary
Environment Standards Division
Department of the Environment and Energy
GPO Box 787
CANBERRA ACT 2601

Dear James,

Wheatstone Project (EPBC 2008/4469) – Conservation Significant Marine Fauna Interaction Management Plan (Rev 7) Addendum 1 for Ministerial Approval

With reference to the Minister's approval of the Wheatstone Project (EPBC 2008/4469) and pursuant to Condition 25 attached to the approval, please find enclosed the *Conservation Significant Marine Fauna Interaction Management Plan (Rev 7) Addendum 1* (Addendum) for the Minister's (or delegate's) consideration and approval. This Addendum has been drafted in consultation with your Department following discussion on 10 August 2017 and a subsequent presentation, describing the methodology and environmental assessment for the proposed activity, being provided on 11 August 2017 via email correspondence.

Chevron considers that Conditions 29, 30 and 31 of EPBC Approval (2008/4469) are relevant to marine drilling and blasting or marine blasting activities and are not applicable to the removal of the temporary jetty piles. The removal of five piles by Rotopile drilling is considered a piling related activity and therefore implementation of Condition 26 (CSMFIMP) of EPBC 2008/4469 is required. As requested by the Department, this activity has been captured as an addendum to the Conservation Significant Marine Fauna Interaction Management Plan (Rev 7). Chevron Australia's preference is to avoid resubmission of a Revision 8 of the plan to include a description of a short-term (one off) and low risk activity, given that Chevron Australia is not proposing additional management measures based on the risk profile.

We respectfully request that Addendum 1 be considered for approval by 05 September 2017. If you require any further information in relation to this matter, please do not hesitate to contact me on tel. 08 9413 6429 or email tyo@chevron.com.

Yours sincerely,

Tye Pope
HES Supervisor - Environment
Wheatstone Project

Encl: Addendum 1 to the Conservation Significant Marine Fauna Interaction Management Plan (Rev 7)
[WS0-0000-HES-PLN-CVX-000-00130-000]



Mr Tye Pope
HES Supervisor – Environment
Wheatstone Project
Chevron Australia Pty Ltd
GPO Box S1580
Perth WA 6845

**EPBC 2008/4469 – Wheatstone LNG Project, Western Australia –
Removal of Temporary Jetty Piles**

Dear Mr Pope,

Thank you for your letter dated 22 August 2017 requesting approval of the Conservation Significant Marine Fauna Interaction Management Plan (CSMFIMP) (Rev 7) Addendum 1, submitted in accordance with EPBC Act approval 2008/4469.

Officers of the Department have reviewed your proposal to undertake auger and Rotopile drilling activities and have advised me on your request. On this basis, and as a delegate of the Minister for the Environment and Energy, I have decided to approve the CSMFIMP (Rev 7) Addendum 1 in accordance with condition 5 of EPBC Act approval 2008/4469. The CSMFIMP (Rev 7) Addendum 1 must now be implemented.

Should you require any further information please contact Heather Cross on 02 6274 1432 or by email: postapproval@environment.gov.au.

Yours sincerely,

James Barker
Assistant Secretary
Assessments and Governance Branch
Environment Standards Division

28 August 2017