ExxonMobil Development

Jansz-Io Deepwater Gas Development

Summary
Environment Plan

DOCUMENT NUMBER

AUJZ-EDR-07-SG-580-G03-0040

Rev No.	Rev Date	Description	Prepared	Reviewed	Approved
A	12-Apr-06	Draft for Client Review	Dr. Jernakoff, IRCE	D.J. Parker	
B	29-May-06	For Client Review	Dr. Jernakoff, IRCE	D.J. Parker	
0	1-Jun-06	Approved for Release		D.J. Parker	R.D. Marlin

1 DESCRIPTION OF THE ACTIVITY

1.1 Overview

This section describes the background and intended scope of activities for the Jansz-Io Deepwater Gas Development. Field construction and drilling operations are scheduled to begin in early 2008 with start-up of gas production in 2010.

The Jansz-Io Deepwater Gas Development is being developed by Mobil Exploration and Producing Australia (MEPA) as the operator of Jansz (WA-18-R). Participation in the Io lease area, covered by WA-25-R and WA-26-R, is 50% Chevron Australia Pty Ltd, 25% MEPA, 12.5% Shell and 12.5% BP. Chevron is the operator of the nearby Gorgon field and the onshore Liquefied Natural Gas (LNG) plant. The Jansz-Io Deepwater Gas Development will utilise the LNG Plant operated by Chevron who may also be referred to as the Gorgon Project Operator.

1.2 Field Description

The Jansz-Io resource is a gas condensate reservoir located approximately 200km off the coast of Western Australia in 1,325m water depth. The discovery well, Jansz-1 in permit area WA-18-R, was drilled in April 2000. This was followed by Io-1 in January 2001 in the adjacent permit area WA-25-R. Appraisal wells Jansz-2 and Jansz-3 were spudded in 2002 and 2003, respectively. The Jansz-3 well was production tested and confirmed the high reservoir quality and deliverability in the core development area of the Jansz-Io gas field.

The field will be developed in conjunction with the Gorgon field and each field will supply gas to a two train (10 million tonne per annum) LNG plant to be located on Barrow Island. Both the Gorgon field development and the LNG plant construction will be managed and operated by Chevron Australia Pty Ltd. Initial development of the Jansz-Io field will be completely subsea with full wellstream production delivered to the onshore LNG plant via a single 762 mm (30-inch) nominal outside diameter carbon steel flowline. The subsea wells will be drilled from four manifolds, the locations of which are detailed in Table 1.1.

Table 1.1 Location of Manifolds

Manifold	Easting (mE)	Northing (mN)
A	245 540	7 805 895
B	253 211	7 809 865
C	259 074	7 812 294
D	249 376	7 807 880

The Development will be completed in three phases (Figure 1.1):

- **Phase 1** development will include a single six-slot manifold and five large bore development wells with a 762 mm (30-inch) nominal OD carbon steel flowline, an electro/hydraulic umbilical,

a 203 mm (8-inch) mono-ethylene glycol (MEG) line and a 203 mm (8-inch) utility line back to Barrow Island;

- **Phase 2** will add a second six-slot manifold and five additional development wells, approximately 12 years after start-up; and
- **Phase 3** will add an offshore compression facility along with the associated risers, flowlines and infrastructure. Timing for Phase 3 is approximately 20 years after start-up.

The Jansz-Io Deepwater Gas Development Environment Plan (EP) addresses only Phase 1. EPs for Phases 2 and 3 will be submitted at a later date.

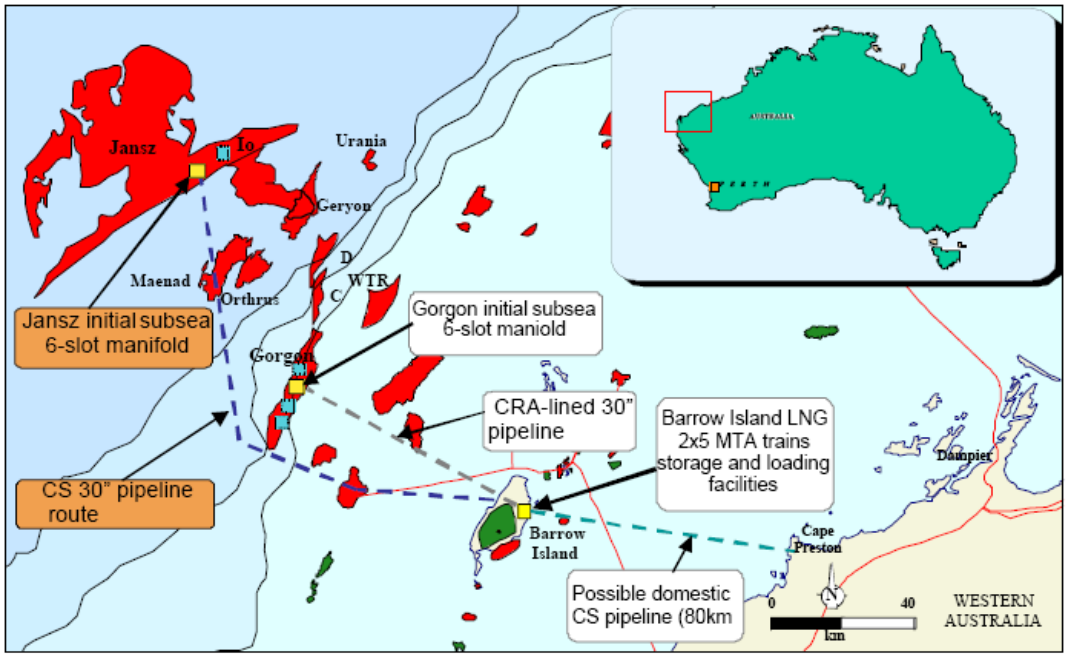

Figure 1.1 Jansz-Io Field Current Development Scheme

2 DESCRIPTION OF THE RECIEVING ENVIRONMENT

2.1 Physical Environment

The Jansz-Io field is located 200km west-northwest of Dampier in 1,325m water depth within permits WA-18-R, WA-25-R and WA-26-R. Studies of the neighbouring WA-267-P deepwater permit area and several regional studies undertaken on the North West Shelf (NWS), indicate that the seabed material is likely to be predominantly flat and featureless and comprised of thick (approximately 2m deep) unconsolidated, fine grained sediments. This seabed habitat type is typical of the region. Specific seabed surveys at the proposed Jansz-Io development site and along potential pipeline routes have been undertaken and confirm the seafloor conditions are generally similar to the rest of the NWS.

2.2 Biological Environment

Seafloor communities in deeper waters are generally depauperate due to low nutrient availability, low light levels and the absence of hard substrates. In 1999, a remotely operated vehicle survey of the seafloor at WA-267-P revealed fine-grained bioturbated sediments, indicating the presence of a range of infaunal organisms. Isolated larger fauna observed comprised a free swimming cnidarian, two demersal fish and a few benthic crustaceans (scampi). Environmental sampling undertaken by MEPA in conjunction with a pipeline survey, and geotechnical and geophysical studies in May 2005 confirmed that benthic fauna in the Jansz-Io region are generally depauperate and typical of the low abundances, richness and diversity observed in other deep areas of the NWS.

There are several species listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) that may migrate or move through the permit area, most notably the Humpback Whale (*Megaptera novaeangliae*). However, none of the species listed are dependent upon the permit area for food or reproduction. The open oceanic conditions associated with the Jansz-Io Deepwater Gas Development mean that there are no features such as feeding or breeding grounds that are likely to cause marine mammals (whales, dolphins, dugong), reptiles (sea turtles or sea snakes) or seabirds to concentrate in the permit area.

Pipelay operations associated with the proposed Jansz pipeline will intersect known migratory routes of Humpback Whales. Pipelay operations are a slow activity and should not cause a significant risk of collision with whales. Best endeavours will be made to schedule the proposed Jansz pipeline construction and installation activities outside of peak northward and southern migrations of the Humpback Whale. The construction and installation of the pipeline is also constrained by the cyclone season, and therefore in the event that construction overlaps with Humpback Whale migration, cetacean interaction procedures will be implemented if needed to reduce the risk of adverse impacts.

2.3 Socio-economic Environment

Most shipping that occurs in the vicinity of the Jansz-Io field is associated with the petroleum industry. The major port closest to the field is Dampier. It is possible that transient shipping traffic would move though the area *en route* between southern Australian ports and areas to the north of Australia; however the short temporal duration of the construction activities are considered to pose a minimal navigational hazard to shipping in the area.

The commercial fisheries that operate in the waters of the NWS are centred at Onslow, over 200km to the south southeast, Exmouth 240 km to the south southwest, and Dampier, 250 km to the southeast of the permit area. Most commercial fishing activity in north-western Australia is focused on the inner continental shelf and waters surrounding the offshore islands to depths of about 30m.

3 MAJOR ENVIRONMENTAL RISKS

A summary of all the identified risks and their rankings is presented in Table 3.1. This table may also be referenced as a complete summary of potential emissions and discharges from the

development phase of the project. Full details of the risk assessment procedure, including definitions for rankings, are provided in Section 4.3.3. of the EP.

No Higher risks were identified in the risk assessment. Upper and Lower Range Medium Risks (UMR and LMR, respectively) are reviewed in detail in Chapter 6 of the EP (refer to Section references provided in Table 3.1) with a summary of Performance Objectives, Standards and Criteria provided in Section 4.2 of this document. Low Risks (LR) were considered to be already managed to as low as reasonably practicable (ALARP) through normally implemented safeguards.

Table 3.1 Summary of Environmental Risks and Effects

ID	Environmental Risks and Effects	Consequence	Probability	Risk Ranking	EP Section
Physical Presence					
Routine Activities					
P1	Creation/removal of artificial habitat	IV	D	LR	-
P2	Vessel manoeuvring	IV	D	LR	-
P3	Light emissions	IV	D	LR	-
P4	Noise emissions	IV	D	LR	-
Non-Routine Activities					
P5	Dropped objects from vessels	IV	D	LR	-
P6	Anchor impact	IV	D	LR	-
P7	Helicopter crash	IV	E	LR	-
P8	Interference with shipping, fishing and recreational operators	IV	D	LR	-
Waste Materials					
Routine Activities					
W1	Grey water, sewage and putrescible waste	III	C	LMR	5.1
W2	Cooling/reject water	IV	D	LR	-
W3	Solid Waste	IV	E	LR	-
W4	Bilge water	IV	C	LR	-
W5	Hazardous waste	IV	E	LR	-
Air Emissions					
Routine Activities					
A1	Power generation exhaust emissions	IV	B	LR	-
A2	Helicopter emissions	IV	C	LR	-
A3	Venting gas and fugitive emissions	IV	B	LR	-
Non-Routine Activities					

ID	Environmental Risks and Effects	Consequence	Probability	Risk Ranking	EP Section
A5	Subsea gas release	IV	E	LR	-
A6	Ozone depleting substances	IV	E	LR	-
Quarantine Issues					
Routine Activities					
Q1	Vessels entering Australian waters with contaminated ballast water	IV	E	LR	-
Q2	Introduction of pests, weeds and diseases (assuming no vessel interaction with Barrow Island)	IV	E	LR	-
Hydrocarbon Releases					
Non-Routine Activities					
R1	Spillage or inadvertent release of diesel fuel or Heavy Fuel Oils (HFO)	II	C	UMR	5.2
R2	Spillage or inadvertent release of helifuel/other hydrocarbons	III	E	LR	5.3
Chemical Releases					
Routine Activities					
C1	Discharge of drill cuttings and fluids	IV	A	LMR	5.4
Non-Routine Activities					
C2	Planned chemical releases, e.g. hydrotest discharge, hydraulic fluids	III	C	LMR	5.5
C3	Unplanned chemical releases including: dropped bulk materials during handling, storage and transfers, chemical and Non-Aqueous Fluids (NAF) releases from transfers and subsea leaks	III	B	UMR	5.6

4 SUMMARY OF MANAGEMENT APPROACH

4.1 Consultation

At this early phase of development, consultation has been limited to the following relevant environmental authorities in the course of planning the Jansz-Io Deepwater Gas Development:

- Department of Environment and Heritage (DEH);
- Western Australian Department of Industry and Resources (DoIR); and
- Western Australian Department of Environment (DoE).

The Jansz-Io Deepwater Gas Development was referred to the DEH under the EPBC Act (EPBC 2005/2184). The Commonwealth Minister for the Environment and Heritage determined the Jansz-Io Deepwater Gas Development to be a controlled action.

The matters protected under Part 3 of the EPBC Act are:

- Sections 23 and 24A (Marine environment).

The approach that must be used for the assessment of the relevant impacts of this action is assessment by Preliminary Documentation. Under Section 93 of the Act, MEPA was required to publish specified information for public comment for a period of 20 business days. Public comments will be taken into consideration by the DEH for the assessment and conditions of approval.

Once contractors are identified and closer to the time of implementation, MEPA will undertake further consultation with all relevant stakeholders to identify any additional potential environmental issues and management requirements for incorporation into activity/contractor specific plans. Relevant stakeholders include:

- DEH;
- DoIR;
- DoE;
- Western Australian Department of Fisheries;
- West Australian Fishing Industries Council (WAFIC);
- Australian Marine Oil Spill Centre (AMOSC);
- Australian Maritime Safety Authority (AMSA);
- Dampier Port Authority; and
- Ashburton Shire Council.

4.2 Summary of Performance Objectives, Standards and Criteria

Performance objectives, standards and criteria for identified environmental risks are presented in Table 4.1. This table also includes the performance objectives, standards and criteria for risks associated with the overarching environmental management for the development.

Table 4.1 Summary of Performance Objectives, Standards and Criteria

Standards	Criteria	Frequency/Comment	Responsible
Physical Presence (Hazards P1-P8) Performance Objective: Limit the impacts of the physical presence of activities on the marine environment, and nearby fishing/shipping operations.			
Petroleum (Submerged Lands) Act (P(SL)A) Section 107 *"… make good disturbance to the seabed ..."*	Procedures and safeguards in place for the installation of all subsea infrastructure.	Prior to start of construction activities.	Construction Manager
DEH Cetacean interaction guidelines	Interactions with cetaceans will follow DEH cetacean interaction guidelines.	During construction and installation activities	Offshore Installation Manager (OIM)
Australian and New Zealand Environment Conservation Council (ANZECC) Interim Ocean Disposal Guidelines (Section 2.2 *"Site Selection, Management, Environmental Assessment and Monitoring"*).	Functional lighting in place on construction vessels and other vessels. Maintenance programs ensure lighting operating correctly.	Prior to start of construction activities.	Construction Manager
Code of Environmental Practice (APPEA, 1996).	Mariners notified of activity via AMSA.	Prior to and during construction and installation activities	OIM
MEPA Offshore installation Management System (OIMS) and Environmental Policy.	Communications in the resolution of conflicts documented.	As required.	Construction Manager
Auscoast/Australian Maritime Safety Authority (AMSA) requirements.	Vessel interactions in the field logged.	As required.	OIM
	Regular crane tests are performed on the construction vessels to check crane integrity.	Periodically.	OIM
	Load assessments carried out prior to lifting operations.	As required.	OIM
	Decommissioning plan approved by DoIR at the end of field life including: fauna interactions; identification of subsea equipment and pipelines on navigation charts; and notification of mariners.	Prior to decommissioning.	Construction Manager

Standards	Criteria	Frequency/Comment	Responsible
Greywater, Sewage and Putrescible Waster (W1) Performance Objective: Limit the potential negative effects of greywater, sewage and putrescible waste discharges on water quality.			
P(SL)(MoE) Regulations.	Waste is macerated/ground to a particle size less than 25mm prior to discharge to the sea.	Ongoing.	OIM
MARPOL Regulations, Annex IV (Prevention of Pollution by Sewage from Ships) (as adopted by the International Maritime Organisation (IMO). ANZECC Water Quality guidelines for Fresh and Marine Waters	Sewage treatment units onboard Mobile Offshore Drilling Unit (MODU) and construction vessels are maintained as part of routine maintenance.	Ongoing.	Construction vessels Maintenance Supervisor
Operating Procedures and Maintenance Management System.	Operating and maintenance procedures exist and are followed for greywater, sewage and putrescible waste treatment.	Periodically.	Construction vessels Maintenance Supervisor
MEPA OIMS and Environmental Policy.	Water quality trends, chemical usage and spill related incidents are logged.	Periodically.	Safety, Health and Environment (SHE) Manager
Solid Waste (W3) / Hazardous Waste (W5) Performance Objective: Avoid/manage the effects of hazardous, liquid and solid wastes to ALARP.			
P(SL)(MoE) Regulations.	Compliance with legislation and procedures regarding housekeeping.	Ongoing.	OIM
Material Safety Data Sheets (MSDS) and Instructions.	Inventory is kept showing that spent oils and lubricants, and solid wastes are being containerised and returned to the mainland.	Ongoing.	OIM
MEPA OIMS and Environmental Policy.	Inventory exists of all chemicals to allow sufficient and appropriate recovery materials to be on hand in the event of a spill (i.e. MSDS sheets, labelling and handling procedures).	Ongoing.	OIM

Standards	Criteria	Frequency/Comment	Responsible
	Personnel are aware of housekeeping requirements via inductions and updates/reviews.	Ongoing.	OIM
	Logs to show biodegradable detergents used.	Ongoing.	OIM
	Documenting, tracking, and segregation of hazardous wastes from other streams of operational wastes as well as their proper storage and handling.	Ongoing.	OIM
Bilge Water (W4) Performance Objective: Avoid and reduce negative effects on water quality.			
P(SL)(MoE) Regulations. Chemical MSDS.	No process drainage or tank cleaning fluids will be drained overboard.	Prior to start of construction.	Construction Manager
Code of Environmental Practice (APPEA, 1996).	Drainage products are sent to the slops tank for settling and processing (as necessary) prior to discharge.	Ongoing.	OIM
MEPA OIMS and Environmental Policy.	Oil and chemical spills are cleaned up and residues are sent to slop tanks.	As required.	OIM
MEPA Waste Management Procedure.	Oil content of ballast water on construction vessels is monitored and complies with legislation.	Regularly.	OIM
Power Generation Exhaust Emissions (A1) Performance Objective: Limit exhaust emissions including CO_2 from power generation.			
MEPA OIMS and Environmental Policy.	Monitoring and logging of fuel usage. Report to MEPA.	Daily.	OIM
	Generators, boilers and other equipment serviced and regularly maintained. Periodic reviews conducted of maintenance records and adherence to procedures related to power generation equipment.	Periodically.	Construction vessels Maintenance Supervisor

Standards	Criteria	Frequency/Comment	Responsible
Helicopter Emissions (A2) Performance Objective: Reduce emissions from helicopters.			
None identified.	No criteria have been identified for this hazard. Helicopter emissions are considered to be of low risk.		
Subsea Gas Release (A5) Performance Objective: Prevent occurrences of subsea blowouts resulting in gas release			
MEPA OIMS MEPA Well Control Manual and BOP Equipment Standards	MODU subsea Blow Out Preventer (BOP) will be inspected and tested as required, Regular BOP Drills will be held.	Prior to start of drilling activities and periodically as required	Drilling Manager
Ozone Depleting Substances (A6) Performance Objective: Prevent releases of ozone depleting substances.			
Operating Procedures and Maintenance Management System.	No release of refrigerant gases.	As required.	Construction vessels Maintenance Supervisor
Environment Protection (Ozone Protection) Policy 1993, Sections 2, 26 and 33.	Refrigerant gases are recovered when maintaining refrigeration, air conditioning and fire suppression systems and disposed of onshore via licensed disposal agents.	As required.	Construction vessels Maintenance Supervisor
MEPA OIMS and Environmental Policy.	Where possible, no halon or CFC based systems will be selected.	Prior to start of construction activities.	Construction Manager
	Monitoring and reduction of fugitive losses from systems.	Ongoing.	OIM

Standards	Criteria	Frequency/Comment	Responsible
Quarantine Issues (Q1-Q2) Performance Objective: Prevent the introduction of foreign organisms into Australia from overseas.			
2001 AQIS Australian Ballast Water Management Requirements. Ballast Water Management System. Code of Environmental Practice (APPEA, 1996).	No items on board MODU or construction vessels that contravene Australian Quarantine Regulations.	Ongoing.	OIM
MEPA OIMS and Environmental Policy.	Construction vessels will comply with AQIS Ballast Water Guidelines.	Ongoing.	Construction Manager
Barrow Island Quarantine Policy	Vessels entering Australia will clear customs before proceeding to site.	Ongoing.	OIM
Spillage or Inadvertent Release of Diesel Fuel (R1) Performance Objective: Reduce the risk of diesel spills from the construction vessels or vessels in the field.			
Operating Procedures and Maintenance Management System	Design and construction of construction vessels diesel tanks reviewed and certified by independent agency.	Prior to start of construction activities.	Construction Manager
	Inspection of fuel tanks /hoses undertaken as part of planned maintenance.	Ongoing.	Construction vessels Maintenance Supervisor
	Diesel refuelling/ transfer is conducted in accordance with MEPA's procedures and, if occurring within the Port of Dampier, those of Dampier Port Authority.	Each fuel transfer operation.	OIM
	Records kept of all refuelling operations.	Ongoing.	OIM
	Reporting of all spills to MEPA and those greater than 80L to DoIR and NOPSA.	As required.	OIM
	Fuel handling and storage procedures are in place and followed.	Ongoing.	OIM
	Transfers of fuel are conducted during daylight hours and calm weather	Ongoing.	OIM

Standards	Criteria	Frequency/Comment	Responsible
Spillage or Inadvertent Release of Helifuel / Other Hydrocarbons (R2) Performance Objective: Reduce the risk of helifuel/other hydrocarbon spills from the MODU, construction vessels or other vessels in the field.			
See Hazard R1.	Hydrocarbon oils are stored in bunded areas on board construction vessels.	Ongoing.	OIM
	No helifuel is stored on board the construction vessels.	Ongoing.	OIM
	Hoses/fittings/connections are maintained and inspected as part of planned maintenance on the construction vessels.	Periodically.	Construction vessels Maintenance Supervisor
Chemical Releases (C1 – C3) Performance Objective: Reduce the risk of adverse effects to marine ecology from a chemical release.			
Code of Environmental Practice (APPEA, 1996). MEPA OIMS and Environmental Policy.	Hydrotest and control fluid ecotoxicity properties are reviewed prior to selection.	Prior to field operations.	SHE Manager
	Antifouling paints on vessels comply with legislation.	Ongoing.	Construction Manager
	Appropriate type and adequate quantities of absorbent material and spill cleanup equipment available on board the MODU, construction vessels and other vessels.	Ongoing.	Construction Manager

5 CONTACT DETAILS

Mobil Exploration & Producing Australia Pty Ltd on behalf of Jansz and Io Joint Ventures
250 St Georges Terrace
Level 30, QV1
Perth, WA 6000

Contact: Donna J. Parker
Safety, Health & Environment Manager
Telephone: (08) 6210 0612
Fax: (08) 6210 0600
Email: donna.j.parker@exxonmobil.com