

Goodwyn A Environmental Plan Summary

This summary of the Project Environmental Plan has been submitted to comply Regulation 11(7)(8) of the Petroleum (Submerged Lands) (Management of Environment) Regulations 1999.

Introduction

Woodside Petroleum Ltd on behalf of the Joint Venture Participants is the designated Operator of the NWS Oil and Gas Project in Western Australia. Woodside Petroleum Ltd's subsidiary, Woodside Energy Ltd (Woodside), is the Operator of the GWA facility.

GWA is the second offshore production facility developed as part of the North West Shelf (NWS) Project and was commissioned in February 1995.

Project Description

GWA is an integrated drilling, production (gas and condensate), utilities and accommodation platform located on the NWS of Western Australia in lease WA-5-L (1) (operating under production license WA-5-L). The facility currently processes gas and condensate from 19 platform-based wells and 2 sub-sea wells from the Echo/Yodel field. Woodside is currently in the process of developing the proposed Perseus over Goodwyn field, which would see another four wells connected to the facility.

Product is exported from GWA to NRA via a 23 km, 750 mm diameter interfield gas/condensate pipeline (IFL). Under normal circumstances product is routed into the second trunkline (2TL), which is tied-in to the IFL approximately 350 m from the NRA platform. There is also the option for the product to be routed across NRA, where it is commingled with NRA product in the export manifold prior to being exported to shore via the NRA trunkline (1TL).

Whilst GWA is established for drilling, no facility specific drilling is planned for the next five years, and has been scoped out of this Environment Plan



Coordinates of Activity

GWA is located approximately 138 km northwest of Dampier and 23 km southwest of the North Rankin A (NRA) platform in location:

Latitude: 19° 39' 12" South
Longitude: 115° 55' 42" East

Description of the Receiving Environment

The NWS exists in an arid (mainly summer rain) subtropical environment with tropical cyclone activity from November to April. Average air temperatures in Karratha (closest regional townsite) range from 15°C to 25°C in winter, and 26°C to 40°C in summer. Rainfall is variable from year to year, with a mean of 310 mm per annum.

The seabed in the vicinity of GWA is typical of deeper offshore areas (>150 m water depth) on the NWS, being characterised by deep (>5 m) soft, silty sediments derived primarily from calcium carbonate, which become deeper, softer and finer with increasing depth. Sampling of the benthos has consistently shown that the soft sediments of the NWS support a low abundance, high diversity invertebrate fauna population, largely comprising burrowing polychaete worms (Phylum Annelida) and crustaceans (Phylum Crustacea). Echinoderms, bivalves and molluscs also contribute significantly to the faunal composition of the area.

A range of whale and dolphin species occur in the waters surrounding GWA, some being seasonal visitors while others occur at low densities all year round. The most common species include the humpback whale, false killer whale, southern bottle-nosed whale, bottle-nosed dolphin, Indo-pacific humpbacked dolphin and Risso's dolphin.

Four species of marine turtles nest on shore sites within the Pilbara region. In order of abundance these are the green turtle (*Chelonia mydas*), flatback turtle (*Natator depressor*), hawksbill turtle (*Eretmochelys imbricata*) and loggerhead turtle (*Caretta caretta*). The leatherback turtle (*Dermochelys coriacea*) may also visit the open waters.

In general, the NWS hosts a diverse assemblage of fish. This is particularly so in the shallow water environments around the oceanic island groups and the mainland coastline. Much of the area in the vicinity of the GWA facility comprises bare, flat sandy seafloor and consequently the natural fish fauna is not believed to be abundant or diverse. However, due to the presence of the platform and other underwater structures around GWA, fish species richness and abundance is probably much higher than in the relatively bare surroundings.

Major Environmental Hazards and Controls

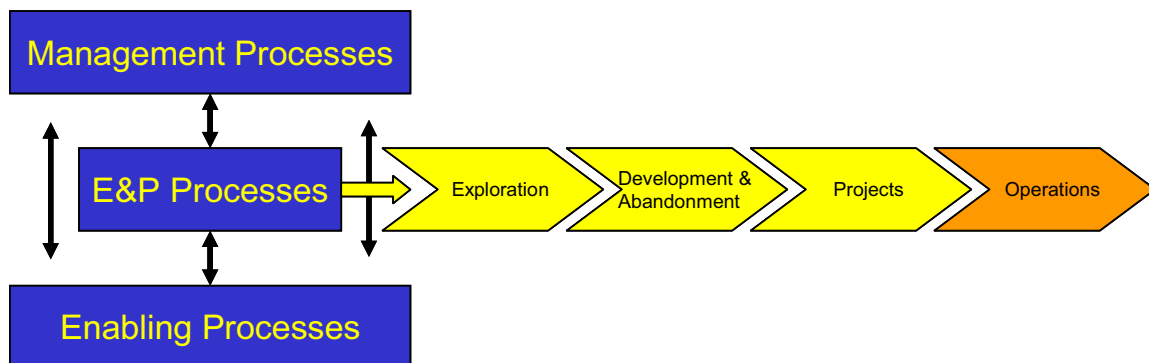
The major Environmental Hazards and controls associated with operating the GWA facility is outlined in the table below.

Aspect	Hazard	Key Hazard Control and Mitigation Measures
Fuel Consumption	Greenhouse gas emissions associated with combustion of fuel for power generation	Fuel gas consumption is constantly monitored and reported. Operate power generation system in accordance to relevant procedures. Inspection and maintenance of gas flow meter and turbines.
Hydrocarbon Gas	Greenhouse gas emissions associated with flaring from the facility	Flaring volumes are monitored and reported Inspection and maintenance of flare flow meters Operate flare system in accordance to procedures Periodic trip reviews (to minimise the amount of trips which contribute to flaring)
Produced Formation Water	Release of produced water to the environment, containing small quantities of entrained hydrocarbons, and potentially chemicals and potential for release of produced water not meeting regulatory specifications.	Concentration of oil in water and volume of produced water discharged is recorded and monitored. Oil in water to meet legislative requirement prior to discharge (30 mg/L – 24 hr average) Oil in water processing equipment (including backup filter for period of high oil in water readings). Continual monitoring of oil in water concentration and volume discharged Online equipment is calibrated and maintained Online readings are verified via laboratory analysis Research conducted at intervals (chemical characterisation, ecotoxicity and

		modelling of produced water discharge)
Hydrocarbon Inventories	Potential release of large quantities of hydrocarbons subsea structures eg wells and flowlines	Operate wells and flowlines in accordance of set operating parameters Continuous monitoring of wells and flowlines Flowlines to be inspected periodically (in accordance to inspection monitoring and maintenance strategy) Leak off tests conducted at regular intervals. Incident notification (in accordance to internal and legislative requirements)
Hydrocarbon/chemical Inventories	Potential release of hydrocarbons/ chemicals via the Hazardous Open Drains and Caisson	Minimise inventory of hydrocarbons in caisson (prevent inventory from entering caisson). Hydrocarbons in caisson is pumped out for onshore disposal Risk based inspection of caisson

Summary of Management Approach

The [Woodside Management Framework](#) (WMF) describes the way in which Woodside is organised and governed. The WMF provides clarity and direction on the boundaries within which all Woodside employees and contractors will work, and empowers employees through clear delegation of authority and setting clear ways of working with clearly defined roles and accountabilities. It describes a single management system for managing Woodside's global business processes.



The WMF and Woodside business processes are continuously improved through a modified plan-do-check-adjust management continuum as follows:

- Plan – Objectives & Leadership Commitment, Capability, Risk Management and Planning & Processes;
- Do – Planning & Processes and Management of Change;
- Measure & Improve – Management Reviews & Audits; and
- Learn & Share – Learning & Knowledge Sharing.

The Operations Business Process describes four key sub-processes as shown in the following diagram of production and activity planning, and the operation, maintenance and modification of facilities. Compliance with the Safety Case and Environment Plan is integral to the Operations Process (12.2.5 – Operate within the Safety Case and Environment Plan). The Woodside Environment Business Process describes a systematic framework for identifying hazards and managing risks, based on the Process Elements described in the Woodside Management System Business Process.

The expectations of the WMF, the Operations Business Process, and the Corporate Health and Safety and Corporate Environment Business Process are met in the GWA facility operations primarily through its implementation of:

- this GWA Environment Plan;
- the GWA Safety Case;
- the annual GWA HSE Plan;

- Woodside, Operations Division, and facility operation standards and procedures; and
- the requirement that contractors and service suppliers for the facility align their performance with Woodside's HS&E requirements.

Consultation

Woodside undertakes consultation with the community and government departments as part of the approval process for the construction and operation of new facilities. As this is an operating facility, the consultation in developing this environment plan is limited to Woodside stakeholders and WA DOIR.

In revising this EP, there was consultation between, and participation in risk assessment workshops by offshore staff, Environmental Advisers, Process and Facility Engineers, maintenance support and specialist consultants.

The GWA Operations Manager and Operations Environmental Advisor also communicate with WA DOIR to discuss various operational aspects. This includes ad hoc meetings between Woodside and the WA DoIR, which ongoing plans and operational issues with regard to legislative requirements, and to provide feedback on environmental performance against environmental commitments.

Contact Details

Further information regarding this Summary Environment Plan or the GWA facility can be obtained by contacting:

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Information of a more general nature can be found on the Woodside website: www.woodside.com.au