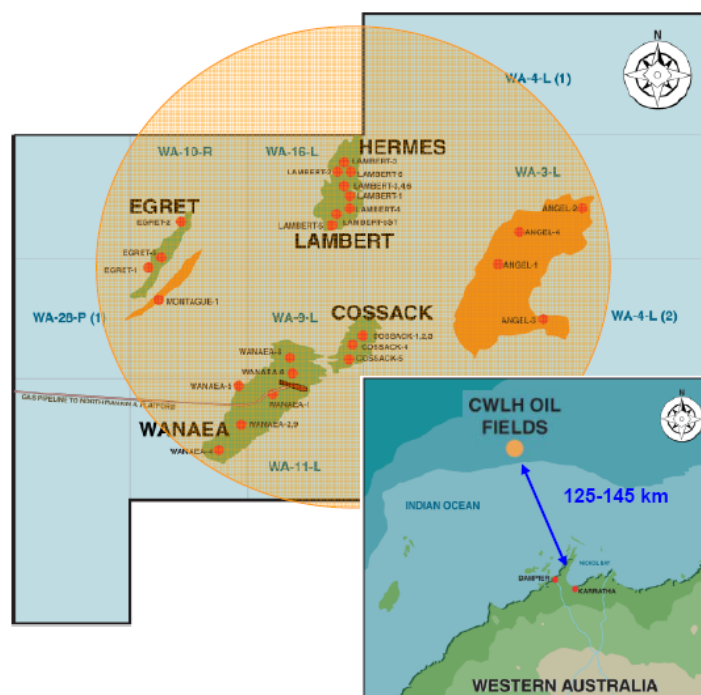


This summary of Subsea Installation works has been prepared in accordance with Part 2, Division 2.2, Section 11 (7) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations, 2009. It may not be used for any other purpose without prior approval from Woodside.

## COORDINATES OF THE ACTIVITY

The Cossack, Wanaea, Lambert and Hermese (CWLH) Fields are located at approximately, Latitude: 19° 35' 13" South and Longitude: 116° 26' 29" East.



## 2. The Receiving Environment.

No significant environmental resources are located in the immediate vicinity of the flowlines and manifolds, situated in approximately 80 to 120 metres of water.

The benthic community is expected to be similar to other locations on the NWS which is characterised by low density infauna consisting of mobile burrowing species, including molluscs, crustaceans, and polychaete, sipunculid and platyhelminth worms.

A number of whale species may be encountered in the region, including Pygmy Blue, Sperm and Humpback Whales. The CWLH fields' location is within the known Humpback Migratory path. The subsea installation activities are planned to commence at the end of the known migration period (July-September) and are not expected to cause significant disruption. No seismic, blasting or other unusual noise events are proposed.

### **3. Description of the Action**

Due to extended reserves, the field life of the CWLH fields is expected to be post 2019. Woodside has made a commitment to replace the *Cossack Pioneer* FPSO to improve performance for the extended field life. The subsea infrastructure will also be upgraded to meet the extension of field life. This work is to be performed both prior to and post departure of the *Cossack Pioneer*, but prior to the arrival of the replacement FPSO, *Okha*, expected in the first half (Q1/Q2) of 2011. The full bridging document relates to the accepted *Cossack Pioneer* Environment Plan (2007).

Work involves the removal, recovery and disconnection, Subsea Installation, and Riser Turret Mooring scopes, including:

**Removal:** performing isolations, line flushing hydrocarbon (to the *Cossack Pioneer*) with chemically inhibited seawater, recovery to the surface and removal of, three dynamic risers and their buoyancy modules, and two 6" flowline jumpers. The requirement to replace RTM mooring chains is being evaluated.

**Disconnection, isolation and wet store on the seabed of:** 6, 8 and 10 inch flowlines (eight in total) and three 6 inch flowline jumpers, disconnected flowline/jumpers will remain wet stored in their current locations.

**Subsea Installation work comprises installation of:** three new 6 inch risers complete with buoyancy modules and the installation and tie in of a number of static flowlines / jumpers. The installation scope for static flexible flowline installation includes the lay and tie in of approximately 20 kms (total) of 6, 8, 10 and 12 inch flexible flowlines and three off 6 inch flowline jumpers. The scope also includes installation of top up of inhibitor in pipework, crossings and mattress installation, secondary stabilisation of flowlines, riser base remedial works, manifold electro hydraulic systems maintenance and pre commissioning activities.

**Riser Turret Mooring works scope includes maintenance of the structural connector, fluid connectors and MIB (MIB Italiana SPA) disconnect-reconnect valves between the topsides process, and the rigid arm replacement on the Riser Turret Mooring (RTM), and riser base stabilisation to be carried out prior to, and following, *Cossack Pioneer* sail away.**

A number of Construction Vessels will provide assistance as required utilising the Dive Support Vessels (DSV) the *Rockwater II* and the *Venturer*, with the *Nor Australis*, tugs and a Heavy Lift Vessel providing further support.

### **4. Major Environmental Hazards and Controls**

No major environmental hazards have been identified over and above those mentioned in the *Cossack Pioneer* Environment Plan. The project has identified the following key hazards and controls for project specific attention:

## 5. Summary of the Management Approach

The management approach follows Woodside's Management System (in line with an ISO-14001 management system). A systematic approach is taken through the identification and assessment of hazards and risk, the establishment of objectives, performance standards, criteria and the development of appropriate documentation.

Environmental management responsibility (and Permit to Work i.e. Integrated Safe System of Work responsibility) for work in the field will be transferred from the Cossack Pioneer Offshore Installation Manager to the Senior Woodside Offshore Representative in the Field, once the Cossack Pioneer disconnects from the riser (when in free sailing mode the FSO master is in charge of the vessel). This will later be transferred to the FPSO OIM once the replacement FPSO connects to the riser.

Vessel Operations will be controlled by the Woodside management system and Cossack Pioneer Marine Operations procedures while in field to minimise collision risks between project vessels and visiting offtake tankers, vessel management systems and the Cossack Pioneer Environment Plan will be in place for the period when there is no FPSO in the field.

Hazard	Performance Objectives	Standards	Criteria / Measurement:
<b>Vessel Emissions Discharges &amp; Wastes</b>	Manage the vessels effects on air & water quality, and ensure appropriate waste disposal	<ul style="list-style-type: none"> <li>- Maintenance Strategy</li> <li>- Vessel Engine and drains system maintenance</li> <li>- Sewage system maintenance</li> <li>- Garbage Management Plans</li> <li>- Vessel Management Systems</li> <li>- MARPOL 73/78</li> <li>- Woodside and TOPL HSE Management Systems</li> </ul>	No Reportable incidents  No critical equipment failures  Sewage systems fully operational prior to commencement of activities  SOPEP & GMP in place and records available.  MARPOL Oil Record Book & Waste Log up to date  Appropriate Segregation achieved  MSDS available onsite
<b>De oiling and De watering of subsea lines</b>	Minimise within operational constraints (See CP EP Chapter 4 Section 4 Loss of small quantities of hydrocarbons)	<ul style="list-style-type: none"> <li>- Maintenance Strategy</li> <li>- Detailed Procedure in preparation for Deoiling and Dewatering</li> <li>- Flowline Flushing KDL SS 17 (Ref 20)</li> </ul>	No reportable incidents.  Compliance with procedures.  Equipment inspection and operating correctly.  Reporting of volumes, concentration and type of chemicals or hydrocarbons discharged.

<b>Hazard</b>	<b>Performance Objectives</b>	<b>Standards</b>	<b>Criteria / Measurement:</b>
<b>Subsea Fluid Leaks &amp; Spills (Chemicals &amp; Oils)</b>	<p>Minimise occurrence of hydrocarbons and chemical into the marine environment spills.</p> <p>Contain spills onboard, if safe &amp; practical.</p>	<ul style="list-style-type: none"> <li>- Wells and Associated Equipment System Operating Procedures</li> <li>- Hydraulic fluid selected for low toxicity.</li> <li>- Western Australia and Dampier Sub-Basin Oil and other Noxious and Hazardous Substances Spill Contingency Plan in place</li> <li>- SOPEP</li> <li>- Sub Sea Installation overside lift planning</li> </ul>	No reportable incidents
<b>Invasive Species</b>	<p>Manage Vessels to minimise transfer of invasive species</p>	<ul style="list-style-type: none"> <li>- Contractor Information Pack for Management of Invasive Marine Species</li> <li>- AQIS Requirements</li> </ul>	Compliance with AQIS requirements Certification
<b>Seabed Disturbance</b>	<p>Minimise within operational constraints</p>	<ul style="list-style-type: none"> <li>- Installation procedures in preparation</li> <li>- Use of Dynamic Positioning</li> </ul>	Pre & Post work ROV Surveys Reports of any items lost overboard

## 6. Consultation already undertaken and plans for ongoing Consultation.

Woodside carried out a series of presentations - meetings, e-mail and letter exchanges with DoIR and subsequently DMP (WA) through 2008-2010 as the Designated Authority, with respect to the planned scope and required environmental submissions for the subsea scope. Meetings have also been held with NOPSA, AMSA, and ABS in relation to the overall project regulation, codes and standards. Work has included internal liaison between the Project Team, Woodside's Cossack Pioneer Team, and major Contractors.

Further notification and consultation with external stakeholders will occur as the project moves forward.

## 7. Contact details of the Operators nominated liaison personnel for the Activity.

For further information about this Environment Plan Bridging Document, please contact the CWLH Redevelopment Project Environment Adviser on +618 9348 4773.