

**TOTAL E&P UK Ltd**  
**LAGGAN-TORMORE DEVELOPMENT EAST OF SHETLAND**  
**Environmental Statement**

**To:** Sarah Pritchard

**From:** Evelyn Pizzolla

**Date:** May 2010

<b>ES Title:</b>	<b>LAGGAN-TORMORE DEVELOPMENT EAST OF SHETLAND</b>
<b>Operator:</b>	<b>TOTAL E&amp;P UK Ltd</b>
<b>Consultants:</b>	Xodus AURORA
<b>Field Group (DECC):</b>	Aberdeen
<b>ES Report No:</b>	D/4056/2009
<b>ES Date:</b>	01 October 2009
<b>Block Nos:</b>	
<b>Development Type:</b>	Export Pipeline
<b>Project overview</b>	
<p>TOTAL is planning to develop the Laggan-Tormore fields, located in Blocks 206/1 &amp; 205/5 respectively, approximately 85–90 km west of Shetland and 55-65 km from the UK-Faroe median line, to produce gas condensate.</p> <p>The Laggan-Tormore fields will be developed as a subsea development. The subsea wells will be tied back via two multiphase flowlines to Sullom Voe in Shetland, where new Gas Processing Plant (GPP) facilities will be built. Dehydrated gas will be exported to the St Fergus gas terminal via a new-build gas pipeline with a subsea tie-in to the existing TOTAL FUKA line, using the new 'T' connection incorporated when the MCP-01 was decommissioned. Condensate will be stabilised and exported by tanker from the existing BP facilities at the Sullom Voe Terminal (SVT). Total had considered developing the fields using an offshore hub. The final development concept selection and other design decisions were discussed within the West of Shetland Environmental Statement (ES).</p> <p>As the project incorporates several component parts, three EIAs are required for consideration under the respective regulations; the West of Shetland (WoS) Offshore ES, the East of Shetland (EoS) ES and the Onshore ES. This assessment covers the EoS Offshore ES for the installation of the export pipeline from the Bay Closure Line (BCL) Yell Sound, (east of Firths Voe,) Shetland. {The installation of the pipeline within the BCL of Yell Sound and into Firths Voe are considered within the Onshore ES and subject to the onshore Habitats Regulations. }</p>	
<b>Project Description</b>	
<b>Export Pipeline</b>	
<p>The Laggan-Tormore development requires the construction and installation of a 225km, 30" steel gas export pipeline which will be routed from the Gas Processing Plant (GPP) at Sullom Voe. The proposed route runs along the south shore of Firths Voe for approximately 25km east through Yell Sound following the existing Brent import pipeline and then south through the northern North Sea for 200km to a tie-in on the existing Frigg UK Agreement (FUKA) pipeline, close to the decommissioned MCP-01. The pipeline will be laid directly onto the seabed.</p> <p>Onshore dehydration will produce dry export gas reducing the potential for internal corrosion. External corrosion protection will be 3-Layer Polyethylene or Polypropylene, in conjunction with Al-</p>	

Zn-In sacrificial anode protection and an external concrete weight coating of 75mm in shallower waters up to 115mm in deeper waters, applied over the anti-corrosion layer to provide on-bottom stability.

Overall rock placement for stabilisation/protection is not anticipated. However, the pipeline will cross six existing pipelines. Mattresses will be used to build bridging piers over and local rock placement, at a worst-case estimate of 2,500 tonnes, will be required at each pipeline crossing. The pipeline will be laid using either an anchored or Dynamic Positioning (DP) pipe-lay barge. An as-laid survey will be performed astern of the vessel to confirm the pipeline is undamaged and located correctly along the route, especially in relation to paralleling the existing Brent pipeline and pipeline crossings. The pipeline will be connected via two tie-in points at the FUKA pipeline which will include a temporary subsea pig-trap to allow intelligent pigging from a permanent pig-launcher located at the new GPP.

With a design life of 30 years the pipeline will have the capacity to export 18,850,000 m<sup>3</sup>/day of gas at peak production. As production from the Laggan & Tormore reservoirs decline it is anticipated that future developments West of Shetland will subsequently tie in and use the spare capacity to export their gas.

### **Key Environmental Sensitivities**

The EIA identified the following environmental sensitivities:

- Strong winds, persistent, long-period swells, complex current regimes and rapidly changing weather conditions within deep waters c 640m – to shallow inshore waters
- Highest seabird vulnerability occurs in February, July and September
- Occurrences of cetaceans, including several species of whale and dolphin
- Grey and Hooded seals frequent the area
- Horse mussel beds in Yell Sound (Firths Voe)
- Demersal fishing effort is high

### **Key Potential Environmental Impacts**

The EIA identified the following potential environmental impacts:

- Physical presence causing disturbance to cetaceans, seals and other sea users
- Seabed disturbance
- Marine discharges
- Accidental hydrocarbon/chemical spills
- Underwater noise on cetaceans
- Light impacts on birds

### **Physical presence**

The pipe-lay & rock-placement vessels may impact on marine mammal behaviour, especially in inshore waters and a Marine Mammal Observer will be on board to advise of cetacean, seal or otter proximity.

There will be considerable, although temporary, vessel activity in the area of Yell Sound to the East of Shetland and out along the pipeline route. The physical presence of a pipe-lay vessel and a rock placement vessel will present a collision risk to other sea users. Standard mitigation measures including Fisheries Liaison Officers, Notification to Mariners, guard vessels, a 500m exclusion zone, etc will be in place. A post pipe-lay survey to inform the Hydrographic office will be undertaken.

### **Seabed disturbance**

Anchor mounds may be formed from the deployment and recovery of anchors. The pipe-lay vessels will use dynamic positioning where possible. If anchored vessels are used the vessels will utilise the same anchor patterns as far as possible on each location, thereby keeping the number of anchor mounds generated to a minimum. Remediation of the seabed will be employed to remove snagging

risks.

The nearshore pipeline route is constrained by seabed geology, topography and the presence of the Brent pipeline. Unless DP vessels are used, the use of anchors in the vicinity of horse-mussel beds could be of concern, however, Total undertook to commission a pre-lay floor plan survey to advise the development of an anchor pattern plan to minimise any impact.

The seabed types which the export line will cross varies considerably along the 225km route and therefore the impacts can also be expected to vary. The installation of the pipeline and any rock placement may cause localised mortality of seabed animals, temporary disturbance during installation operations and permanent loss of seabed habitat, however, this is not considered to be of significance to the overall abundance and diversity of the subsea communities.

Where rock dumping is required for stabilisation or correction of free-spans or as an alternative to trenching, volumes and locations will be optimised to minimise additional seabed disturbance.

### **Marine discharges**

There will be the discharge to sea of commissioning chemicals from the pipeline. The exact chemical suite to be used will be finalised during detailed design. However, based on previous experience it is expected that sodium hypochlorite will be used, which is a low toxicity chemical and it is therefore not expected that pipeline discharges from commissioning operations will have a significant impact on the surrounding environment. All chemicals will be compliant with the Offshore Chemical Regulations (OCR) and subject to assessment in the relevant permit before installation operations commence. Due to the volumes being released, discharge will take place at the offshore end of the pipeline to ensure maximum dilution and dispersion of any chemicals, further reducing any environmental impact.

Although there is fish spawning and nursery in the vicinity of the proposed discharge point, these form part of larger offshore areas and therefore discharges here are not expected to have a significant impact on the overall spawning and nursery activities.

### **Accidental hydrocarbon/chemical spills**

The export pipeline will be transporting dry gas and therefore there is no risk of a hydrocarbon spill from the line.

The installations vessels will carry diesel and marine heavy fuel oil, however, it is considered unlikely that a spill could occur but detailed spill prevention measures will be enforced. A detailed Oil Pollution Emergency Plan (OPEP) submitted to DECC for approval. prior to operations commencing,

### **Noise**

Noise generation from offshore activities include, vessel movements, in-field and offshore pipe-lay activities, the use of dynamic positioning thrusters. These activities may have the potential to impact mainly upon cetaceans and seals, and otters in inshore areas.

Through using recognised good practice such as the timing of operations to avoid sensitive periods / populations, monitoring of mammals and potential impacts, and the use of soft starts (building noise levels up slowly to allow animals to move away), the residual noise impacts arising from the operation should be insignificant.

In addition, Total have committed to using an Marine Mammal Observer (MMO) to advise on the commencement of near shore rock-placement operations close to the BCL at the head of Sullom Voe, to minimise the impact on marine mammals within 500m of operations.

**Public Consultation:** No comments were received as a result of the public consultation.

**Consultee(s):**

The statutory consultees for this project were Marine Scotland (MS), JNCC and SNH. All were requested to comment on the ES. The following comments were made:

General comment

It was noted by most consultees that the Bay Closure Line at the head of Yell Sound, which marked the limit of the Offshore ES was not established within the narrative and that the inclusion of operations within Yell Sound had led to confusion.

Total acknowledged that they had not established the BCL within the ES. DECC provided charts marking the BCL and circulated to all consultees.

Marine Scotland

Marine Scotland (MS) commented that in their opinion the final selection of route from Firth's Voe via the MCP-01 junction tie-in is a sensible one and the impacts from installation of the pipeline was well described.

In particular, MS noted a well constructed discussion of seabed impacts, specifically the potential impacts of anchor mounds and rock placement activities. MS considered the decision to discharge pipeline commissioning chemicals at the MCP-01 to allow greater dilution and dispersion to be positive and sensible, MS considered spill risks associated with the various elements of the operation at different locations to be accurately identified and the correct ameliorative actions proposed, including an approved Oil Pollution Emergency Plan (OPEP).

MS noted some minor comments on decommissioning statements but acknowledged that this would be subject to further, more relevant discussion, as decommissioning approached

Overall, MS were content for the ES to receive approval.

JNCC:

JNCC felt Total should have better defined the scope of the offshore ES and that it would have been useful if the limits of the Bay Closure lines had been marked within the figures presented in the ES.

However, JNCC considered that in general the ES provided a good description of the development, local environment and details of appropriate mitigation to minimise the effects of the activities on the receiving environment.

JNCC acknowledged that , following analysis of the survey data, that none of the ' rocky reef' features identified conformed to the requirements of Annex 1 criteria and therefore would not require additional survey work.

JNCC noted the presence of sea-pens within the survey data and the potential conservation concern. However, JNCC believed that the area was not of notable conservation importance as densities of fauna were comparatively low and not of specific risk from pipe-laying activities.

JNCC noted a missing reference and Total provided the reference and further documentation.

On the basis of the information provided in the ES, the responses to requests for specific reference

data, JNCC were content that the proposed pipe-lay operations were unlikely to have a significant environmental impact in the offshore marine environment.

### SNH

SNH objected to the proposal on the grounds that insufficient information had been provided within the ES to determine the likely effects on European Protected Species (EPS) and the wider marine environment.

SNH were concerned that cetaceans may be present in the offshore area, prior to or during proposed rock-placement operations and that the effects of noise arising from the works in combination with the use of Dynamic Positioning (DP) was an area of potentially significant concern. SNH requested more information on the location, frequency and magnitude of rock dumping operations.

Total provided additional information and a detailed Technical note assessing the impacts of DP vessel and rock-placement operations noise.

Following the provision of the information SNH indicated that they were still not completely satisfied that these operations would not cause a disturbance to cetaceans in the area and an EPS licence may be required. However, SNH suggested mitigation measures, quoting JNCC guidelines, which Total considered. These were that an MMO should be present and no rock placement should commence until it was confirmed no cetaceans were in the area, and this for a distance of 3km from the BCL.

Total has agreed to this request.

Subsequent requests that rock-placement should cease if cetaceans were sighted within 500m of operations were rejected by DECC as not within the scope of the existing guidelines and not in the interests of completing the work expeditiously in order to remove the cause of the potential disturbance.

SNH also raised concerns on the impact of the pipe-laying and rock placement activities on harbour seals using haul-out sites throughout Yell Sound and close to the eastern entrance near the BCL and requested an exclusion zone of 1000 meters during breeding and moulting seasons (June – August) and 500 meters at other times of the year. Total have agreed to this request, where practicable, noting that the pipeline route is restricted by topographical constraints and an existing pipeline..

SNH noted that *Modiolus* (horse mussel) beds had been identified in the pipeline survey route and were concerned that the beds could constitute reefs although video footage appeared to show shell drifts of dead modiolus as well as live examples and communities of brittle stars.

Total undertook additional work to address the extent of the modiolus beds provided supporting information indicating that possible live modiolus were only recorded at three locations along the pipeline route within the first 4km and therefore, outwith the area of concern for the offshore ES.

SNH agreed that the impact on sea-pen communities would be minimal.

### **Further Information:**

#### DECC OED

OED noted that the BCL had not been established in the ES and that the inclusion of operations within Yell Sound led to confusion.

#### Shetland Island Council

SIC commented on the ES although their remit only extended from shore up to the BCL. Their concerns were for the disturbance of cetaceans, the impact on harbour seal using haul out sites around the coast and the disturbance of horse mussel beds.

SIC were content with the mitigation measures agreed to date by Total and were re-assured of further

detailed discussion affecting internal water decisions with Total.

**Conclusion(s):**

Following consultation, DECC and its consultees are satisfied that, with the implementation of mitigation measures in defined areas, this project is not likely to have a significant impact on the receiving environment, including any sites or species protected under the Habitats Regulations.

**Recommendation(s):**

**On the basis of the information presented within the ES and advice from consultees it is recommended that the ES should be approved.**

*Sarah Pritchard*

*19 May 2010*

**Sarah Pritchard**

**Date**