

Section 10. Selected Decommissioning Option for the Maureen Oil Loading Pipeline

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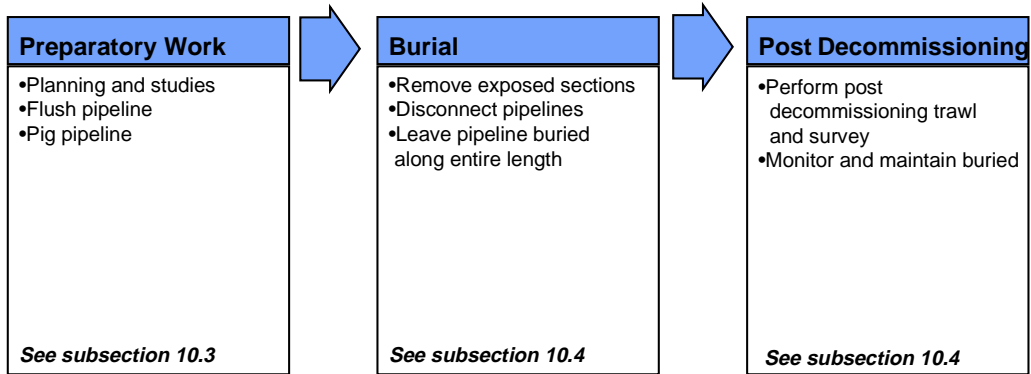
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10.1 Introduction

This section provides a description of the Selected Decommissioning Option for the Maureen Oil Loading Pipeline.

10.2 Overview



10.3 Preparing the Pipeline for Disconnection and Decommissioning

The pipeline will be cleaned of any hydrocarbon accumulations within, or adhering to the pipeline wall, prior to the facility being decommissioned. The objective is to obtain a standard of cleanliness, following cleaning, which ensures that the concentration of hydrocarbons within the pipeline does not exceed 40 ppm.

The cleaning regime will be implemented by completing two independent programmes: flushing and pigging.

Pipeline flushing was completed in December 1999 and undertaken in two phases. Phase 1 involved pumping warm crude oil through the Loading Pipeline to the Maureen Loading Column where it was collected in a tanker. The objective was to use the warm oil as a solvent to remove hydrocarbon and wax deposits from the pipeline wall. This exercise was conducted in accordance with normal operational procedures for loading tankers.

Phase 2 consisted of a high velocity flush using seawater. This procedure used the crude oil loading pumps on the Maureen Platform. Displaced pipeline contents were captured in a tanker at the Maureen Loading Column. The tanker contents were then offloaded at the Petroplus facility in Milford Haven for treatment and disposal.

After the pipeline has been flushed, a pigging programme will be undertaken prior to the pipeline disconnection. The scheme will comprise a chemical, gel and brush pig cleaning programme, the details of which will be determined by a specialist contractor. All fluids, and any solids, displaced during the pigging process will be captured in a vessel and disposed of at a treatment facility.

10.4 Pipeline Burial and Snagging Risk

For the Maureen Oil Loading Pipeline to be decommissioned *in situ* it must not only be cleaned to an acceptable level but it should not pose any risk to other users of the sea.

Accordingly, upon completion of the pipeline decommissioning operations, it will be left buried along its entire length. In this condition it will not present any snagging risk to fishing trawls. Currently, the principal areas of exposure are found on the approaches to the Maureen Platform and Maureen Loading Column. These sections will be removed during the decommissioning programme.

The independent study¹ conducted by Andrew Palmer and Associates reports that approximately 48% of the pipeline is buried to a depth greater than 600 mm and 40% of the length is buried to a depth of between 400 and 600 mm. The remaining 12% consists mainly of the pipeline ends which was by design, left on the seabed surface and provided with rock material cover. It supports the preferred option of leaving the pipeline *in situ* and confirms the pipeline cover as being adequate for a pipeline of this size.

A post-decommissioning trawl will be carried out to ensure there is no snagging risk, and thereafter a programme of periodic surveys will be agreed with the DTI to assure the ongoing integrity of the burial.

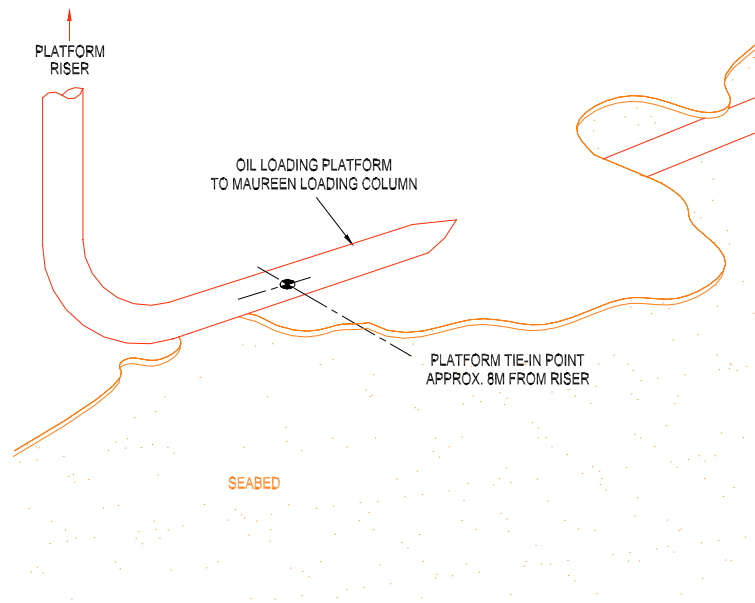
The following subsections describe how the pipeline sections will be removed or be subject to reparation to ensure burial for the pipeline length.

10.4.1 Maureen Platform End of the Oil Loading Pipeline

The exposed section at the Maureen Platform end (KP 0.000 to KP 0.120), approximately 120 m in length, will be removed leaving the pipeline end at a burial depth of 600 mm.

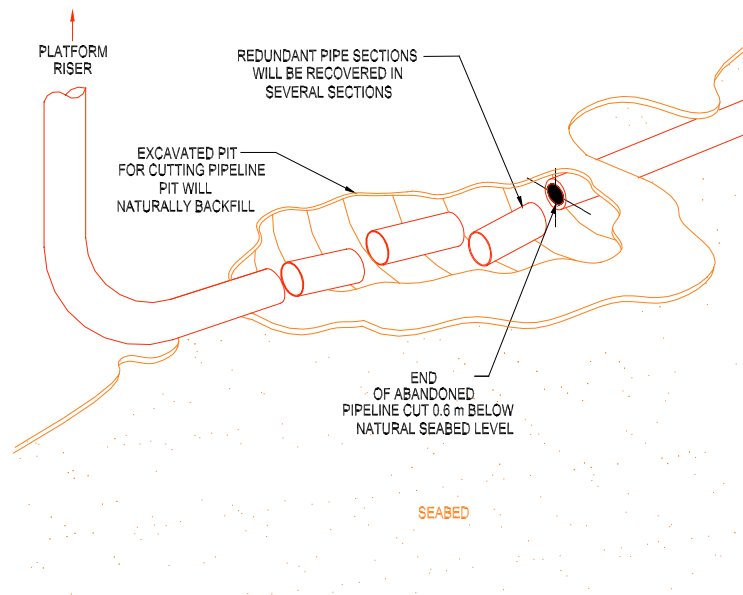
The seabed will be excavated from the tie-in point, as shown in Figure 10-1, to fully expose the section of pipeline to be removed.

Figure 10-1 Platform Tie-in Point Pre-Decommissioning



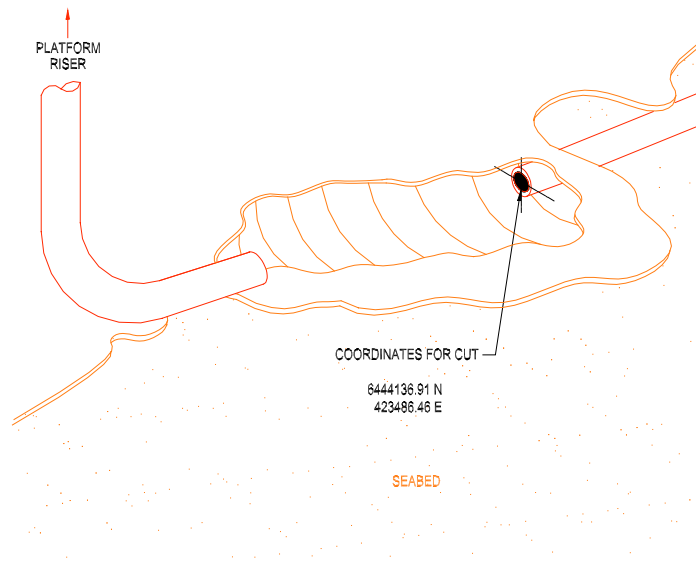
The exposed pipe will be cut into several sections, as shown in Figure 10-2, to enable it to be recovered.

Figure 10-2 Pipe Disposal Platform End



The removed sections of pipeline will be recovered to the diving support vessel and disposed of onshore. The excavated area (Figure 10-3) will then be allowed to backfill naturally, burying the open ended pipeline.

Figure 10-3 Platform Tie-in Point Post-Decommissioning

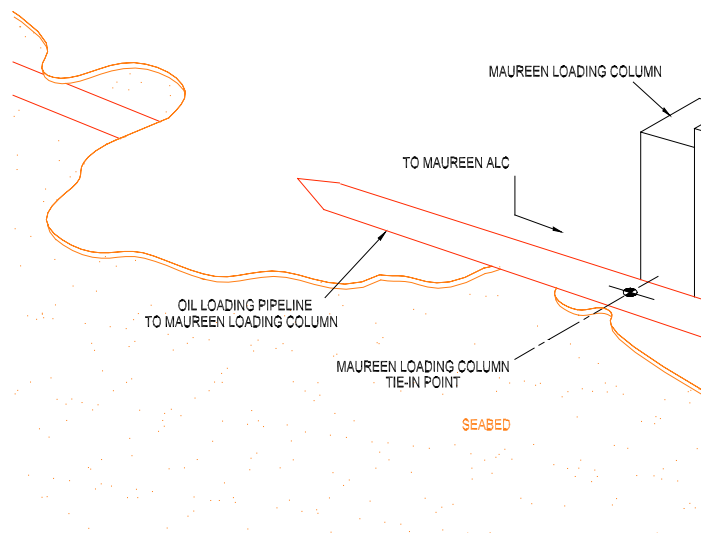


10.4.2 Maureen Loading Column End of the Oil Loading Pipeline

The exposed section at the Maureen Loading Column end (KP 2.282 to KP 2.326), approximately 44 m in length will be removed leaving the pipeline end at a burial depth of 600 mm.

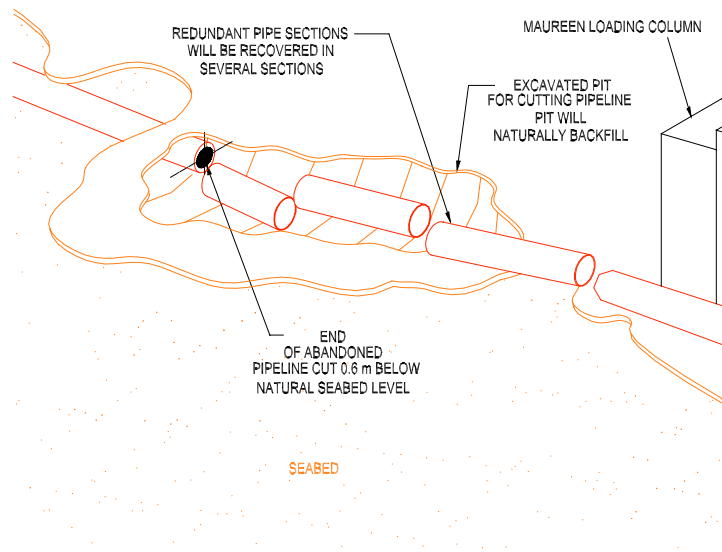
The seabed will be excavated from the tie-in point, as shown in Figure 10-4, to fully expose the section of pipeline to be removed.

Figure 10-4 Maureen Loading Column Tie-in Point Pre-Decommissioning



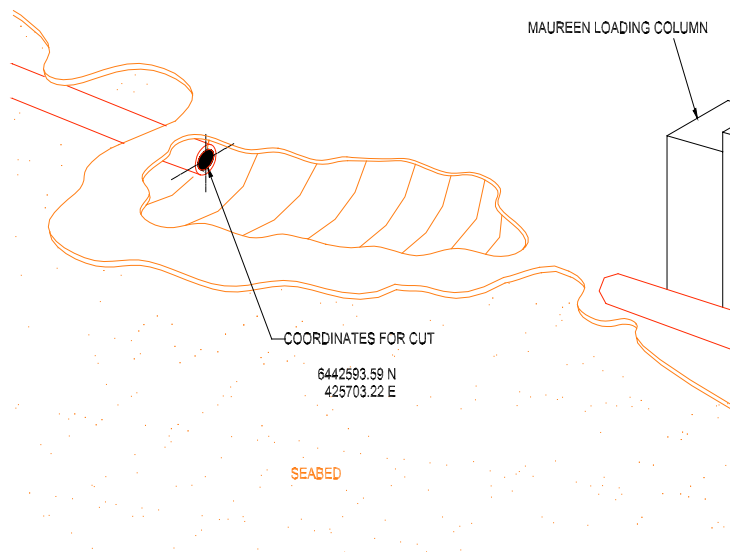
The exposed pipe will be cut into several sections, as shown in Figure 10-5, to enable it to be recovered.

Figure 10-5 Pipe Disposal Maureen Loading Column End



The removed sections of pipeline will be recovered to the DSV and disposed of onshore. The excavated area (Figure 10-6) will then be allowed to backfill naturally, burying the open ended pipeline.

Figure 10-6 Maureen Loading Column Tie-in Point Post-Decommissioning



10.4.3 Exposed Section of the Oil Loading Pipeline

Following the last survey in 1997, the only area of partially exposed pipeline was a 20 m section between KP 2.020 and KP 2.040. In the event that this section remains exposed when the decommissioning works are undertaken, it will be subject to reburial or provided with a gravel cover to mitigate any risk of snagging by other users of the sea.

10.5 Environmental Considerations

The main environmental impacts estimated to be caused by the activities to decommission the Maureen Oil Loading Pipeline are briefly discussed below.

10.5.1 Energy Consumption and Emissions

The energy consumption and emissions generated if the Oil Loading Pipeline were totally removed would far exceed those associated with leaving it in place owing to the extended period it would take to recover it to the surface. By leaving in situ and only recovering the exposed end sections of the pipeline the energy consumption and emissions are significantly reduced.

10.5.2 Discharges to Sea

The pipeline will be flushed and pigged clean to ensure hydrocarbon residues are removed prior to disconnection. There will be a small discharge of water remaining in the pipeline whilst the ends are removed, but because of the cleanliness of the water the impact on the surrounding ecosystem will be negligible.

10.5.3 Seabed Disturbance

The pipeline at the Platform end is not buried under the drill cuttings layer, so there will be minimal disturbance of the cuttings when gaining access to the sections of pipeline to be removed. The depth of the cuttings layer diminishes rapidly in the direction of the pipeline approach and it is anticipated that the cuttings disturbed during the operation will resettle within the existing cuttings layer, and the impact is considered minimal.

10.6 Notes and References

A Glossary of terms and abbreviations is within Appendix A, and a complete list of supporting studies is contained within Section 17.

¹ Decommissioning Philosophy Review. A report for Phillips Petroleum Company United Kingdom by Andrew Palmer and Associates 1999.