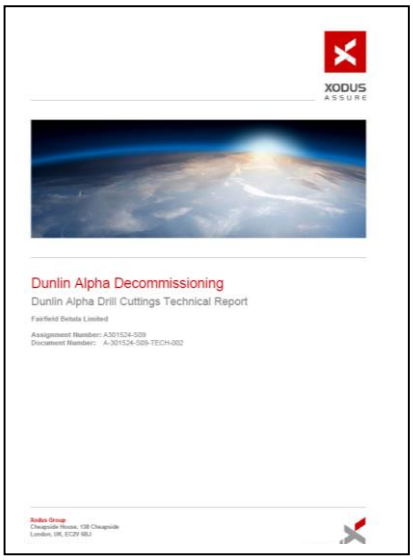
Dunlin Alpha Decommissioing - Drill Cuttings

It is Fairfield's preferred management option to leave the Dunlin Alpha drill cuttings in place, undisturbed, in order that they may naturally degrade over time.

1. What are drill cuttings, and why are they hazardous?



During drilling operations, rock is cut into small pieces by the drilling activity and removed from the well. The rock is usually ejected from the well in a mix with some of the chemicals used to help the drilling activity. A particular set of chemicals are called 'drilling muds', and these are used to help move the rock that is drilled up to the surface. This mix is termed 'drill cuttings'.

In addition to chemicals used in 'drilling muds', drill cuttings may also include heavy metals and naturally occurring radiological material brought up from the reservoir.

Dunlin Alpha Drill Cuttings Technical Report - Section 3 contains further details of the composition of the Dunlin Alpha drill cuttings pile.

2. What is the extent of the Dunlin Alpha drill cuttings pile?

A number of Multi Beam Echo Sound (MBES) surveys were undertaken to map out the footprint and estimate the volume of the cuttings deposits. In total, the volume of drill cuttings at the Dunlin Alpha platform is estimated to be 19,555 m^3, covering an area of 9,184 m^2. This equates to approximately 48,888 tonnes.

15 sampling stations were selected and sampled within the footprint of the Dunlin Alpha cuttings pile. In total, 12 surface samples and 7 cores samples (up to 4m depth) were taken to assess the physical character of the drill cuttings pile. The results have been used to inform the management options for the cuttings pile and assess potential environmental impacts associated with both removing them and leaving them undisturbed.

Dunlin Alpha Drill Cuttings Technical Report - Sections 2 and 3 contains further details of the survey and sampling that was undertaken on the Dunlin Alpha drill cuttings pile.

3. What are OSPAR thresholds?

The OSPAR (Oslo-Paris) Convention seeks to protect the marine environment of the North-East Atlantic. In 2006, OSPAR published *Recommendation 2006/5 on a Management Regime for Offshore Cuttings Piles*. The purpose of the Recommendation is to reduce to a level that is not significant, the impacts of pollution by oil and/or other substances from drill cuttings piles. Two thresholds were defined for assessing potential impacts:

- Persistence over the area of seabed contaminated of in excess of 500 km2.year.
- Rate of loss of oil to the water column of greater than 10 te/year.

OSPAR Recommendation 2006/5 states that if the calculated values for a cuttings pile are below either of these thresholds then no further action is required with regards to treatment of the cuttings pile. The cuttings pile at Dunlin Alpha has been assessed and found not to exceed either of the OSPAR thresholds.

Dunlin Alpha Drill Cuttings Technical Report - Section 3 contains further details of the Dunlin Alpha drill cuttings pile OSPAR assessment.

4. What options have Fairfield considered for management of the Dunlin Alpha drill cuttings pile?

Although the Dunlin Alpha drill cuttings pile does not exceed OSPAR thresholds, a number of management options were assessed to inform the Dunlin Alpha installation comparative assessment process. The options considered included physically removing the drill cuttings for onshore disposal, recovery of drill cuttings for seabed dispersal, and leaving the drill cuttings *in situ*.

Of the recovery options considered, grab excavation was assessed as being the most preferred if recovery of the drill cuttings was required. However, any recovery option would result in some release of contaminants to the water column and redistribution of drill cutting sediments. When considered against a leave *in situ* option, all recovery options were considered to be less preferred against environmental, technical, societal, safety and economic criteria.

Dunlin Alpha Drill Cuttings Technical Report - Section 4 contains further details of the assessment of options for the management of the Dunlin Alpha cuttings pile.

5. What are the environmental impacts of leaving them in situ?

Drill cuttings that are left *in situ* are expected to remain relatively undisturbed with a small, localised impact as hydrocarbons leach out of the cuttings into the water column, and heavy metals are redistributed to the surrounding seabed by natural processes. The worst-case leaching rate has been calculated as 1.75 tonnes per year, and is well below the OSPAR limit of environmental significance.

Environmental impact modelling has also been undertaken for potential drill cuttings disturbance caused by over-trawling by fishing vessels, and dropped objects. The environmental impact has been assessed as not significant for either scenario.

Dunlin Alpha Drill Cuttings Technical Report - Sections 2 and 3 – and the *Dunlin Alpha Decommissioning Environmental Appraisal* Section 5 contain further details of potential environmental impacts.