

APPENDIX 10 – RESTORATION PLAN

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1. Introduction

Viking UK Gas Limited is submitting an application to North York Moors National Park Authority for permission to construct a temporary access track and site from which to drill two (2) appraisal petroleum wells and undertake a period of testing. In support of the planning application a scheme for site restoration has been produced, which makes provision for the capping or plugging of the borehole to the satisfaction of the Mineral Planning Authority (MPA).

2. Restoration scheme background

The aim of the restoration scheme is to return the site to agriculture in a condition as close as practically possible to its original state. The sub-soil and top-soil should be in an uncompacted state, such that the growth of crop roots is unimpeded and drainage water can percolate down through the profile relatively freely either to the piped drainage system or to naturally permeable strata.

The scheme will be agreed in writing by the MPA, approved by the HSE, DECC and the Landowner.

The cultivation of sub-soil and the replacement/cultivation of top-soil is weather dependant and often subject to conditions imposed by the Mineral Planning Authority. Timescales, were given, are estimated assuming both the sub-soil and top-soil are in a suitably dry non-plastic state such that damage to its structure shall be avoided.

3. Reinstatement operations

When the decision is made to restore the site to its former usage the well(s) will be plugged, hydrostatically tested, and abandoned with an agreed programme or method approved by the HSE and the DECC.

3.1 Pre restoration site clearance

The wellhead and Christmas-Tree will be removed and the well casing cut off not less than 1.5 metres (5 feet) below the finished ground level, a metal plate welded on top, and a concrete slab placed on top of the plate.

All plant, equipment, buildings, security fencing, and surface installations, will be dismantled and removed from the site, either to a re-location or to storage.

The site ditches, sump(s), cellar(s), and cess tank(s), will be drained and any contaminated materials removed from the site, such waste will be disposed of at approved locations, in accordance with prevailing legislation of the time.

All pipes, cables, ducting, and items above the impermeable lining will be disconnected, excavated, and removed from the site for disposal.

All uncontaminated hardcore and stone will be removed, with a flat bladed grader or bucket, for re-use or disposal. Concrete installations will be broken up and removed, the geotextile membrane (Terram), sand and impermeable linings will then be removed, with disposal to an approved location.

Any installations, cables, and pipes, below the linings level will then be excavated and removed from the site.

The cellar, sump and ditching voids will be in-filled with any sub-soil stored on the site, in layers of not more than 200mm thickness, ready for the site area to be then re-graded to the original contour levels.

Any header drains installed will be rodded to check their integrity prior to their retention as part of the reinstatement scheme.

3.2 Sub-soil cultivation

The sub-soil will be deep tine cultivated in strips, using a low ground pressure bulldozer drawing a winged, straight legged tine cultivator to a depth of 600mm at 1000mm centres. After each strip is deep tine cultivated, top-soil will be back-tipped onto the loosened strip and graded out either with the bucket of the 360° excavator or with a low ground pressure bulldozer. The deep tine cultivated sub-soil will not be traversed by any machinery.

3.3 Replacement of soil-sub

Any weed growth on any subsoil stockpiles will be eliminated by non-persistent, contact weed killer such as "Roundup", prior to the re-grading of the sub-soil to reform the falls and gradients which existed prior to the occupation of the site and to the original site contours. After each strip of sub-soil is deep tine cultivated, previously excavated sub-soil will be back-tipped onto the loosened strips in as thicker layer as possible and graded out either with the bucket of the 360° excavator or with a low ground pressure bulldozer. The deep tine cultivated sub-soil will not be traversed by any machinery.

3.4 Replacement of top-soil

Any weed growth on the topsoil stockpiles will be eliminated by non-persistent, contact weed killer such as "Roundup". Topsoil will be back-tipped from the stockpile onto the loosened strips and graded out either with the bucket of the 360° excavator or with a low ground pressure bulldozer to a uniform depth (the original depth before excavation), and will be levelled to avoid the formation of depressions which could hold water.

All topsoil areas within the site, including areas not affected by construction will be ploughed and cultivated to ensure that all stones, rubble, vegetation and other extraneous material larger than 75mm in any direction are removed from the site to a suitable tip.

The topsoil will be worked to a fine tilth by rotovator or harrowing to not less than 100mm depth.

If it should prove necessary to import top soil into the site, disease and pest free material to British Standard 3882 (General Purpose Grade) will be used.

3.5 Removal of site boundary fence

The boundary fencing will normally be dismantled and removed prior to site restoration works. If however, the land surrounding the site is used for grazing livestock, the boundary fence will be dismantled and removed on completion of the restoration works, as it will be required to protect the restoration area from the animals.

3.6 Reinstatement of fences and gates

Any fences and gates removed during the use of the site will be replaced with new materials which match closely as practicable those previously existing on site.

3.7 Reinstatement of hedgerows

Any hawthorn hedge removed will be replanted with good nursery stock plants spaced in a double row 9 inches apart, individually guarded in plastic tubes to increase protection and growth and to create a 'greenhouse' affect. A tannalised timber post and four rail fence with livestock and rabbit proof netting will be constructed on either side of the newly planted hedge. Any fence to protect a hedgerow planting will be maintained for a period of two years.

Subsequent Management

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| Year 1 | 1. | Initial treatment will be carried out as described above.

Apply 'Herbicide' twice a year to give the soil enough resistance to control weeds and helps establish the plants. |
| Year 2 | 1. | Apply 'Herbicide' twice a year to give the soil enough resistance to control weeds and helps establish plants. |
| Year 3 | 1. | Annual inspection. |
| Year 4 | 1. | Annual inspection. |
| Year 5 | 1. | Annual inspection. |

4. New field drainage

If necessary, a scheme of field drainage in the site will be prepared and agreed with the Landowner and for works to be carried out by a specialist land drainage contractor in year two or earlier if appropriate.

Any construction of header drains installed to intercept the field drains will be retained; these will be rodded to check their integrity prior to their incorporation as part of the drainage reinstatement scheme.

Perforated plastic pipe of minimum diameter, 110mm, will be laid at the bottom of the trench surrounded by backfill with clean washed 10 to 20mm pea-gravel (depending on the drainage machine to be used), and will be backfilled to within 225mm of surface allowing for settlement for the gravel. Drains will be laid to the maximum available falls and, at depths not less than 660mm cover.

Any outfall of the drainage system will consist of 2m lengths of frost resistant plastic pipe set into a suitable headwall (concrete or gabion) with a splash plate, discharging at water level into the ditches.

If it is not possible to lay drains at a depth of at least 600mm of cover, the Landowner will be consulted and his written approval will be sought to an amended specification.

5. Management and aftercare

The whole former operation site will be returned to agriculture after completion of the works, subject to the Landowner's agreement. Annual inspections will be made in August/September of each year, for a period of five years, with the Landowner or his Agent, to review the progress and crop productivity of the restoration area.

5.1 Subsequent Management if subject to grass planting

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| Year 1 | <ol style="list-style-type: none"> 1. Initial treatment will be carried out as described above. 2. The site will be rolled with a light, grassland roller and spread with a compound fertiliser as recommended by soil sample analysis. 3. The grass will be cut for silage or hay May/June and subsequently grazed. 4. Any weeds will be sprayed with an appropriate weed killer. 5. All stock/cattle will be removed in adverse weather conditions to prevent poaching. |
| Year 2 | <ol style="list-style-type: none"> 1. Annual inspection. 2. Carry out additional restoration (if required) and compensate the owner or the land user for any loss. |
| Year 3 | <ol style="list-style-type: none"> 1. Annual inspection. 2. Carry out additional restoration (if required) and compensate the owner or the land user for any loss. |
| Year 4 | <ol style="list-style-type: none"> 1. Annual inspection. 2. Carry out additional restoration (if required) and compensate the owner or the land user for any loss. |
| Year 5 | <ol style="list-style-type: none"> 1. Annual inspection. 2. Carry out additional restoration (if required) and compensate the owner or the land user for any loss. |

5.2 Subsequent management if subject to arable planting

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| Year 1 | <ol style="list-style-type: none"> 1. Initial treatment will be carried out as described above |
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| | 2. | The crop will be assessed prior to harvest with regard to production levels and compared to production levels from adjoining undisturbed land. |
| Year 2 | 1. | Annual inspection. |
| | 2. | Further sub-soiling or comprehensive filed drainage scheme will be considered (if required). |
| | 3. | Compensate the owner or land user for any loss or disturbance if required. |
| Year 3 | 1. | Annual inspection. |
| | 2. | Compensate the owner or land user for any loss or disturbance (if required). |
| Year 4 | 1. | Annual inspection. |
| | 2. | Compensate the owner or land user for any loss or disturbance (if required). |
| Year 5 | 1. | Annual inspection. |
| | 2. | Compensate the owner or land user for any loss or disturbance (if required). |