



NTS - Non-Technical Summary

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Glossary

Term/Abbreviation	Definition
PoCF	Port of Cromarty Firth
PPC	Pollution Prevention Control

1 Introduction

The Cromarty Firth Port Authority was created by an Act of Parliament; the Cromarty Firth Port Authority Order of Confirmation Act 1973. The Cromarty Firth Port Authority trades under the name The Port of Cromarty Firth (PoCF). PoCF is an independent statutory body administered by a Board of eight Trustees. The Board is accountable under its Trust Port Status to the Scottish Government. PoCF is responsible for all marine activities in the Cromarty Firth. The Invergordon Service Base is operated by the PoCF.

The PoCF is applying for a Pollution Prevention Control (PPC) permit, to allow oil and gas assets from the North Sea that have reached the end of their life to be decommissioned on the Installation, located on the Invergordon Service Base. This document provides a Non-Technical Summary of the application, providing an overview of the activities to be undertaken, the associated potential environmental issues, and how they will be managed and monitored.

2 PPC Activities

The decommissioning of oil and gas assets involves the removal of hazardous wastes prior to the break-up of the asset. The resultant wastes are size reduced and segregated for offsite recycling, recovery, reuse, or disposal as appropriate.

The activities that require a PPC permit are the recovery of hazardous waste, and the directly associated activity of recovery of non-hazardous wastes. The maximum quantity of waste that could be stored on the installation at any one time is 50,000 Tonnes. The actual amount of waste on site will be determined by the size of the asset being decommissioned, and will reduce as a project progresses. The site target is to recycle, re-use, or recover at least 97% of the waste material associated with each asset.

3 Waste Hierarchy and Best Available Technique

The dismantling of oil and gas assets is in effect a waste management operation. The waste hierarchy is recognised as being a key guiding principle to be followed in the identification of Best Available Technique for the management and disposal of waste.

The waste hierarchy prioritises waste prevention. If waste is produced, then the priority is to reuse materials, recycle them, or recover them in some other way (e.g. for energy/heat), and last of all disposal (i.e. landfill) (Figure 4.1).

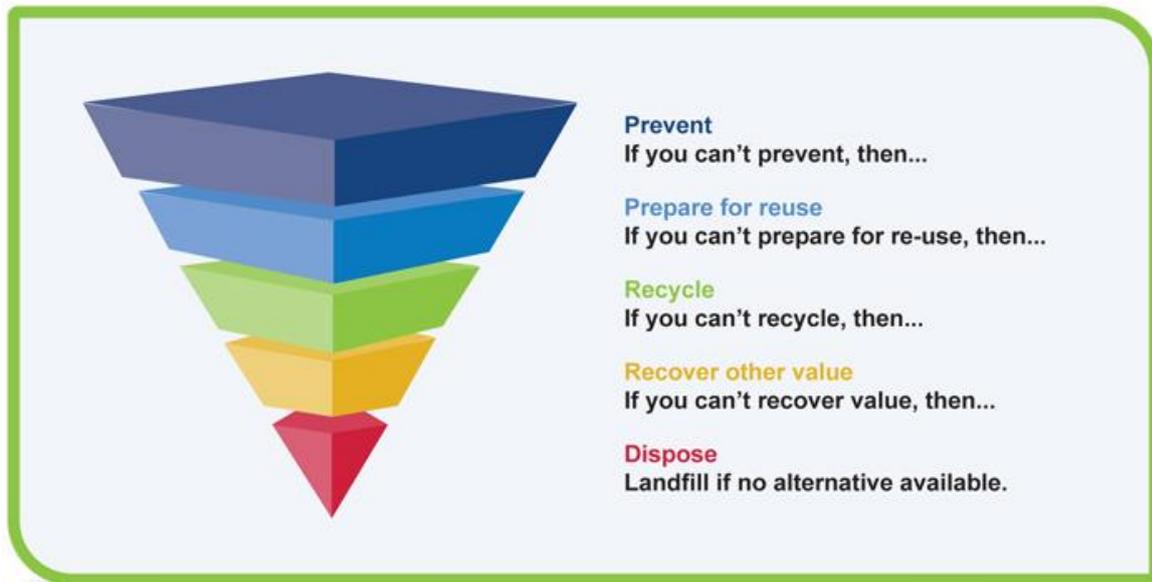


Figure 4.1: Waste Hierarchy¹

The opportunity for waste prevention in a decommissioning project is limited to minimising the new waste created which is directly linked to minimising raw material usage.

Each of the waste groups likely to arise from the decommissioning of oil and gas assets were considered in turn, and the possibilities for reuse, recycling and recovery considered. Specific items such as pumps and some electrical equipment may be suitable for reuse. The bulk of the waste associated with oil and gas assets is metal, which can be recycled. A small proportion of the waste may be suitable for recovery: this is likely to be in the form of heat. As discussed in Section 2 the site target is to recycle, re-use, or recover at least 97% of the waste material associated with each asset. The project steps are designed to ensure a high standard of performance against the waste hierarchy.

In addition to the sentencing waste in alignment with the Best Available Techniques, the actual activities carried out on the site will also utilise the Best Available Techniques. The project steps and specific management techniques have been designed with due regard to the relevant European Council Best Available Technique reference documents, Scottish Environment Protection Agency Pollution Prevention Guidance and the Industry body standards where available.

4 Site Condition

The Invergordon Service Base is an existing operational site, with multiple berths and laydown areas, as shown in Drawing 3.1.1. The site is located entirely upon reclaimed land, which has always been operated by the PoCF. No onshore contaminated land issues are expected, there is however evidence of metal contamination of seabed sediments around the Berth 4 area that are likely to be associated with historic activities.

All areas of the Invergordon Service Base, with the exception of the Berth 5 Laydown Area, have impervious surfaces. The Berth 5 laydown area was reclaimed in 2015 and has been left with a temporary crushed stone surface with French drains while it settles. The use of the Berth 5 laydown

¹ <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/waste/>

area will be limited to dry waste storage, until a sealed drainage system and impervious surface has been installed.

Throughout the installation, surface water drainage passes through oil and silt interceptors prior to discharge. Prior to the installation becoming operational, isolation valves will be added before the outfalls of the drainage systems which don't currently have them. This will allow the drains to be isolated in order to stop discharges, in the unlikely event of a spill occurring.

An Initial Site Condition Report (Document 2) has been produced to support the PPC application. This will be updated periodically to keep it current. Prior to the surrender of the PPC application, the site condition report will be fully reviewed; if there is a potential that land has become contaminated it will be investigated and remediated to its initial condition. A Statement of Site Condition will be provided with the application to surrender the permit, full details of this process are provided in Document 3.6.

5 Project Steps

An overview of the steps each decommissioning project will go through is provided in this section. Full details are provided in Documents 3.1: Start-Up Management Plan and 3.2: Operations.

5.1 Project Start-Up

Works will start well before an asset is delivered to the Installation for decommissioning, to ensure that the appropriate arrangements are in place to carry out the work safely, compliantly and in an environmentally sensitive manner. Four documents will be developed:

- Appropriate contractual arrangements with vetted companies – PoCF will need to work with others to carry out the works. Vetting will ensure companies are reputable and qualified to carry out the works. Contractual arrangements will bind them to meeting the requirements of both the PPC permit, and PoCF's procedures.
- Waste Management Plan – This will ensure that all the waste can be handled on the site, and that appropriate waste routes are in place prior to the asset arriving on site.
- Areas Plan – This will provide a detailed layout for the project, identifying what activities will be carried out where, where different wastes will be stored, and the location of spill kits and fire-fighting equipment.
- Risk Assessment Method Statements – Detailing how works will be carried out, the associated risks, and measures in place to manage any risks be they health, safety, or environmental risks.

5.2 Enabling Works

Physical preparations will be made prior to assets arriving for decommissioning, this is likely to include: installation of temporary services, the erection of fencing and signage to demarcate the various work areas, putting spill and firefighting equipment in place.

5.3 Receiving the Asset

Assets will be delivered to the installation on a barge or vessel. The PoCF pilots will ensure the safe passage through the Cromarty Firth to a berth, where it will be moored for off-loading. Off-loading may utilise cranes and Self-Propelled Modular Transporters, depending on the size of the asset.

5.4 Removal of Marine Growth

The first activity will be to remove any marine growth present on the asset. This task is prioritised to avoid odour issues arising. Physical scraping is the preferred method of marine growth removal, but high pressure water jetting may be required.

5.5 Survey

The asset will be surveyed to ensure compliance with the hand-over documentation. The survey will identify/confirm safe access routes, structural integrity, location and volumes of any hazardous materials, and the location of any plant and equipment identified for re-use.

5.6 Hazardous Material Removal

Hazardous materials will be removed from the asset at the earliest opportunity to reduce the potential risks posed. Hazardous wastes will be appropriately stored while awaiting prompt removal from the site, for onwards treatment or disposal.

5.7 Soft Strip

Furnishings and fittings are removed from topsides during soft strip. This is a hands-on task which removes items that may be suitable for reuse or refurbishment; for example, pumps or electrical items. Recyclable wastes such as glass (windows etc.) and wood (door frames etc.) are removed at this stage, to allow them to be easily segregated for recycling.

5.8 Dismantling

Once the asset has been stripped such that it is primarily metal, it will be dismantled. For the larger assets, it is likely that they will initially be split into smaller sections. Gas axes and other hand tools will be utilised to cut sections, which can be lifted by crane to ground height. Dismantling can then progress as it would for smaller assets.

The dismantling will be conducted in a progressive manner; working from the top down, using excavators equipped with demolition attachments, including metal shears, grabs, and pulverisers. Where the use of demolition excavators are restricted (such as by the size of the beams and girders) other methods of demolition will be used, for example; hot cutting using oxygen and gas cutting equipment.

5.9 Size, Segregation, Transfer and Waste Storage

Once the asset is dismantled, materials will be size reduced (if required), segregated, and transferred to suitable containers and prepared for storage on site prior to load-out. During this work, which is likely to include hot works e.g. oxygen and gas cutting of metal, appropriate precautions will be in place to minimise fire risks.

5.10 Load Out

The bulk of the waste will be transported from the installation by ships for onward reuse, recycling, or recovery. Waste will be transported from the storage areas to a load out quay, before being loaded onto the vessel; loading may require the use of vessel or landside cranes to lift the waste.

6 Risk Management

Prior to any works commencing, potential hazards will be identified, risks quantified, and appropriate mitigation put in place. Each decommissioning project will have its own specific potential hazards that need to be managed. However, the main hazards are generic to all projects; these have been

identified in Document 3.3: Risk Management. This allows a set of standard mitigation measures to be identified; the main generic risks include; spills, fire, and firewater run-off. Details of the site Emergency Plan are provided in Document 3.4.

6.1 Loss of Containment (Spills)

A spill of a material is not in its self an environmental issue. In order to have an environmental impact, the material has to be a source of hazard, and have a pathway to an environmental receptor. The Cromarty Firth and its associated ecology are recognised as the main environmental receptor for the Invergordon Service Base installation.

Although all bulk fluids should have been removed from an oil and gas asset prior to its arrival at the installation, it is likely that there will be some residual materials, for example oils. Hence there will be hazardous materials, which means potential sources need to be managed. The maximum amount of waste oil and other liquid hazardous wastes allowed on the installation at any one time are 30 tonnes, and 12 tonnes respectively. These will be stored in multiple containers, meaning that the actual volume of hazardous liquids that could be spilled at any one time will be much lower than these numbers.

As discussed in Section 4.6, the priority is to remove hazardous materials from the asset at the earliest opportunity to allow them to be appropriately contained and stored in a bunded area. Bunds provide a secondary means of containing the material, in the event of a spill from the primary container. This breaks the pathway and ensures that the material cannot reach the environment.

Precautions will be in place whilst hazardous materials are being removed and transported from the asset. This will be done through the Risk Assessment Method Statements, which will prescribe exactly how the work will be carried out, the risks posed, and associated mitigation requirements.

The pollution control hierarchy will be utilised in the event of a spill. The five steps of the hierarchy will be implemented as follows:

1. Contain at source – temporary bunds and drip trays will be utilised to provide containment at source. These will be put in place prior to works being undertaken.
2. Contain close to source – spill kits including absorbent pads and sausages will be utilised to contain spills close to source.
3. Contain on the surface – drain covers and absorbent sausages will be utilised to prevent spillages entering the drainage system.
4. Contain in the drainage system – the drains include both oil and silt interceptors which will remove the majority of pollutants from the liquid effluent. However, in the unlikely event of a spillage entering a drainage system the isolation valves will be closed, preventing discharges and allowing appropriate remedial steps to be taken.
5. Contain on the watercourse – if the previous steps have not prevented a discharge to water, the PoCF's approved Oil Spill Contingency Plan will be employed to contain the spillage.

6.2 Fire and Firewater Run-Off

There is a potential for flammable materials to be associated with oil and gas assets. It is noted that process pipework and vessels should have been emptied, purged and vented, prior to delivery to the installation, but there will be some residual risk.

As discussed in Section 5.1 Risk Assessed Method Statements will be in place to carry out works. Where a fire risk is identified, appropriate management and mitigation will be put in place for the specific task. Firefighting equipment will be located close to hot work areas and areas with an

identified fire risk. If a significant fire were to occur the relevant part of the Port's Major Incident Plan would be implemented.

Firewater run-off can be polluting due to potential contamination with oils or other hazardous substances, and as such it needs to be contained to protect the water quality in the Cromarty Firth. The pollution control hierarchy will be implemented to contain firewater. For safety reasons, it is unlikely that the water will be able to be contained at or close to source. The first stage of containment in this instance is therefore likely to be on the surface, followed by containment in the drainage system by closing the isolation valves.

7 Raw Materials & Energy

Due to the nature of the activities that will be undertaken at the facility, it will be a low user of raw and auxiliary materials. Materials will be utilised for site preparations, surfacing of the Berth 5 laydown area, and drainage upgrades. Operations will require energy for lighting and machinery operations, and water for high pressure water jetting, dust suppression, road sweeping and fire extinguishing. Document 6: Raw Materials Usage and Energy Consumption Assessment provides more information.

8 Emissions and Sampling

An Emissions Assessment (Document 7) has been completed and a Sampling Plan (Document 3.5) put in place. No effects on human health associated with emissions are predicted. The sampling plan details three methods to be utilised to monitor the environmental performance of the site:

- Sampling and monitoring - samples are taken for analysis or measurements are taken that can be used to physically monitor emissions.
- Environmental Walk Round – to check that materials are stored appropriately, operations are being carried out correctly, and mitigation is in place and utilised appropriately.
- Audits - to systematically check that procedures and Risk Assessed Method Statements are being appropriately implemented, and are achieving what is required of them.

Each of the potential emissions are discussed in turn, along with the proposed sampling in this section.

8.1 Water

There is no intent to discharge substances to the surface water drainage system. Rainwater may however wash materials on the ground, such as dust particles from the surface of the installation into the drainage system. The use of a road sweeper and manual sweeping to remove particulates will minimise surface water contamination. If materials enter the drainage system, then they will pass through silt and oil interceptors which will remove both solids and oils.

Surface water discharges from the Invergordon Service Base are all already licensed through The Waste Environment (Controlled Activities) (Scotland) Regulations 2010 or the Control of Pollution Act 1974 As Amended. The requirements of the existing licence consents will be met. No regular water sampling is proposed during normal operations of the installation, however ad-hoc sampling and analysis will be carried out if an incident occurs that has the potential to impact on water quality.

There will be various items on the Environmental Walk Round check list which relate to water quality, including:

- Checks of containment – to ensure there are no drips or leaks.

- Dust checks – minimising solids entering drains.
- Area checks – signs of loss of containment.
- Spill kit checks – to ensure they are properly stocked, and in the correct location.
- Water quality checks – visual checks of the waters around the installation, particularly around outfalls to look for visual signs of pollution.

The oil/silt interceptors are also checked regularly and emptied as required to ensure they have sufficient capacity to work effectively.

8.2 Dust

The decommissioning activities including soft strip and demolition can give rise to small particles, which in dry windy conditions can be spread as dust. Dust suppression techniques will be implemented to prevent dust becoming a nuisance issue including; water misting to dampen wastes and prevent particulates becoming airborne, covered storage, and good housekeeping.

Dust monitoring is proposed at two locations on the perimeter of the site. The monitoring technique proposed utilises sticky cylindrical dust monitors, which are left in place for a number of days and then analysed to determine the dust loading and the direction of the dust source from the monitoring point. This will provide an understanding of whether or not there is a dust issue, and the area of the source to allow any improvement measures to be implemented.

Dust will also be checked for during the Environmental Walk Round, if there is evidence of dust in the air or on surfaces, prompt action will be taken.

8.3 Light

Operational areas of the installation will be lit sufficiently to provide safe working conditions. Additional mobile lighting will be provided at the site where necessary. Lighting will only be used where necessary and all lights will be directional and be orientated downwards, to minimise visibility of the light source from the surrounding area, and to avoid unnecessary illumination outside of the boundary of the facility. There will be limited night-time working associated with the installation, hence temporary lighting will primarily be required in the mornings and evenings in the winter months.

8.4 Litter

The material that will be handled at the facility, and the nature of operations are not of a type that includes litter, or will give rise to airborne litter emissions, therefore litter will not be a significant issue. The Environmental Walk Round will include checks for litter and general housekeeping. Incidents of littering associated with staff welfare will be followed up wherever practicable and, if needed, additional training or bins provided to prevent reoccurrence.

8.5 Odour

The only source of odour associated with oil and gas asset decommissioning is decomposing marine growth. As discussed in Section 5.4, marine growth will be removed promptly, to remove the source of potential odour. Removed marine growth will be collected in covered receptacles, ready for swift removal from site.

Odour monitoring will be carried out close to the work areas. If a distinct odour is detected, monitoring will be carried out at the site boundary. If the odour is distinct at the site boundary a full

odour assessment will be carried out, in line with the Institute of Air Quality Monitoring's guidance², to determine the level of nuisance associated with the odour.

Additional mitigation will be employed if there is an odour issue identified.

8.6 Noise

A noise assessment for the typical operations to be carried out on the site has been completed (Document 8). The resultant noise levels were compared against two British Standards BS5228 Code of practice for noise and vibration control on construction and open sites³ and BS4141 Methods for rating and assessing industrial and commercial sound⁴. The planned activities are below BS 5228 Threshold of Significance for daytime, evening and weekend hours. When compared against BS 4142 they were deemed to be of low impact. If the typical operational activities were to be carried out at night-time then the noise impacts may be significant.

Although the Invergordon Service Base is open 24 hours a day seven days a week, it is not proposed that the installation operations will be continuous. The main operating hours will be between 7am and 9pm Monday to Saturday and 8am and 4pm on Sundays. From time to time work out-with these hours may be required. Additional noise impact assessments will be undertaken on a case by case basis should night-time working become necessary.

The noise assessment has been based on predicted noise levels from the activities associated with the decommissioning operations, and as such, while every effort has been made to ensure they are representative and based on the worst case, they are only estimates. As a result, the Port will monitor the actual noise levels generated by installation once operations are ongoing, in order to ensure that the installation does not result in noise disturbance for local residents.

Noise monitoring will be conducted for each new phase of operation, which has the potential to cause noise disturbance of local residents. Monitoring will be conducted at up to seven noise monitoring locations, in the closest residential and recreational areas surrounding the installation, until a good understanding of the real noise levels is obtained. Once the noise levels are understood, and it is confirmed that the installation is not causing noise disturbance, the monitoring will be stopped until the next new phase of work commences. If the monitoring reveals that the noise levels from the installation have the potential to cause disturbance, additional mitigation measures will be implemented.

Extra monitoring will be conducted if there are concerns raised, and additional mitigation measures implemented as necessary.

The monitoring will be conducted using a calibrated noise meter, operated by a suitably qualified person, in line with the relevant guidance and legislation.

² Institute of Air Quality Management, Guidance on the Assessment of Odour for Planning, 2014.

³ BSI (2014). BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Noise. UK: British Standards Institute.

⁴ BSI (2014). BS4142:2014 Methods for rating and assessing industrial and commercial sound. UK: British Standards Institute.

9 Ecological Assessment

In order to provide an understanding of whether the installation is likely to have a significant effect on a European conservation site, an ecological assessment (Document 9) has been carried out, in line with the requirements of the Conservation (Natural Habitats etc.) Regulations 1994. This assessment also considered potential effects on non-European sites such as Sites of Special Scientific Interest.

To identify the conservation sites that needed to be considered within the assessment, a review of the location of the sites, together with the species and habitats they are designated for was conducted. Where there was a possible link between the installation and a site, that site was taken forward for further assessment. The following sites were considered in detail:

- Cromarty Firth Special Protection Area and Site of Special Scientific Interest,
- Loch Eye Special Protection Area and Site of Special Scientific Interest,
- Dornoch Firth and Loch Fleet Special Protection Area,
- Inner Moray Firth Special Protection Area and Sites of Special Scientific Interest,
- Moray Firth Proposed Special Protection Area,
- Rosemarkie to Shandwick Coast Site of Special Scientific Interest,
- Moray Firth Special Area of Conservation, and the
- Dornoch Firth and Morrich More Special Area of Conservation.

The aspects of the operations associated with the installation that have the potential to cause significant effects on these sites, through impacting the species and habitats for which they are designated, were then identified. These included vessel traffic movements, spills of hazardous substances, in-air noise, and lighting.

The relevant species (birds and marine mammals) and habitats that may be present in the area surrounding the installation were then identified, through a combination of literature review and field surveys. This information was then used to assess which species and habitats may be affected by the relevant aspects of the decommissioning operations, in order to identify whether the installation has the potential to negatively impact the conservation areas detailed above.

The assessment found that the vessel traffic movements, in air noise, and lighting associated with the installation are not likely to result in any significant effects on the species and habitats for which the conservation areas are designated. It was however identified that without mitigation, a release of oils or other hazardous substances from the installation into the Cromarty Firth does have the potential to result in significant negative effects on the following sites:

- Cromarty Firth Special Protection Area,
- Moray Firth Special Area of Conservation,
- Dornoch Firth and Morrich More Special Area of Conservation, and the
- Rosemarkie to Shandwick Coast Site of Special Scientific Interest.

However, when the mitigation measures that will be implemented at the installation were considered (see Section 6), it was determined that a release of harmful substances into the Cromarty Firth is extremely unlikely. This is due to the fact that PoCF's existing approved and regulated mitigation measures will be supplemented by additional robust pollution prevention protocols, designed specifically for the decommissioning operations. Furthermore, the monitoring procedures, and site emergency response plan (Documents 3.4 and 3.5), mean that if a spill does occur, it will be quickly detected and remediated, thus greatly limiting the potential impacts.

The assessment therefore concluded, that following the provision of mitigation measures, the proposed installation at the Invergordon Service Base will not result in any significant negative impacts on designated nature conservation sites.

10 Conclusion

End of life North Sea oil and gas assets require well managed decommissioning. The PoCF have submitted a Pollution Prevention Control application to the Scottish Environment Protection Agency to allow them to handle the wastes associated with decommissioning.

The steps proposed for carrying out decommissioning projects have been specifically designed to manage the potential environmental effects and prioritise early removal of hazardous materials. The general risk assessment, emissions assessment, noise modelling and ecological assessment have all identified that, with management and mitigation implemented in line with the Best Available Techniques, decommissioning activities can be carried out with no significant environmental effects. Appropriate sampling and monitoring has been proposed to ensure that the management and mitigation is effective.