

Water Use

Supporting Guidance (WAT-SG-94)

Sector Specific Guidance: Oil and Gas Decommissioning Operations

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Update Summary

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# Key Points

This document provides guidance on the authorisation of discharges to the water environment from Oil and Gas Decommissioning Operations.

* If the discharge location is within a waste management licence (WML) boundary, then discharge conditions should be included in the WML. If a Pollution Prevention and Control (PPC) permit applies to the site, any discharge to the water environment should be included in the PPC permit.
* Rainfall runoff from the areas where depolluting/decommissioning is taking place should be authorised by a Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) licence, a WML or PPC Part A permit.
* Rainfall runoff from the areas where only depolluted materials are stored can be authorised by CAR GBR10, a WML or PPC Part A permit.
* Where water used in a process such as washings requires authorisation under CAR, this should be authorised as ‘trade or other effluent’.
* Any CAR authorisation application should be considered in tandem with the associated waste management licence (WML) or PPC permit application, which will refer to an Asset Specific Treatment Plan.
* If the discharge is included in a CAR, WML or PPC permit, then appropriate numeric limits should be included in order to protect the environment.
* Naturally Occurring Radioactive Material (NORM) is radioactive and it is present as scales on equipment, pipes etc that have been used in oil and gas production.
* The management of NORM including the removal, treatment of contaminated items, storage and disposal requires a radioactive substances activities authorisation under the Environmental Authorisations (Scotland) Regulations (EASR).
* EASR authorisations are relevant licences under CAR. Therefore, an EASR authorisation required for a discharge containing NORM to the water environment may contain conditions and limitations relating to non-radioactive properties.
* High risk contamination from structures such as sludges, liquids, marine growth, sacrificial anodes, NORM, radioactive sealed sources including those in smoke detectors, and washings of oily residues etc. normally need removed off site.

# Oil and Gas Decommissioning Operations

## Background

A number of sites around Scotland are seeking to establish decommissioning centres for the oil and gas industry. This is an emerging sector for Scotland, and SEPA’s Oil and Gas Decommissioning Sector Plan has been issued to support development of this industry. These sites are very large (one site is at least a mile long) to accommodate very large structures. They are usually located in coastal locations on quaysides to allow for delivery of the large assets for decommissioning. These are often in close proximity to areas designated as SACs, SPAs and/or SSSIs. It is easiest to consider these as very large End-of-Life (ELV) sites – with a smaller area for working on the dismantling and a large storage area.

Rainwater will fall onto the site and will naturally find its way to the water environment (sea or river). When this rainwater drains across the site it will pick up contaminants. There will be more contaminants picked up from the area used for the decommissioning process, compared to the wider site used for storage.

* A discharge that is solely rainfall related should be authorised as surface water run-off.
* Wash water should be authorised as process water or ‘trade or other effluent’.

Under CAR, SEPA is required to assess activities liable to cause harm to the water environment. Where an activity may cause harm, SEPA will set appropriate discharge limits. To do this we require the expected flow rate and the substances in the discharge to be appropriately characterised.

The storage and treatment of waste requires a waste management licence or PPC Part A permit. Refer to [SEPA Guidance Document: WST-G-059 Regulation of Offshore Oil and Gas Waste](https://www.sepa.org.uk/media/369293/wst-g-059-offshore-og-guidance.pdf). In these permits there is a requirement for an Asset Specific Treatment Plan to be produced for each structure to be decommissioned greater than 1000 tonnes. This specifies the age and type of structure, an inventory of materials and the proposed decommissioning method.

Offshore decommissioning activities at a facility may be intermittent in nature due to the contract nature of the work. It is therefore likely that these facilities will look to supplement the decommissioning work with a range of other activities including typical scrap yard operations and the traditional port storage/transport of goods.

Off-shore oil and gas waste covers a wide range of equipment and materials. Due to the nature of the processes involved offshore and age of the installations being decommissioned, these are likely to contain a wide range of hazardous components and liquids. Older rigs may contain more hazardous substances such as PCBs and TBTs, so special care will need to be taken to remove these. Section 2.2 below sets out the typical stages in decommissioning operations.

It should be assumed that any facility relating to the production, transfer or storage of oil or gas could have NORM contamination and should be addressed as such.

## Stages in Oil and Gas Decommissioning

At any stage NORM could be present and therefore prior authorisation under EASR is likely. Operators should check for NORM contamination at each stage. If NORM is present it needs to be managed in accordance with EASR.

These sites have a large concrete pad on which the various stages of the processing will take place, as indicated below.

* Items need to be monitored for the presence of NORM. All NORM contaminated items must be segregated from non-contaminated items. This monitoring may occur before the items reach the site.
* While most marine growth such as seaweed, barnacles and mussels is removed offshore, some may need to be removed on shore.
* Ballast water may need to discharged from the structure (Refer to Annex 1).
* Any sacrificial anodes (Cathodic Protection), needs to be removed and stored in a bunded area where no further anode degradation can discharge to the water environment. Typically, these anodes are comprised of zinc or aluminium and can be very large. Anodes from oil cargo tanks may also be NORM contaminated.
* Soft stripping will remove materials such as fixtures and fittings, insulation, cables, glass etc. Asbestos may need to be removed, along with NORM and mercury scale. This removal may take place in a designated building and the process must be appropriately authorised.
* Bilge water/sewerage, residual sludge and oily water (slops) in pipework and vessels will be drained by gravity or by pumping and normally removed off site by road tanker and/or to foul sewer.
* Once drained, contaminated pipework needs to be cleaned by flushing with water and detergent, with this water collected and pumped to a water treatment plant (WTP), again the applicant will need to assess whether any contamination such as NORM may be present and if so needs to be managed appropriately.
* The structures will be cut up either by hot cutting or cold cutting. This cutting will produce metal and potentially paint particulates which may contain anti-fouling components (e.g. TBT, lead) and Persistent Organic Pollutants (POPs).
* Radioactive sealed sources, including small sources found in smoke detectors, are commonly used in offshore installations. These need to be removed and managed in accordance with EASR.

# CAR Authorisation Considerations

## Managing Contaminants and Process Water

There are a number of substances that because they pose an intrinsically high risk of pollution, should normally be removed off site by tanker or by a direct connection to the public foul sewer. Specific assessments may be needed on a case by case for such routes dependent on the contamination and levels of such contamination. Such materials include –

* sludges, liquids pumped out of or drained from pipework and vessels
* marine growth and sacrificial anodes removed from structures
* NORM, mercury and asbestos
* washings of oily residues from pipework and vessels

In certain situations, it may be justified to discharge process water such as washings and other materials from the site. However, this must be assessed on a case by case basis and only where there is adequate treatment facilities available. Such discharges may be more appropriate for particularly remote sites, to avoid otherwise lengthy journeys for road tankers. However authorisations may be needed for this to occur.

If it is intended to discharge process water, then it must be ensured that the treatment facilities can cope with the effluent, e.g. the use of detergents will compromise the effective operation of oil interceptors. Steam cleaning or high pressure jetting may be viable alternatives in this case.

Treatment options for runoff would normally include an oil interceptor, with potentially a facility to remove particulates such as a vortex separator, settlement tank or lagoon. There would normally be no need for secondary treatment.

## Authorisation Conditions

### CAR/WML/PPC/EASR Interaction

If the discharge location is within a WML boundary, then discharge conditions (except sewage) should be included in the WML. If a PPC permit applies to the site, any discharge from the stationary technical unit to the water environment should be included in the PPC permit.

If the site discharges NORM to the environment, it will require a radioactive substances permit under EASR. This permit may also include conditions or limits on the non-radioactive properties of the radioactive discharge.

If the discharge is out with the WML site boundary, a CAR authorisation should be considered in tandem with the associated WML. For both WML & PPC these should refer to an Asset Specific Treatment Plan (ASTP), e.g. see Waste Management Permit (Storage and Treatment of Offshore Waste and Waste Ships).

An ASTP is key in ensuring that best practice is followed to prevent pollution. The ASTP specifies the age and type of structure, an inventory of materials and the proposed decommissioning method.

Since the ASTP is required by the WML or PPC permit, then there is no need to refer to a working plan in the CAR licence.

### CAR Licence

Where rainfall runoff from the areas where depolluting/decommissioning is taking place requires authorisation under CAR, this should be licenced using the Water Run-Off Discharge Permit template. The quantity of runoff can amount to a considerable amount due to the large impermeable surface areas involved.

Where water used in a process such as washings requires authorisation under CAR, this should be authorised as ‘trade or other effluent’.

Appropriate numeric limits should be included in order to protect the environment. Numeric limits are useful as a backstop when enforcement action is needed. They will also influence the type and scale of treatment to be provided. Appropriate modelling will have to be undertaken [WAT-SG-11: Modelling Coastal and Transitional Discharges](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-11).

Potential contaminants in the discharge will vary depending on the inventory on the offshore structure, but following an approved ASTP will ensure that discharge of contamination is kept to a minimum.

Rainfall runoff from separate areas where only clean, depolluted materials are stored can be authorised by CAR GBR10.

### Typical List of Determinands

The determinands listed in Table 1 below should be considered for inclusion in the discharge licence. Determinands may be removed or added as required.

Table 1

|  |
| --- |
| Parameter |
| Suspended Solids  |
| pH |
| Total hydrocarbons |
| Mercury (passing a 0.45um membrane) |
| Cadmium (passing a 0.45um membrane) |
| Tributyl tin  |
| Copper (passing a 0.45um membrane) |
| Aluminium (passing a 0.45um membrane) |
| Zinc (passing a 0.45um membrane) |
| Iron (passing a 0.45um membrane) |
| Lead (passing a 0.45um membrane) |
| Arsenic (passing a 0.45um membrane) |
| Chromium VI (passing a 0.45um membrane) |
| Perfluorooctane sulfonic acid and its derivatives (PFOS) |
| Polychlorinated Biphenyls (PCBs) |

## Monitoring

Routine inspections of the discharge should be scheduled. These inspections can be undertaken by the WML/PPC officer in order that compliance with the ASTP is assessed.

Routine CAR discharge sampling is likely to be of less benefit than routine inspections. Since the discharge is intermittent, only occurring during rainfall, routine sampling is unlikely to pick up the ‘first flush’ peak of pollutant runoff.

However, operator monitoring and sampling of the discharge should be considered.

SEPA may also choose to undertake compliance/audit sampling under the PPC permit.

Routine inspections by the Radioactive Substances Unit will be carried out to check compliance with EASR authorisations. These authorisations require operator sampling for NORM and routine reporting of quantities discharged.

## Annex 1 Discharge of Ballast Water

**Introduction**

Ballasting and de-ballasting is the process of taking on or discharging fresh water or seawater to maintain a structure’s stability, draught and manoeuvrability. The process is essential in maintaining a vessel or structure stability during operations including moving the vessel to a decommissioning facility. The movement of ballast water within a structure can help maintain stability during the decommissioning process.

However, at some point in the decommissioning process, these tanks will require to be de-ballasted (or more simply the ballast water discharged).

**What does this mean in terms of Decommissioning Activities?**

Ballast water can pose a significant risk to the environment surrounding the decommissioning facility with the potential for:

1. Hydrocarbon pollution
2. Sediment loads from sludges
3. Introduction of invasive non-native species (or INNSs).
4. Discharge of chemicals from the decontamination process.
5. High concentrations of metals.
6. Microbiological loadings.

There are three potential scenarios relating to discharge of ballast water.

1. The discharge of residual ballast water from the structure or parts of the structure during onshore decommissioning works.

In this scenario the management and regulation of the discharge would be regulated under the site runoff or drainage conditions on the SEPA site licence / authorisation.

1. The discharge of ballast water immediately prior to or during operations to remove the structure from the water environment into or onto a decommissioning facility.

SEPA would consider that in this scenario the structure would still be deemed a vessel and as such any discharge would be out with SEPA control and instead regulated by the Maritime and Coastguard Agency.

1. The discharge of ballast water during wet berth decommissioning works (i.e. when the structure is berthed in the water).

SEPA considers that in this scenario the structure would still be deemed a vessel and as such any discharge would be out with SEPA control and instead regulated by the Maritime and Coastguard Agency.

In addition to the normal assessment of pollutants such as hydrocarbons, suspended solids, metals etc, consideration needs to be given to the potential introduction of INNSs due to the discharge of ballast water.

The discharge of ballast waters and sediments has been governed under the Ballast Water Management Convention since its entry into force in September 2017. Further guidance can be found here:

[Control and management of ballast water - GOV.UK (www.gov.uk)](https://www.gov.uk/guidance/control-and-management-of-ballast-water)

The Convention applies to ships and defines a ship as a vessel of any type whatsoever operating in the aquatic environment and includes submersibles, floating craft, floating platforms, Floating Storage Units (FSUs) and Floating Production, Storage and Offloading vessels (FPSOs).

SEPA recognises that some structures may not be classed as ships, however if they contain ballast tanks and are being decommissioned the same principles apply.

**Ballast Water Standards**

The relevant standard for SEPA is D2 - Ballast water performance standard.

Before discharge, the ballast water may need to be tested to ensure that the D2 - Ballast water performance standard is complied with. This specifies limits of viable organisms and indicator microbes.

If it can be demonstrated that the D2 - Ballast water performance standard can be met, then no specific limits in the SEPA authorisation would be required. If the performance standard is exceeded then further discussion and controls may be required.

References

Key Documents

* [SEPA Guidance Document: WST-G-059 Regulation of Offshore Oil and Gas Waste](https://www.sepa.org.uk/media/369293/wst-g-059-offshore-og-guidance.pdf)
* [SEPA Guidance Document: A Guide to Waste Management Licensing](https://www.sepa.org.uk/media/28977/guide-to-waste-management-licensing.pdf)
* [CAR Application Forms](https://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/#Water)
* Form A - for all NEW applicants
* Form B2 - point source discharges, excluding foul only sewage and fish farm effluent
* [Environmental Regulation (Scotland) Charging Scheme](https://www.sepa.org.uk/regulations/authorisations-and-permits/charging-schemes/charging-schemes-and-summary-charging-booklets/) (www.sepa.org.uk)
* [WAT-SG-11: Modelling Coastal and Transitional Discharges](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* CAR Surface Water Run-off Permit Template
* [WAT-RM-08: Regulation of Sustainable Urban Drainage Systems (SUDS)](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-SG-12: General Binding Rules for Surface Water Drainage Systems](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [Guidance for Pollution Prevention](http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/)  (GPP) NetRegs. (netregs.org.uk)
* PPG 1: Understanding your environmental responsibilities - good environmental practices
* GPP 2: Above ground oil storage tanks
* GPP 5: Works and maintenance in or near water
* PPG 6: Working at construction and demolition sites
* GPP 13 Vehicle washing and cleaning
* GPP 21: Pollution incident response planning
* PPG 22: Incident response - dealing with spills
* PPG 27 Installation, decommissioning and removal of underground storage tanks

CIRIA Manuals (www.ciria.org)

* [Control of water pollution from construction sites. Guidance for consultants and contractors](https://www.ciria.org/Search?SearchTerms=c532) (C532)
* [Drainage of development sites - a guide](https://www.ciria.org/Search?SearchTerms=x108) (X108) (Free)
* [Guidance on the Construction of SUDS](https://www.ciria.org/Search?SearchTerms=c768) (C768)
* [Site handbook for the construction of SUDS](https://www.ciria.org/Search?SearchTerms=c698) (C698) (Free)
* [The SuDS Manual](https://www.ciria.org/Search?SearchTerms=c753) (C753) (Free)

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