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4.4 Incident Management



Sullom Voe Terminal

Plan

Oil Spill Waste Minimisation and Management Plan

Issuing Authority (Region Lead or Conformance Tag):	Martin Sidgwick Emergency Response Team Leader	Document Custodian:	Martin Sidgwick Emergency Response Team Leader
Document Administrator:	Sheila Tait IMDC Analyst	Applicability:	Sullom Voe Terminal
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Revision summary:	First issue as a BP document (previously a Cape Environmental Services document). This document highlights waste management issues related to an oil spill clean-up in Yell Sound. It outlines the source of waste, how the waste will be collected, storage considerations and disposal options to be used. For further information contact DCC at ODL on 01224 628018 or dcc@odl.co.uk .		
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Oil Spill Waste Minimisation and Management Plan

Document Administrator:	Stephen Johnson Waste Controller Cape Environmental Services 33-35 McFarlane Street Paisley PA3 1SA	Contact:	Site: Tel: 01806 243847 stephen.johnson@uk.bp.com
	BP Sullom Voe Terminal Mossbank Firth Shetland ZE2 9TU	Contact:	Tel: 01806 243000

Introduction

The approaches to Sullom Voe have several areas of high environmental sensitivity, including Sites of Special Interests (SSIs) in Yell Sound and a Special Area of Conservation (SAC) which covers the whole of the Voe itself. The Sullom Voe Harbour Oil Spill Plan was developed, and has evolved over time in recognition of the need to protect the various species of conservation importance, the marine habitats and wildlife in general.



In the aftermath of a spill, deciding how to deal with the waste oil and contaminated material is a critical process. It is a fundamental requirement that, as soon as an incident occurs, the correct decisions are made. This will ensure a successful waste management operation minimising the environmental damage to the affected area.

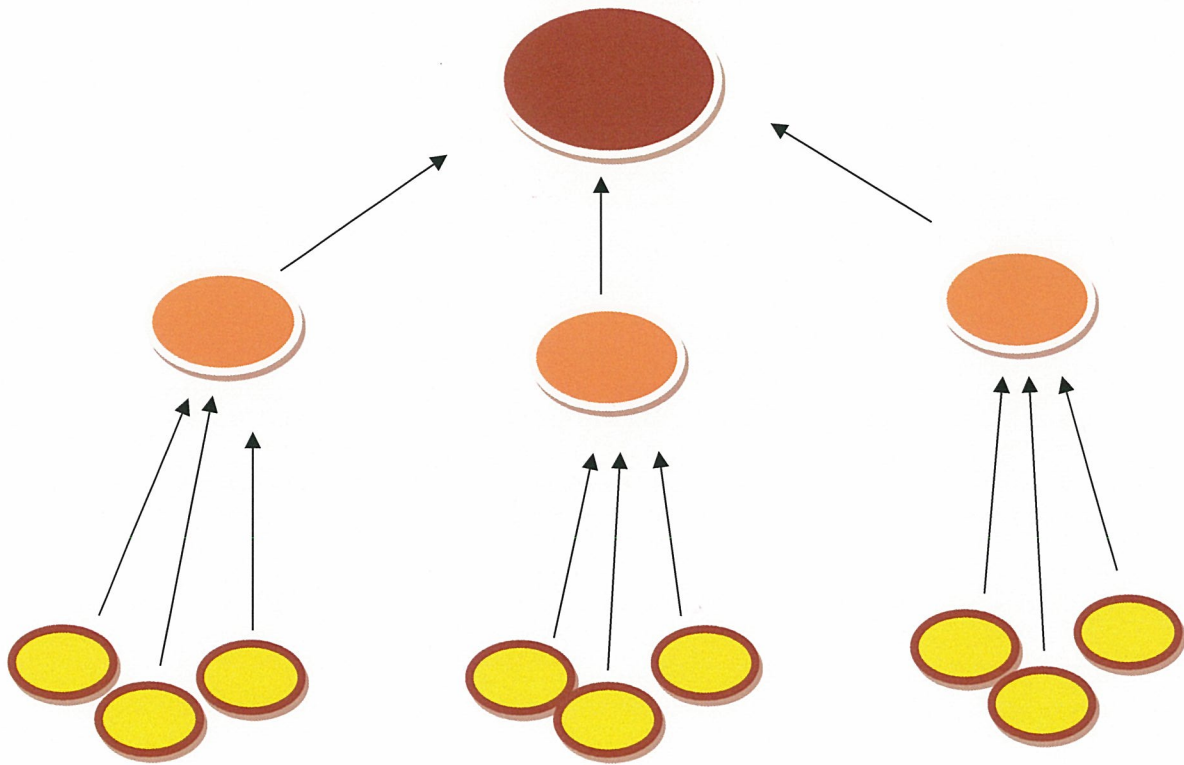
Historical data shows that oil spills impacting the shoreline can, in extreme cases, produce up to 30 times more waste than the volume of oil originally spilt. Although there may be different reasons for the amount of waste generated, it is also evident that a significant number of smaller spills have created large amounts of waste. The management of all waste in any spill should be a high priority.

Large amounts of waste are likely to be collected relatively quickly during a clean-up, and beach-head storage sites are likely to be rapidly overwhelmed. This plan therefore includes the location of a variety of temporary storage sites. If there are sufficient temporary storage sites the problem of disposal can be approached in stages, so that each disposal route is not overloaded.

This plan has been developed to highlight waste management issues related to an oil spill clean-up in Yell Sound. It outlines the source of waste, how the waste will be collected, the storage considerations and disposal options to be used. It follows the progress of the waste through each stage (Figure 1), and includes detail of disposal options which will be used for the area covered by the plan.

Local disposal options have been given priority so as to minimise the logistical problems of transporting the waste over long distances. Nevertheless, the disposal methods to be used are dependent on the presence of suitable disposal facilities, and the local availability of raw materials. In the event of a major spill, it is likely that more than one technique will be required to deal with the quantities of oil and contaminated material to be handled.

Waste Management Model (Figure 1)



Transportation



Waste generated by different oil recovery methods



Intermediate and long term storage

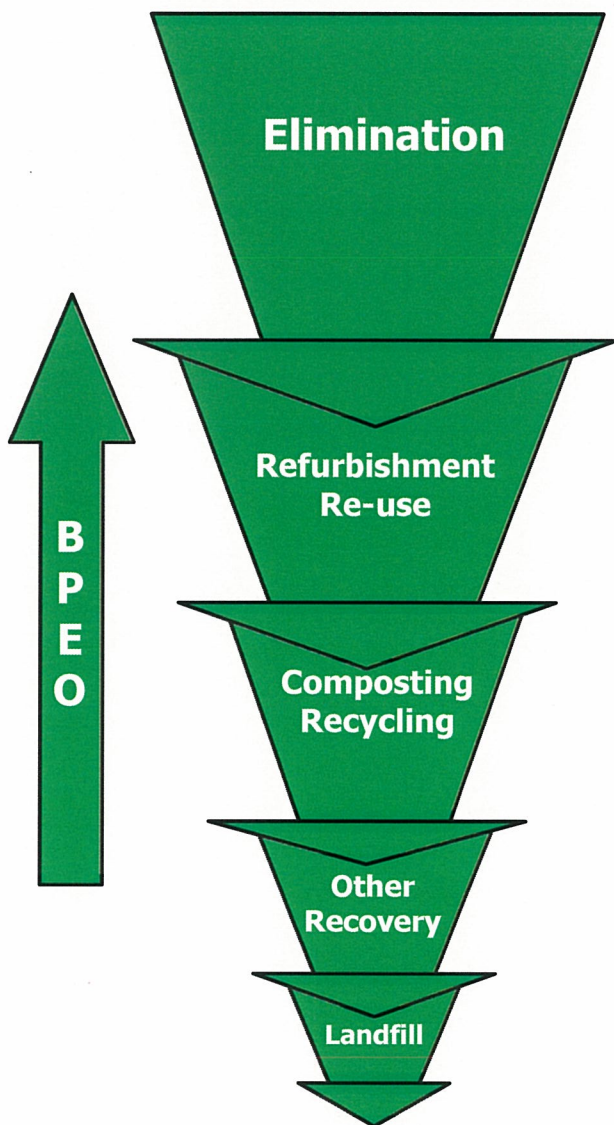


Treatment, recycling and final disposal

The waste hierarchy refers to the "3 Rs" reduce/eliminate, reuse and recycle, which classify waste management strategies according to their desirability.

The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste.

BEST PRACTICABLE ENVIRONMENTAL OPTION (BPEO)



Waste Elimination

Efficient methods should be developed for spill clean up to ensure that the minimum material is used and/or contaminated during the process

Product Reuse

This is the reuse of an item for its original purpose, i.e. clean-up equipment should be cleaned and reused in place of disposable items, or cleaning PPE for reuse

Recycling

This is the production of a marketable product from waste, e.g. taking the recovered oil to SVT. This will be dependent on the quality of the recovered product

Disposal

Disposal is the least desirable option. If none of the above methods can be used for whatever reason waste must be disposed of effectively through some means, for example Hazardous Landfill

Possible disposal methods are explored on pages 10, 11 and 12

Oil Spill Clean Up Methods

There are different methodologies that can be adopted for the purpose of cleaning up oil spills. Some of the few important and commonly used methods can be explained as follows:

Using oil booms

Oil booms are a very popular method of controlling oil spills. There are various kinds of oil booms that have been designed for various areas where the oil spillage might occur, leading to a quite thorough oil spill clean-up.

Using absorbents

Absorbents mean sponges that are placed on the surface of the spill affected area. These absorbents suck and absorb the oil from the surface of the water leading to an oil spill clean-up.

Using dispensers

This method involves using fertilizers to disperse the oil spillage in the water. Even though the method sounds and looks unconventional, it is one of the highly recommended oil spill clean-up methods. The fertilizers help to hasten the growth of micro-organisms which help to diffuse the components of the oil spilt in the water.

Skimming

As the name suggests, skimming involves the removal of the oil spillage with the help of tools and equipment from the surface of the water. The most important aspect to be noted that only lighter oils can be separated and removed from the water in this method of cleaning up oil spills. This is because the density of oil will tend to be lighter than the density of water.

Using Hot water and huge force

In this method, huge force of the hot water is used to push the oil spilt back into the water. Then with the help of the skimming tools and equipment, the oil spill clean-up operation takes place.

Using mechanical aid

Mechanical removal is the use of all-terrain machinery to remove oil and contaminated materials from beaches. Front-end loaders, excavators, tractors, and other mechanical units can be used. The work done by these machines was essentially the same work done by hand; just on a much larger scale.

Using manual labour

Manual removal includes the use of shovels, rakes, absorbent materials, and hand pickup to clean beach segments of pooled oil, oily fine-grained sediment, and oily debris. This method is commonly used on beaches where oiling is light and a higher impact method would cause further harm than good. As beaches become cleaner with the use of other methods, hand removal is used to remove the little remains.

Using natural methods

In certain circumstances, material contaminated with a low percentage of oil can be left to degrade naturally. If the spill is at a remote or isolated location, a site with no amenity value, or has occurred during the winter, it is worth considering the possibility of allowing natural processes to proceed, and then to reassess the situation as conditions allow

On-Site Temporary Storage / Segregation

In the event of a spill and the subsequent clean-up operation, oil and oiled debris collected becomes a waste that should be segregated, stored, treated, recycled and disposed of separately. An important process in the first stages of an oil spill response is to classify and segregate waste streams at source. Waste will be channelled into separate storage dependent upon type, taking into consideration the most suitable containment for that material.

Waste storage containers shall be appropriate in terms of volume, composition, shape and opening for the material to be stored. Only containers in good condition will be utilised. Bungs and lids will be securely fastened or other forms of covering shall be provided.

Segregated waste will be stored in a manner to prevent:

- Accidental spillage or leakage
- Loss of liquid waste to underlying soil
- Loss of waste due to movement by wind
- Corrosion or wear to containers
- Loss of integrity from accidental collision or weathering
- Scavenging by animals

Segregated waste will be stored in a manner to ensure:

- Storage containers are situated above high-water limits to avoid being washed away
- Facilities are within close proximity of the recovery equipment to limit secondary contamination
- Adequate access is available for vehicles to remove the waste from site

Waste Elimination / Minimisation

Minimisation is a method of reducing the amount of waste entering each stream. This is essential to reduce the amount of waste for final disposal, thus limiting environmental impacts. There are a number of methods to achieve this; a few are highlighted below/over page:

- Potential impact sites should be identified before the oil has beached. These should be cleared of debris and rubbish to reduce the final amount of waste to be treated
- Segregation at source of the different types of polluted wastes (liquid, solid, PPE, etc.)

- Containment sites should, where possible, have a weatherproof cover to prevent ingress of excessive rainwater to waste storage areas
- Recovery equipment should be cleaned and re-used rather than discarded
- In-Situ handling of waste reduces the amount requiring further transport and treatment
- Re-usable (PPE) should be utilised where appropriate
- Absorbents should be used sparingly and effectively

Secondary Contamination

Secondary contamination is the spread of oil via people, transport and equipment to otherwise unpolluted areas. This should be avoided to control the overall impact of the spill, and can be achieved in a number of ways. For example:

- The design of 'clean' and 'dirty' zones at the work site
- Regular checks on all pumps and hose connections for leaks
- Ensure all storage is water and oil proof to prevent leakage
- Decontaminating personnel and equipment before leaving the work area
- Lining and decontaminating all vehicles intended for waste transportation before leaving site
- Establishing a traffic circulation plan for vehicles

Health and Safety

Refer to Health and Safety Plan.

Wastes Stream Classification

European Council Directive 91/689/EEC (the Hazardous Waste Directive or HWD) sets the framework within Member States of the European Community for provisions to control the movement of hazardous wastes. The aim of the HWD is to provide a precise and uniform European-wide definition of hazardous waste and to ensure the correct management and regulation of such waste.

The HWD defines hazardous waste, as wastes featuring on a list drawn up by the European Commission, because they possess one or more of the hazardous properties set out in the HWD.

The technical guidance note WM2 – this section concentrates on the legal framework for the definition of hazardous waste as defined by the HWD, how this definition is derived and linked to EU legislation and also outlines the methodology for assessing wastes based EWC 2002 and guidance on determination of dangerous substances within waste;

Appendix A European Waste Catalogue (EWC) – provides guidance on the use of EWC 2002. It reproduces the list in full, including its amendments.

Appendix B – provides advice on the dangerous substances and/or properties that could be associated for particular hazardous waste entries. An explanation on classification is provided by way of worked examples and discussion points to highlight key issues;

Appendix C – provides advice on the fourteen hazardous properties: determining assessment methods, threshold concentrations and advice on which test methods should be considered for each hazard; and

Appendix D - provides advice on the use of data sources that may be utilised when trying to find appropriate data for substances within the waste.

Wastes Stream Handling, Storage / Disposal Methods

RECOVERED FLUIDS

On-Site Temporary Storage

Oil / water collected from the sea will be stored in various types of temporary tanks and vessels such as ISO Tanks, Independent Bulk Carrier (IBC), Fast tanks and 45gal Drums.

Product details: ISO's, IBC's and Drums
Product Supplier: TWMA, Vatster, Shetland, ZE2 9SG
Contact: Site Manager *Tel:* 01595 840431

Product details: ISO's, IBC's, Fast tanks.
Product Supplier: BP Pollution Base, Sella Ness (OSRL)
Contact: Pollution Equipment CO-ORD *Tel:* 01806 243359

Waste Transfer

Oil / water collected from the sea and will be transported in various road tankers and ISO tanks

Product details: Vacuum Tanker/s, Disab Dry Vacuumation
Product Supplier: Cape Environmental, C/o Sullom Voe Terminal, Shetland, ZE2 9TU
Contact: Waste Controller *Tel:* 01806 243847

Product details: Vacuum Tanker/s
Product Supplier: BP Sullom Voe Terminal (Pollution)
Contact: Pollution Equipment CO-ORD *Tel:* 01806 243359

Product details: Vacuum Tanker/s, ISO Tanks/Trailers
Product Supplier: TWMA, Vatster, Shetland, ZE2 9SG
Contact: Site Manager *Tel:* 01595 840431

Recycling / Disposal

Oil / water collected from the sea will be the most suitable for processing at Sullom Voe Terminal since it will usually only be necessary to separate any water collected with the oil. Oil and water containing small debris items may be discharged at the Sullom Voe Terminal solid slops separator.

Waste Transfer: BP Sullom Voe Terminal
Process details: Product Re-Use
Contact: Shift TL *Tel:* 01806 243352
Contact: Incident Manager *Tel:* 01806 243560/561

TWMA Vatster has back up liquid storage and will arrange onward transport to the Mainland for disposal, if required.

Waste Transfer: TWMA, Vatster, Shetland, ZE2 9SG
Process details: Intermediate Storage and Onward Transport for Disposal
Contact: Site Manager *Tel:* 01595 840431

RECOVERED DEBRIS, SAND AND SHINGLE

On-Site Temporary Storage and Transport

It will usually be necessary to store oiled debris / sand-shingle temporarily to allow time for logistics to be put into place to support the optimum transport and disposal route. In a large spill, the amount of material collected may exceed the capacity of any treatment or disposal sites in the local area. In this event, a larger temporary storage site will be required. This storage acts as a buffer between the rate of collection and the, usually slower, rate of final disposal of the waste. A range of containers such as barges, skips and open head drums may be used, but if they are not available, simple lined storage pits can also be effective. The containers used should allow the oiled waste to be simply removed.

This temporary storage will be set up with the full permission and guidance from the Scottish Environmental Protection Agency (SEPA).

Product details: Skips
Product Supplier: Cape Environmental, C/o Sullom Voe Terminal, Shetland, ZE2 9TL
Contact: Waste Controller *Tel:* 01806 243847

Product details: Skips, Tipper Trailers, Excavators, Tracked Dumpers
Product Supplier: Garriock Brothers Ltd, Brae, Shetland, ZE2 9SG
Contact: Main Office *Tel:* 01806 522365

Product details: Tipper Trailers, Excavators, Tracked Dumpers
Product Supplier: EMN Plant Ltd, Sella Ness, Graven, Shetland, ZE2 9UP
Contact: Site Manager Tel: 01806 242 888

Intermediate Transfer / Storage

Scottish Environmental Protection Agency (SEPA) have given consent to use the modified Old Fire Training Ground at Sullom Voe Terminal as temporary storage for Oiled Debris, Sand and Shingle prior to onward transport and disposal.

Recycling / Disposal / Transfer

TWMA Vatster has a facility for storage, sorting and will arrange onward transport to the Mainland for disposal, where required.

Waste Transfer/Treatment Facility: TWMA, Vatster, Shetland, ZE2 9SG
Process details: Intermediate Storage/Sorting
Contact: Site Manager Tel: 01595 840431

Disposal Methods (as arranged by the waste receiver):

Waste Treatment and Disposal

All the possible disposal methods should be considered including direct recovery of product, processing of oils to saleable products, use as fuel, incineration (preferably with energy recovery), biological degradation, scrubbing etc. Adoption of a single technique should be avoided, since the best results are often obtained by using several methods in parallel or in series. The prime aim should be to recover oil for re-use, with methods such as incineration and Landfill being used only as a last resort.

Various methods of oil spill debris disposal have been practiced:

- Recovery of liquid oily waste
- Stabilisation
- Land farming
- Incineration / Energy Recovery
- Sand and Shingle Washing
- Landfill

Each disposal method is best suited for certain circumstances, depending on debris characteristics, climate and disposal site features. Primary considerations include land availability, accessibility of existing suitable landfills, degree of regulatory control over waste disposal practices, and prevailing weather conditions.

The characteristics of oil spill debris can vary significantly depending on the spill location, clean-up method, oil type and other factors. Basic debris parameters are important in selecting a compatible disposal method. For example:

- Size distribution of the solid matter collected during spill clean-up
- Biodegradability of the debris constituents
- Oil content in the debris

Waste management methods to be considered are:

Recovery of liquid oily waste

Oil / water collected from the sea will be the most suitable for processing at Sullom Voe Terminal since it will usually only be necessary to separate any water collected with the oil. Oil and water containing small debris items may be discharged at the Sullom Voe Terminal solid slops separator.

Stabilisation

Stabilisation is a method that can sometimes be used with oiled sand. This entails mixing the oiled sand with an inorganic substance such as quicklime (calcium oxide) powder to form an inert product. The oil binds with fine particles which prevent leaching. However, this method is not appropriate for cobbles or if the sand is mixed with large amounts of wood, seaweed or other debris. Stabilised material can usually be disposed of with fewer restrictions than untreated oily sand and can be used in land reclamation or similar applications.

Land farming

Land farming is a method of disposing of the waste directly on the surface of the soil, consisting basically of the biodegradation of the organic substrate of the waste with the assimilation of metal ions by the soil. This degrades and immobilises the pollutants. The waste is applied to the soil and mixed into it using tractors or ploughs.

When using natural absorbent materials impregnated with oil, they are biodegradable and therefore there is no problem in disposing of them in this type of environment. Sand cannot be added since this will change the physical, chemical and biological characteristics of the waste material.

Incineration / Energy Recovery

Industrial incinerators are used for controlled burning. The burn temperature is controlled, and varies between 1,000°C and 1,300°C. Materials such as absorbent booms and oil that cannot be re-refined are cheaper to incinerate than other products since they burn easily.

Energy recovery incinerators are more desirable as the energy from the combustion process is harnessed to generate hot water.



Washing contaminated sand / shingle


Sand scrubber systems are designed to remove oil from sand and shingle and can give excellent results, after washing the sand can be used by the construction industry.

Landfill

Industrial waste landfill sites reduce the risk of impacts on the environment. These sites are operated in accordance with criteria laid down in technical norms for the design, location and operation of landfill sites.

For disposing of sediments and other types of waste in industrial and municipal landfill sites, the waste should have an oil content of less than 5% without the presence of free liquids.

Landfill is the least desirable waste management option and should only be used as a last resort.



A final Waste Management Report must be developed at the conclusion of response activities. The final report should state in detail the types of waste generated as well as the amount of each waste type generated, disposed of, or treated.

Distribution list

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