RP 549: Planning the Processing of Waste arising from a Marine Oil Spill:

Part 1: Local Authority Guidance

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ABBREVIATIONS, ACRONYMS AND GLOSSARY OF TERMS

ADR	European Agreement concerning the international carriage of Dangerous goods by Road
API	American Petroleum Institute
BOSCA	British Oil Spill Control Association
BRGM	Bureau de Recherches Géologiques et Minières
BSW	Bottom Sediment and Water
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAPEX	Capital expenditures
CCW	Countryside Council for Wales
Cedre	Centre de documentation, de recherche et d'expérimentations sur les pollutions accidentelles des eaux
CM	Centimetre
DARD	Department of Agriculture and Rural Development
DDE	Direction Départementale de l'Equipement
DEFRA	Department for Environment, Food and Rural Affairs
DIREN	Direction Régionale de l'Environnement
DM	Decimetre
DOE (NI)	Department of the Environment (Northern Ireland)
DRIRE	Direction Régionale de l'Industrie, de la Recherche et de l'Environnement
DS	Dry Sediment
DTLR	Department for Transport, Local Government and the Regions
EA	Environment Agency
EC	European Commission
EG	Environment Group

EIA	Environmental Impact Assessment
ELO	Environment Liaison Officer
EU	European Union
EWC	European Waste Catalogue
FT	Feet
GC / MS	High resolution Gas Chromatography and Mass Spectrometry
GT	Gross Tonnage
HazMat	Hazardous Materials
HC	Hydrocarbon
HDPE	High Density Polyethylene
HNS	Hazardous and Noxious Substances
HTTD	High Temperature Thermal Desorption
HWIP	Household Waste Incineration Plant
IMO	International Maritime Organisation
IOPC	International Oil Pollution Compensation Funds
ITOPF	International Tanker Owners Pollution Federation Limited
JNCC	Joint Nature Conservation Committee
LDPE	Low Density Polyethylene
LTTD	Low Temperature Thermal Desorption
M^3	Cubic metre
MCA	Maritime and Coastguard Agency
MEIR	Marine Emergencies Information Room
MM	Millimetre
MRC	Marine Response Centre
MS	Matière sèche (Dry sediment – DS)
NCP	National Contingency Plan
NE	Natural England
NIEA	Northern Ireland Environment Agency
NCV	Net Calorific Value

NNR	National Nature Reserve
NOSCP	National Oil Spill Contingency Plan
OECD	Organisation for Economic Co-operation and Development
OMT	Oil Spill Management Team
OPEX	Operational expenditures
OPRC	Convention Oil Pollution Preparedness, Response and Co-operation Convention 1990
OSW	Oil Spill Waste
OSWM	Oil Spill Waste Management
OSWMP	Oil Spill Waste Management Plan
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCPSO	Principal Counter Pollution and Salvage Officer
PCT	Polychlorinated Terphenyl
POLREP	Pollution Report
PPB	Part per billion (= 0,001 mg/ kg)
PPE	Personal Protective Equipment
PPM	Part per million (= 1 mg/ kg)
PVC	Polyvinyl chloride (a type of plastic)
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
SAC	Special Area of Conservation
SCU	Salvage Control Unit
SEEEC	Sea Empress Environmental Evaluation Committee
SEERAD	Scottish Executive Environmental & Rural Affairs Department
SEPA	Scottish Environment Protection Agency
SFI	Sea Fisheries Inspectorate

SI	Statutory Instrument
SITREP	Situation Report
SNH	Scottish Natural Heritage
SOLAS	Safety of Life at Sea Convention
SOSREP	Secretary of State's Representative for Maritime Salvage and Intervention
SPM	Suspended Particle Matter
SRC	Shoreline Response Centre
SSSI	Site of Special Scientific Interest
STOp	Scientific, Technical and Operational Guidance Notes
T	Tons
TG	Technical Guidelines
THC	Total Hydrocarbon Content
UKHMA	UK Harbour Masters Association
UKMPG	UK Major Ports Group
UNCLOS	United Nations Convention on the Law of the Sea 1982
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
VHOC	Volatile Halogenated Organic Compounds
VOC	Volatile Organic Compounds
WGS 84	World Geodetic System 1984
WTS	Waste Tracking Sheet

1 INTRODUCTION

1.1 Project Background and Terms of Reference

The Maritime and Coastguard Agency (MCA) is the competent U.K. authority that responds to pollution from shipping and offshore installations. The MCA is regularly called upon to react to a wide range of maritime incidents and has developed a comprehensive response procedure to deal with any emergency at sea that causes pollution, or threatens to cause pollution.

As part of its contingency planning role, the MCA has produced a number of documents which set out the basis on which the UK deals with a marine oil spill. Details of these documents are contained in Section 2.4 of this report. In 2004, the MCA commissioned BMT Cordah to undertake four tasks which together comprised the "Development of a Protocol for the Treatment and Disposal of Oily Waste in the UK". The overall project objective focused on the management and infrastructure in place to deal with oily waste resulting from a marine spill in the United Kingdom. This project was reported in 4 volumes, addressing each of the four main tasks which formed the overall project brief. The report on Task 4 "Designing infrastructure for the handling of large quantities of oily waste"[1] included brief references to treatment techniques and other considerations, but did not address detailed procedures for selecting appropriate treatment processes.

MCA considered that more detailed information on the availability and selection of treatment processes would be advantageous and in 2009, commissioned SLR Consulting Ltd (SLR) to provide this through the undertaking of a desktop study to develop a comprehensive technical and logistics plan for dealing with large quantities of solid and liquid oily waste which could arise from the spilling of oil into the maritime environment from tanker, fixed offshore development or production rig or onshore facility.

1.2 Structure of Outputs from Study

The results of this study have been compiled into four separate parts:

Part 1 – Local Authority Guidance – providing an overview of the management of oil spill waste and identifying the steps Local Authorities need to take to ensure they have effectively planned for an oil spill incident

Part 2 – Contingency Planning – this provides a step-by-step guide to how Local Authorities or other emergency planners can prepare an outline plan in advance of an incident using the best available data

Part 3 – Incident Planning – this provides a step-by-step guide to the means by which appropriate treatment solutions can be identified and implemented once an incident has occurred.

[1] MCA/BMT Cordah Ltd 2007

Part 4 – Information and Data – this section acts as a source of information and data relevant to the selection and implementation of waste processing solutions and the regulatory framework.

1.3 Part 1 Report Structure

This section of the study report has been structured as follows

Section 1 - Introduction

Section 2 - Scope and Purpose of Part 1

Section 3 – The Management of Oil Spills in the UK

Section 4 – Regulatory Framework

Section 5 – Overview of Waste Management and Processing Activities

Section 6 – Technologies used for Oil Spill Waste Processing

Section 7 – Local Authority Planning for Oil Spill Waste

Appendices

1.4 Overview

The term waste is defined as "any substance or object the holder discards, intends to discard or is required to discard" under the Waste Framework Directive Waste Framework Directive (European Directive 2006/12/EC. Once a substance or object has become waste, it will remain waste until it has been fully recovered and treated and no longer poses a potential threat to the environment or to human health. Annex 1 of the Directive refers to “materials spilled, lost or having undergone other mishap, including any materials, equipment, etc., contaminated as a result of the mishap” (category Q4).

Processing of waste generated following a major oil spill involves a complex range of activities. Selection of the optimum solution depends on a large number of factors.

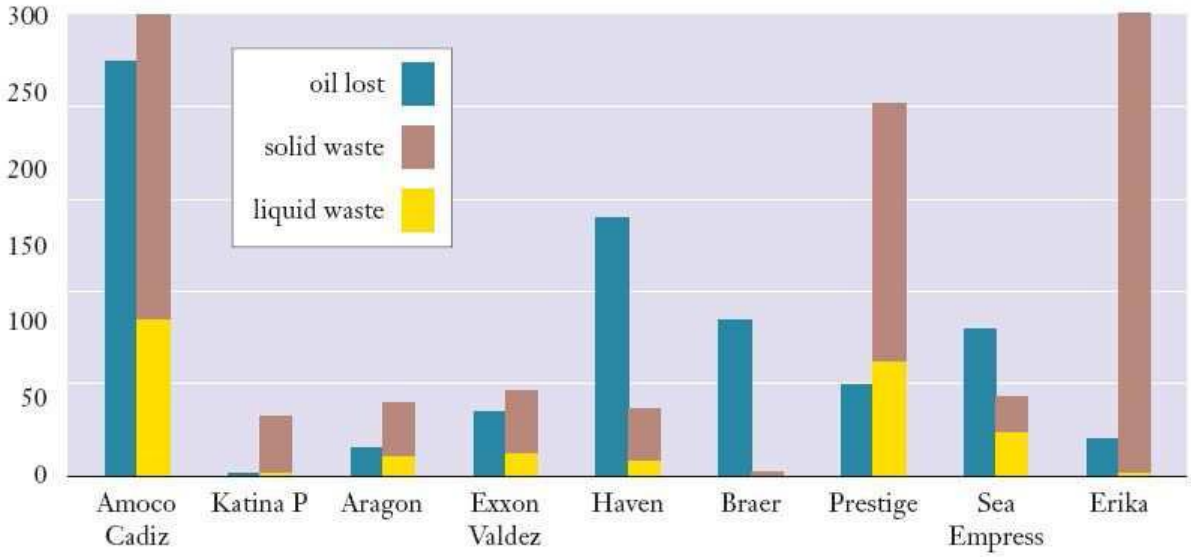
Figure 1-1 below indicates the types of waste which are likely to be generated by a marine oil spill.

Figure 1-2 shows the wide variation in volumes and characteristics of waste produced by historic oils spills.

The objective of strategy development is to develop a solution which achieves the best possible compromise between these factors, as indicated in the diagram in Figure 1-3, below, to achieve the optimum solution, taking all the factors into account.

Figure 1-1 : Types of waste generated by a marine oil spill[2]

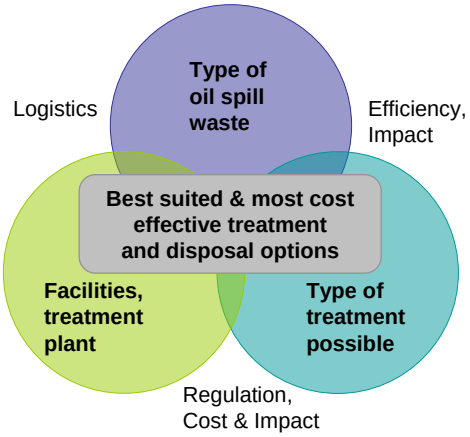
Figure 1-2 Waste generated during historical oil spill incidents – in 1,000 tonnes[3]



[2] Source - REMPEC

[3] (Source: IPIECA, Guidelines for Oil Spill Waste Minimization and Management, Report Series, Vol. 12).

Figure 1-3 : The Optimum Solution



The study has developed a process which can be followed to enable decisions to be made about the choice of the most appropriate technologies and/or facilities to use to treat waste materials arising from the response to an oil spill landfall incident in the UK.

The main difficulties associated with providing guidance on the planning of oil spill waste (OSW) processing are:

- the vast range of volume, type, characteristics and location of the waste generated;
- the equally wide range of technologies available with which the waste could be processed;
- the need for rapid response to mitigate initial environmental and commercial impacts;
- the different and possibly remote (from the spill) geographical location of potential treatment facilities;
- the unpredictability of the market and availability of potential outlets for processed materials;
- the very complex inter-relationship between political, regulatory, technical, logistical, environmental and commercial elements;
- the extensive range of stakeholders and other interested parties

The essence of the challenge faced by the authors in developing guidance on the steps to follow when choosing an appropriate strategy and/or technology for dealing with the waste arisings from a marine oil spill was to try to distil into a clear, logical and easily followed approach the thought processes and knowledge acquired by process engineers over many years undertaking similar projects. To achieve this, the approach adopted has been to produce a step-by-step methodology which starts with the spill, then at each stage identifies the critical information which would be required and on which an appropriate decision would be based. The guide then endeavours to indicate the responses which an experienced process engineer would develop with the benefit of this information – ultimately leading to a conclusion as to what to do.

Ideally, technical, regulatory, political and legal experts would be involved in all decision making processes, but the potential urgency of the situation being considered means that it may be necessary to start the process (or even complete it) without direct input from such experts. This tool is intended to inform such deliberations.

2 SCOPE AND PURPOSE OF PART 1

2.1 Purpose

The decision making guide and model have been developed to set out a process which can be used to inform decisions about the choice of technologies to be used to clean up waste materials arising from the response to an oil spill landfall incident in the UK. It is intended to be used and integrated with existing plans and procedures which have been developed to manage oil spill incidents which may have an impact on UK shores. Details of these and related parties are included in Section 1.

The guide considers the processing of waste arising from all possible oil spill types and magnitudes. Where small quantities of oil have been spilt and the areas impacted are limited, simple approaches including the employment of a relevantly experienced contractor with appropriate permits and equipment will often be the most effective and expedient means of managing the problem. In other instances, where thousands of tonnes of oil have been deposited and many kilometres of coastline affected, considerable planning and logistical effort will be required in addition to the selection of appropriate treatment methods. The documents endeavour to provide guidance on the approach which can be used in all instances.

This part of the output from the study focuses on providing a source of information and guidance for Local Authorities on the whole subject of oil spill waste management and the actions which it is recommended they take to ensure they are as well prepared as possible in the event of an incident.

2.2 Scope of Project

There is a very large amount of literature in existence relating to the management of marine oil spills. This has been produced by an equally wide range of authors and sponsors. However, study of this literature identifies the common theme of three interconnected strands which have to be pulled together to reduce the complexity of the decision-making processes involved. These are:

A. Decisions about how to treat the area where oil has landed;
B. Decisions about how to treat wastes arising from this operation, and
C. Compliance with the prevailing logistical and legal constraints.
D. This project focused on addressing B and C above.

2.3 Overall Strategy

If sufficient information and resources could be made available, the most comprehensive strategy would be as follows:

- To develop an overall Contingency Plan (or a series of alternative plans) in advance any spill, using the guide and model described in Parts 2 and 3 of this report based on assumptions of what might be spilt, or repeating the assessments for a range of alternative scenarios and creating an “envelope” of possible outcomes. This approach is described in more detail in Part 2 of the reporting.

- To repeat the above as soon as the spill has been notified and modelling to identify probable points of landfall has been completed (also referred to in Part 2)
- When contamination has reached the shoreline and can be examined and classified (Part 3)
- By examination and analysis of material actually deposited in storage areas (either temporary or intermediate), as shown in Part 3.

2.4 Scope of this Part 1

This part of the report provides a brief summary of the management of Oil Spill Waste and the Local Authorities' responsibilities; an overview of the regulatory framework; an overview and flow charts of the steps involved in the processing of oily waste and the local authorities' contribution; information on the technologies used in processing waste and advice on the minimum level of planning which should be undertaken in advance of a spill.

Local authorities can find guidance on best practise for shoreline clean-up operations, including Shoreline Cleanup Assessment Technique (SCAT) on the MCA and ITOPF websites.

2.5 Areas not Addressed in the Project

Whilst it is recognised that the tighter the control of beach cleanup operations, the lower the yield of waste, and the more readily the wastes are treatable, detailed consideration of how to carry out these operations is outside the scope of this document, although reference must be made to this element of the response and information on the techniques being used and the data generated is essential.

The document does not address issues associated with the initial identification, transfer of waste and compliance with relevant waste management legislation at the shoreline.

3 THE MANAGEMENT OF OIL SPILLS IN THE UK

A large number of bodies, both governmental, and non-governmental are involved in the management of oil spills in the UK. A full list of the parties involved and their roles and responsibilities is contained in the "National Contingency Plan for Marine Pollution from Shipping and Offshore Installations" (NCP), published in August 2006 by the Maritime and Coastguard Agency (MCA), from which much of the text below has been extracted for expediency.

The NCP sets out command and control procedures for incident response. These procedures have built-in thresholds to allow for flexibility of response to different degrees of incident.

3.1 Roles and responsibilities of Key Organisations

3.1.1 Overall Responsibility

The MCA is the competent U.K. authority that responds to pollution from shipping and offshore installations. The MCA is regularly called upon to react to a wide range of maritime incidents and has developed a comprehensive response procedure to deal with any emergency at sea that causes pollution, or threatens to cause pollution.

MCA is an executive agency of Department for Transport. The Agency is responsible for:

- Minimising loss of life amongst seafarers and coastal users;
- Responding to maritime emergencies 24 hours a day;
- Developing, promoting and enforcing high standards of maritime safety and pollution prevention for ships; and
- When pollution occurs, minimising the impact on UK interests.

During an incident, the role of the Chief Executive is to continue managing the Agency as a whole. The Secretary of States Representative (SOSREP) has the decisive voice in the decision making process in a marine salvage operation that involves the threat of significant pollution. The Counter Pollution and Response Branch are responsible for maintaining the UK Government's stockpiles of equipment.

3.1.2 Department for Energy and Climate Change

The Department for Energy and Climate Change (DECC) is responsible for licensing exploration and regulating development of the UK's oil and gas resources, including environmental regulation. DECC is also responsible for prevention of oil pollution and offshore environmental issues including approving oil spill response plans for the offshore industry as required under the OPRC Convention and the Offshore Installations (Emergency Pollution Control) Regulations.

3.1.3 Department for Environment, Food and Rural Affairs

Defra works for the essentials of life – food, air, land, waster, people, animals and plants. Its remit is the pursuit of sustainable development – weaving together economic, social and environmental concerns. Defra therefore:

- brings all aspects of the environment, rural matters, farming, fisheries and food production together;
- is a focal point for all rural policy, relating to people, the economy and the environment;
- has roles in both European Union and global policy making, so that its work has a strong international dimension.

3.1.4 Environmental Agencies

3.1.4.1 Environment Agency (EA)(England and Wales), Scottish Environmental Protection Agency (SEPA)

The EA is responsible for protecting and improving the environment (air, land and water) in England and Wales. The EA regulates:

- discharges to controlled waters (from land based sources) including territorial waters up to three miles seaward of the territorial baseline;
- management and disposal of waste;
- major industrial processes;
- management of radioactive substances;
- flood risk management and flood warning;
- fisheries, including some sea fisheries;
- navigation on certain waterways, estuaries and harbours.

The EA has wide ranging powers of inspection, regulation and enforcement particularly in relation to pollution control. Although not an emergency service, the Agency is a Category 1 responder under the Civil Contingency Act 2004. It operates a 24 hour incident response service to incidents that have caused or have the potential to cause harm to human health, the natural environment (air, land and water) or property.

SEPA has similar powers in Scotland

3.1.4.2 Environment and Heritage Service (Northern Ireland)

The Northern Ireland Environment Agency (NIEA) is the largest Agency within the Department of Environment with approximately 800 staff.

We take the lead in advising on, and in implementing, the Government's environmental policy and strategy in Northern Ireland. We carry out a range of activities, which promote the Government's key themes of sustainable development, biodiversity and climate change.

The stated aims of the NIEA are to:

- protect and conserve Northern Ireland's natural heritage and built environment
- control pollution
- promote the wider appreciation of the environment and best environmental practices

3.1.5 Local Authorities

Local authorities have no specific statutory duty to plan for, or carry out, shoreline clean up, but have the power to do so. Maritime local authorities and NIEA fulfil their responsibilities by working in partnership with other agencies to reduce, control or mitigate the effects of coastal oil or chemical pollution. It is strongly recommended that maritime local authorities

give priority to the preparation of contingency plans to manage the impacts of a marine oil spill, including the processing of the waste arising.

Where local authorities, and NIEA, the emergency services, certain health bodies, the environmental regulator and the MCA have individually or collectively, assessed the risk and the effects of coastal oil or chemical pollution and where it is considered necessary, they prepare, publish and maintain response plans.

MCA supports local authorities by maintaining the stockpiles of beach cleaning equipment; providing training courses on contingency planning and oil spill response; by providing hands-on demonstrations of beach-cleaning equipment and booming exercises; and by participating in local authority training exercises.

3.1.6 Ministry of Defence (MOD)

The MOD is responsible for dealing with pollution incidents from warships and other MOD ships operated for non-commercial purposes.

In the event of an incident at sea, where the MOD is not directly involved and subject to operational commitments, the MOD may provide assistance on a cost reimbursement basis to MCA. This could only consist of appropriate capabilities available at the time of the incident. Any request for MOD assistance of any kind should be addressed to the Chief of Defence Staff (DS) Duty Officer.

3.1.7 Nature Conservation Organisations

Four organisations deal with nature conservation issues in Great Britain; Natural England (NE), Countryside Council for Wales (CCW), Scottish Natural Heritage (SNH), and Joint Nature Conservation Committee (JNCC). The Northern Ireland Environment Agency (NIEA) is the equivalent organisation in Northern Ireland.

As part of the response to a marine pollution incident, these organisations, through the Environment Group:

- provide advice on the environment impacts of a spill to the SOSREP and any established response centres;
- provide advice to the MCA's Counter Pollution Branch, local authorities, etc;
- co-ordinate the collation and provision of the best available information on wildlife interests and threats to them (including seabird colony and individual bird counts and working with NGOs on beached bird surveys, collection of dead oiled birds, and reporting of live casualties;
- provide nature conservation advice and information to local authorities, MCA Counter Pollution Branch, Defra/Marine Scotland, EA/SEPA; and
- work with and assist in the co-ordination of shoreline response from Non Government Organisations.

3.1.7.1.1Natural England

NE advises on incidents in territorial waters around England (that is, south of 55°50'N on the east coast, all of the south coast, and the west coast south of 51°20'N and between the Dee Estuary and 54°30'N)

3.1.7.1.2Countryside Council for Wales

The main statutory functions of the CCW are to advise the National Assembly for Wales on countryside and wildlife matters. It also has statutory responsibility for wildlife conservation on land and at sea; for certain landscape conservation matters; for promoting enjoyment of the countryside; and for encouraging public understanding of the environment of Wales. CCW advises Government on the conservation and wildlife implications of maritime incidents in Wales and in UK territorial waters adjacent to Wales. In addition the council has statutory nature conservation responsibilities in respect of Great Britain and international obligations that it delivers with English Nature and Scottish Natural Heritage through the Joint Nature Conservation Committee.

3.1.7.1.3Scottish Natural Heritage

SNH is a statutory non-departmental public body established by the Natural Heritage (Scotland) Act 1991. It is ultimately accountable to the Scottish Parliament. Its statutory aims are to secure the conservation and enhancement of Scotland's natural heritage and to foster understanding and facilitate enjoyment of it. SNH provides advice to Government on nature conservation in Scotland.

SNH advises on incidents in the internal waters and territorial sea of UK waters adjacent to Scotland (that is the area defined by the Scottish Adjacent Waters Boundaries Order 1999(SI 1999 No. 1126).

3.1.7.1.4Joint Nature Conservation Committee

The JNCC is the forum through which the three country nature conservation agencies – CCW, NE, and SNH – deliver their statutory responsibilities for Great Britain as a whole and internationally. These responsibilities contribute to sustaining and enriching biological diversity, enhancing geological features, and sustaining natural systems.

The JNCC's Marine Advice and Seabirds at Sea Team are able to provide specialist advice to the country agencies and assist in monitoring and surveillance operations during major incidents. JNCC also deals with marine pollution incidents occurring outside territorial waters.

3.1.8 Other Organisations

3.1.8.1 Northern Ireland – Department of the Environment (DOE)

DOE is responsible in Northern Ireland for the development of Policy concerning the environment and natural heritage, including the marine environment and the living resources that it supports. In Northern Ireland the Fisheries Division of the Department of Agriculture and Rural Development (DARD) is the licensing authority for fisheries.

3.1.8.2 Food Standards Agency (FSA)

The FSA is an independent non-Ministerial UK government department set up by an Act of Parliament in 2000 to protect the public's health and consumer interests in relation to food in the UK.

During incidents and emergencies, the FSA is responsible for providing advice on all food safety and standard issues. Where there appears to be a risk to consumers the Agency is responsible for issuing Orders made under Part I of the Food and Environment Protection

Act. These orders will restrict the movement, sale or supply of certain foods (this may include all foods or specific foods) and agricultural products in a specified area(s). It is aimed at protecting consumers from food that may be or may become hazardous.

3.2 Related and Reference Documents/Contingency Plans/Guides

The following are the key planning documents which have been developed to overarch the management of marine oil spills in the UK:

3.2.1 National Contingency Plan for Marine Pollution

The "National Contingency Plan for Marine Pollution from Shipping and Offshore Installations" (NCP) is prepared by MCA and sets out the means by which the effects of a spill of oil at sea are counteracted. Plans are also prepared by local authorities, harbour authorities and the owners of offshore installations. These plans provide detail information on the local response to a marine oil spill incident and should include arrangements for mutual support between the various parties.

The plan co-exists with major incident and security plans developed and implemented by ships, ports and offshore installations. In order for all to be effective, there must be considerable co-operation in the command and actions within each plan.

Following reviews of two major pollution incidents, *Sea Empress* (1996) and the *Braer* (1993), in January 2000 the CPR Branch of the MCA issued a new NCP, published on the MCA's website (http://www.mcga.gov.uk/). The NCP, which has since been reviewed and published in January 2007, describes the command and control to be implemented in a nationally significant incident where there is a threat of, or actual, pollution. This command structure includes the role of the Secretary of State's Representative (SOSREP), the control centres of the Salvage Control Unit (SCU) and Marine Response Centre (MRC), the response centres linked with offshore installations and the Shoreline Response Centre (SRC), and the advisory Environment Group (EG):

The MCA has divided the U.K.'s coastline into three regions, Scotland and Northern Ireland, Western, and Eastern. Each region has a Counter-Pollution and Salvage Officer (CPSO).

3.2.2 MCA Manual of Oil Spill Response

The purpose of this manual is to give technical guidance to personnel from different organisations on oil spill response operations, in particular the UK maritime local authorities and other public bodies who would be involved in responding to oil pollution.

This includes guidance on considering response options in oil spill contingency plans and more specific guidance on the technical aspects of shoreline protection and shoreline clean-up. The manual is divided into four parts:

Part 1 Overview of pollution response in UK waters
Part 2 Marine response inshore
Part 3 Shoreline clean-up of oil
Part 4 Disposal of recovered oil and oily waste

Part 1 provides an overview of the oil spill response arrangements in the UK and is intended for personnel involved in the preparation of oil spill contingency plans and managing personnel involved in oil spill response activities.

Part 2 describes the techniques that can be used to protect shorelines from the damaging effects of oil pollution. It concentrates on the practical techniques used and the issues that need to be addressed when using booms to protect shorelines and the use of skimmers and other devices to remove spilled oil that has been contained in the booms. This section is intended for personnel who would expect to be involved in supervising protective booming and skimming operations.

Part 3 describes the techniques that should be used to clean oil from different types of shorelines. This section is intended for those who would expect to be involved in supervising beach clean-up operations.

Part 4 describes the techniques for collecting the wastes produced by the recovery of spilled oil and shoreline clean-up with an emphasis on minimising these wastes by careful segregation and the avoidance of secondary contamination. Temporary storage near the collections sites and intermediate, longer term storage is considered. Options for final disposal of these wastes are described. This section is intended for both planners, since the storage and disposal of the large quantities of waste generated by a large oil spill needs careful prior consideration, and for operational response staff in order that they can appreciate the need for waste minimisation.

3.2.3 Other Useful Documents and Guides

A large number of guides and reference documents have been produced by various bodies over a number of years. Two which summarise the activities comprehensively are:

“Guidelines for Oil Spill Waste Minimization and Management”. International Petroleum Industry Environmental Conservation Association, London, Report Series Vol. 12, IPIECA 2004

“Draft Oil Spill Waste Management Decision Support Tool”, Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea, International Maritime Organisation, REMPEC, 2010.

“Marine Pollution Clean-up Manual, Maritime & Coastguard Agency, Southampton, UK, MCA 2007.

ITOPF Waste Tip

Other documents and references are identified where appropriate within the text.

4 REGULATORY FRAMEWORK

The planning, design, construction, operation and eventual decommissioning of temporary and permanent facilities for the storage and processing of oily wastes must comply with UK national legislation and regulations. The handling of waste oil products is carefully controlled and enforced in England and Wales by the Environment Agency (EA), in Scotland by the Scottish Environment Protection Agency (SEPA), and in Northern Ireland by the NIEA.

The object of the Regulators is to:

- Minimise the amounts of hazardous/special waste that are generated.
- Control and track the movement of hazardous/special waste, from the time of its collection to its final disposal, by means of a consignment note system.
- Institute licensing and inspection controls for carriers of waste and operators of transit sites.
- Regulate industrial processes and waste handling sites (including landfills and storage facilities) through the Integrated Pollution Prevention Control (IPPC) regime.

The regulatory framework embraces the vast majority of actions and activities relating to the management and processing of oil spill waste and it is therefore essential that those involved in the decision-making process are aware of the relevant legislation and consult with and liaise constantly with the relevant regulator's representatives.

4.1 The Role of the Environmental Regulator

The EA has produced its own internal operational instruction, entitled "Waste Management during Major Marine Pollution Incidents. This sets out the approach the regulator is expected to take during the management of an oil spill. A Liaison Officer is appointed to the Shoreline Response Centre (SRC), who will provide advice and support on regulatory matters through the Waste Management sub group of the SRC.

The liaison office will provide advice on:

- Segregating and minimising the amount of waste produced
- Developing recovery plans or clean up plans that have a net benefit to the environment
- Planning the temporary storage of contaminated material pending treatment
- Designing and locating the temporary storage and recovery areas
- Understanding the waste regulations, including issues relating to hazardous waste and waste carriers
- Managing the final recovery or disposal of the contaminated waste

The EA has "enforcement positions" on various relevant aspects of OSW management, including:

- Enforcement and Prosecution Policy
- Environmental Permits

  - acts done in an emergency
  - enforcement action when the statutory defence no longer applies
- Identifying temporary sites
- Hazardous waste regulations
  - acts done in an emergency
  - enforcement action when the statutory defence no longer applies
  - recording movements of hazardous waste
- The use of registered waste carriers
- Recording regulatory decisions

These are published as internal documents to guide the regulator's staff. Copies should be made available to all parties involved in the management of OSW.

4.2 Acts Done in an Emergency

The Hazardous Waste Regulations 2005 anticipate that there may be unusual or exceptional circumstances where it is not immediately possible to comply with the Regulations as a result of an emergency or grave danger. An emergency or grave danger is defined by Regulation 61(2) as "*a present or threatened situation arising from a substance or object which is, or which there are reasonable grounds to believe is, hazardous waste, and the situation constitutes a threat to the population or the environment in any place"*.

Where there is a risk to the environment or health because of the release of hazardous waste such as a spillage or chemical leak of hazardous waste or a spillage of hazardous waste at a road traffic accident, which is likely to cause harm to human health and/or pollution of the environment, there would generally be an emergency or grave danger. Regulation 40 of the Environmental Permitting Regulations provides a defence for actions taken in an emergency, providing these are:

- Steps taken to minimise pollution
- The EA is notified of the acts as soon as is reasonably practicable.

4.3 Relevant Legislation

Appendix A contains details of the relevant legislation. The sections below summarise the relevant legislation which will need to be taken into consideration and complied with throughout the processing of waste arisings.

Legislation of particular relevance is:

4.3.1 Waste Framework Directive

The Directive on Waste (75/442/EEC, as amended) establishes a framework for the management of waste across the European Community. It also defines certain terms, such as 'waste', 'recovery' and 'disposal', to ensure that a uniform approach is taken across the EU. It requires Member States to:

- give priority to waste prevention and encourage reuse and recovery of waste
- ensure that waste is recovered or disposed of without endangering human health and without using processes which could harm the environment

- prohibit the uncontrolled disposal of waste, ensure that waste management activities are permitted (unless specifically exempt)
- establish an integrated and adequate network of disposal installations
- prepare waste management plans
- ensure that the cost of disposal is borne by the waste holder in accordance with the polluter pays principle
- ensure that waste carriers are registered

The Waste Framework Directive was initially implemented in the UK through the following national legislation:

The Environmental Protection Act 1990

The Control of Pollution (Amendment) Act 1989

The Waste Management Licensing Regulations 1994 (as amended)

The Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991

The legislation requires that anyone who treats, keeps, deposits or disposes of waste needs an environmental permit (England and Wales) or a waste management licence (Scotland and Northern Ireland), unless exempt or excluded, which is issued by the Environment Agency (England and Wales), SEPA (Scotland) Northern Ireland Environment Agency (Northern Ireland). Environmental permits and waste management licences include conditions relating to operations at the site and the controlling bodies monitor activities to ensure compliance with the licence conditions. A key objective of the licensing system is to ensure that waste is recovered or disposed of without endangering human health and without using processes or methods which harm the environment.

The environmental permits are issued in line with the Environmental Permitting (England and Wales) Regulations 2010, whilst the waste management licences are issued in line with the Waste Management Licensing (Scotland) Regulations 1996 in Scotland and the Northern Ireland Environment Agency in Northern Ireland.

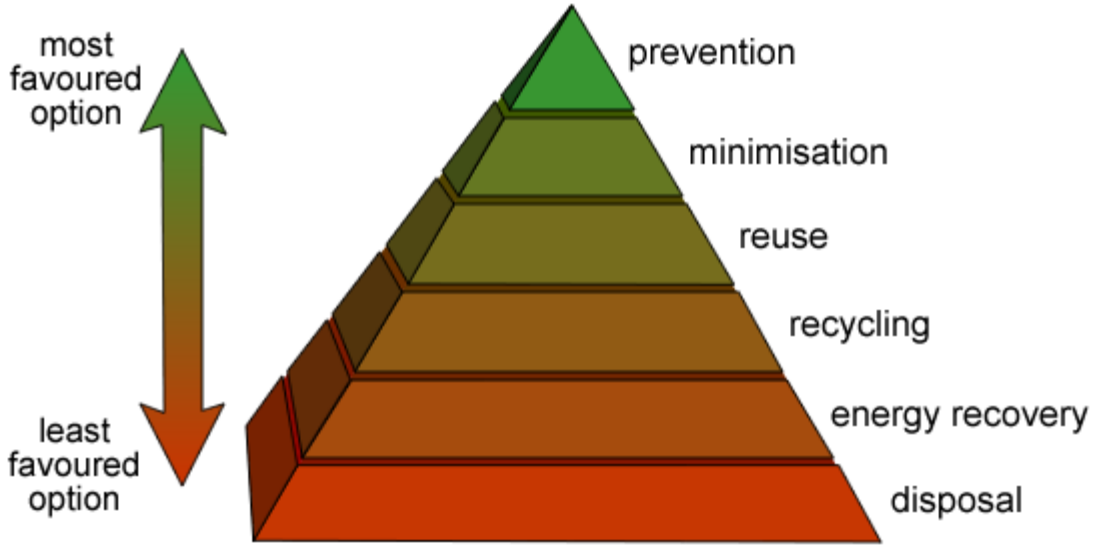
It is also an offence to transport controlled waste unless registered with the EA, SEPA or NIEA. Registered carriers are authorised persons for the purposes of the Duty of Care Regulations. Similarly, the holder of a waste management licence is also an authorised person.

4.3.2 Waste Hierarchy

The waste hierarchy aims to encourage the management of waste materials in order to reduce the amount of waste produced, and to recover maximum value from the wastes that are produced. It is not applied as a strict hierarchy as many complex factors influence the optimal management for any given waste material. However, as a guide, it encourages the prevention of waste, followed by the reuse and refurbishment of goods, then value recovery through recycling and composting.

The next option is energy recovery, an important level in the hierarchy as many materials have significant embedded energy that can be recovered. Waste prevention, reuse, recycling and recovery are collectively defined by the Organisation for Economic Co-

operation and Development (OECD) as waste minimisation. Finally, waste disposal should only be used when no option further up the hierarchy is possible.



In the case of oil spill waste, the "prevention" element of the process is addressed by design and contingency planning for offshore installations and shipping. Minimisation of waste starts as soon as the waste is spilled and is a critical aspect of all elements of OSW planning.

4.3.3 Hazardous Waste Directive

Under the Hazardous Waste Directive 91/689 EEC, environmental regulators in the UK are under a duty imposed by the respective administrations to take the necessary steps to mitigate or avert an emergency or grave danger. As members of the National Contingency Plan Waste Sub-Group, the regulator will have an important role in ensuring that all reasonably practical steps necessary or expedient are taken. This will include ensuring early removal, or *in situ* treatment or transfer of bulk oily waste into interim storage. In exercising these functions records must be kept of those actions the regulator deems expedient.

4.3.4 European Waste Codes

In preparation for disposal, the categories of wastes generated will need to be cross-referenced to the European Waste Catalogue (EWC). The actual reference will need to be identified once information is available on the waste type and how it has been produced. The most probable reference points in the EWC that will relate to an oil spill clean-up operation are Section 05 – Wastes from Petroleum Refining, Natural Gas Purification and Pyrolytic Treatment of Coal; and Section 13 – Oil Wastes and Wastes of Liquid Fuels (except edible oils, and those in chapters 05, 12 and 19). A comprehensive list of possible waste codes is included in Appendix B of this document. The List of Wastes Regulations (England) 2005, List of Wastes Regulations (Wales) 2005 and List of Wastes Regulations (Northern Ireland) 2005 provide the European Waste Catalogue list of codes used to classify wastes, used when determining if a material or substance is waste or hazardous waste and for classifying and coding wastes for the waste control regime.

4.3.5 Duty of Care

The duty of care regime was introduced into UK legislation under Section 34(1) of the **Environmental Protection Act 1990** and thus places a duty of care on all people who import, produce, carry, keep, treat or dispose of controlled wastes, or as a broker, have control of such waste, to ensure there is no unauthorised or harmful deposit, treatment or disposal of the waste, prevent the escape of the waste from their control or that of any other person ensure the transfer of the waste to an authorised person or to a person for authorised transport purposes ensure that a written description of the waste is also transferred.

In basic terms this means that waste handlers should:

- store waste securely;
- ensure controlled waste is not mixed with hazardous/special waste;
- clearly label waste containers;
- appropriately store waste containers;
- use only registered waste carriers;
- ensure the waste transfer notes are completed and retained for the appropriate length of time; and
- ensure the final destination for the waste is registered with the appropriate regulatory body or that it holds an exemption.

4.3.6 Health and Safety

Oil spill management needs to consider health and safety risks that may arise during the handling, transportation, storage and processing of oily wastes. The regulations that are pertinent to occupational health and safety for oil treatment and disposal within a site are summarised in Appendix C.

4.3.7 Handling, Transfer and Transport of Waste

The transfer of waste from primary storage sites to intermediate and long term storage or to treatment and disposal facilities should be carried out by suitable vehicles, e.g. road tankers for liquid waste and trucks for solid waste. During an emergency, a variety of vehicles not normally used for oil transport may be required. This may include vacuum trucks, tipper trucks, skips or refuse trucks. Sources of transport means should ideally be identified in the OSWMP and agreements made in advance.

A waste transfer note (WTN) is required for every load of waste which is transferred from one party to another. A WTN shows carriers and site operators who handle the waste what they are dealing with to enable it to be managed safely and legally. WTN's also ensure there is a clear audit trail from when the waste is produced until it is disposed of.

When waste is transferred from one party to another checks should be made to ensure the receiving party holds the relevant registration, licence or exemption for the type of waste they are accepting.

4.3.8 Environmental Permitting (England and Wales) Regulations 2010

An environmental permit is required for a business if it carries out any activity or operation that is covered by the **term** regulated facility (installations, mobile plant, waste operations,

mining waste operations, radioactive substances activities, waste discharge activities and/or groundwater activities). An environmental permit must be gained before operations begin.

The Environmental Permitting (England and Wales) Regulations 2010 were created to standardise environmental permitting and compliance in England and Wales to protect human health and the environment. Environmental permits are designed to reduce and simplify the administration of industrial facilities and waste management operations. The 2010 Environmental Permitting Regulations replaced the 2007 regulations by extending the range of activities that require an environmental permit. Old licences and authorisations were converted into environmental permits automatically. The regulations affect all regulated facilities that are installations (a full list of installations is available in Schedule 1 of the Regulations), mobile plant, waste operations (including mining waste operations), radioactive substances activities, and water discharge and groundwater activities.

There are two types of permit available: standard and bespoke.

- A standard permit is a simple permit that requires the permit-holder to abide by a set of standard rules. Each category of activity has its own fixed set of rules, previously consulted on with industry by Environment Agency. As they are part of a standardised system, these standard permits are quicker to apply for, involve simpler processing and have clear guidance.
- If the activity does not fit into the standard rules due to the nature of the environmental risk or the nature of the activity, a bespoke permit is required. A bespoke permit has conditions that are specific to the activity that the permit-holder is performing.
- If the local authority is the regulator, the process is slightly different. All permits are bespoke, though some sectors can apply for simpler permits based on a standardised form. These simpler permits still have variable conditions that can be negotiated with the local authority, and are thus different from standard permits. Like standard permits, these permits are generally quicker to apply for and obtain.

To obtain an environmental permit from the EA, the operator of the facility, mobile plant etc. must decide whether a standard permit or a bespoke permit is required, or if their operation is exempt. The environmental permit is applied for by completing an application form. The application will be reviewed, with an Environmental Protection Officer often visiting the application site to check on pollution control measures and working practices. If the business is judged to satisfy the conditions of the permit then an environmental permit will be issued.

4.3.9 Environmental Permitting of Mobile Plant

An environmental permit is required to operate a mobile plant that carries out activities regulated by PPC in England and Wales under the Environmental Permitting (England and Wales) Regulations 2010 by applying to the environmental regulator. The same process is covered by the Waste Management Licensing (Scotland) Regulations 1996 in Scotland and regulated by SEPA and in Northern Ireland process is regulated by the Northern Ireland Environment Agency using the Waste Management Licensing Regulations (Northern Ireland) 2003.

A mobile plant that is permitted in Scotland may be operated in England, as an interim position, despite England operating under the environmental permitting regime.

The basis of this approach is as follows:

- a single permit allowing operators to use several pieces of mobile plant, either singly or in combination, at the same time on different sites
- a 'deployment form' that means operators can identify all key data including their account manager, site specific information and a guide to other permits they may need
- changing the way we charge for mobile treatment permits
- setting up a network of Environment Agency account managers who'll ensure a nationally consistent approach to mobile plant permitting: this will see improved accountability, better communication and a single point of contact for operators.

5 OVERVIEW OF WASTE MANAGEMENT AND PROCESSING ACTIVITIES

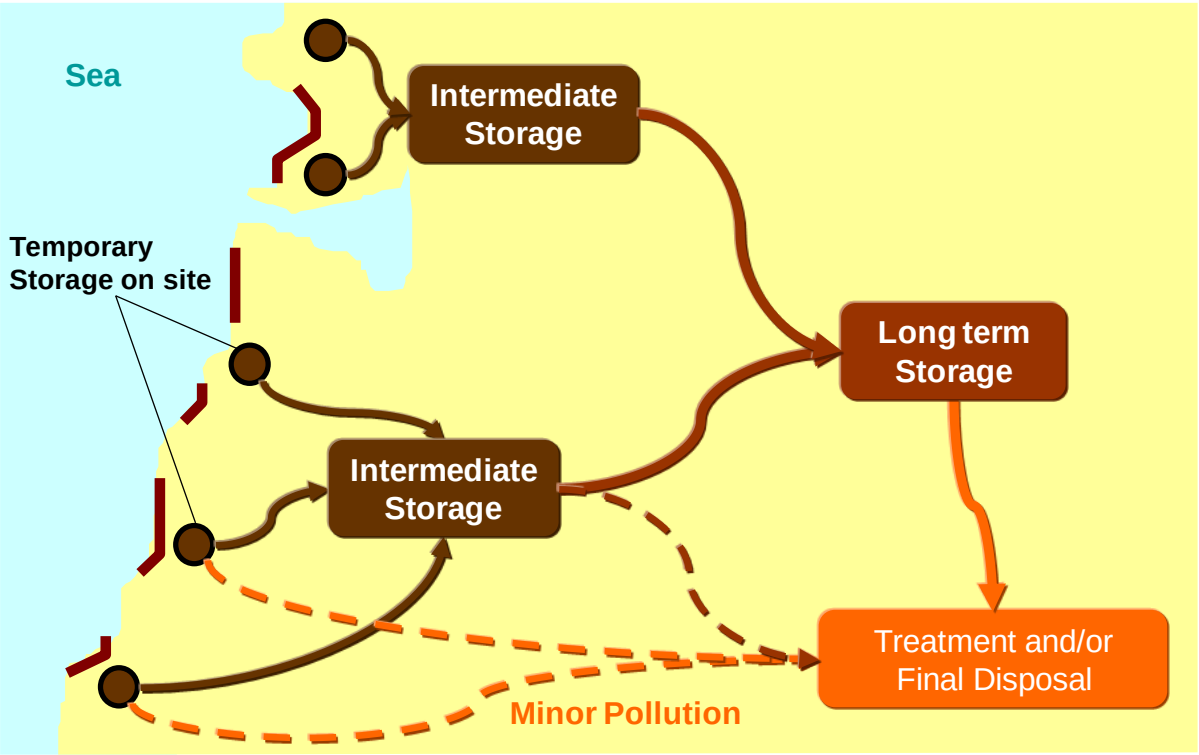
5.1 Introduction

Historical data show that oil spills impacting the shoreline can in extreme cases produce up to 30 times more waste than the volume originally spilled while small spills have also sometimes created large amounts of waste. However, this varies depending on the characteristic and behaviour of the oil, response techniques and management. It is essential to reduce the amount of waste, thus limiting the difficult problem of dealing with the quantity of waste generated in a very short period, and limiting environmental and economical impacts (Source: IPIECA guidelines).

In order to develop a guide to how to determine the appropriate strategy for processing waste arisings from an oil spill, it is necessary to first define general principles. The objective of any oil spill clean-up operation is to recover, treat, recycle or dispose of the oily waste in the most efficient and environmentally sound manner. The disposal option chosen will depend upon the amount and type of oil and contaminated debris, the location of the spill, environmental and legal considerations and the likely costs involved.

The overall process is shown schematically in Figure 5-1 below (source Draft Oil Spill Waste Management Decision Support Tool", REMPEC 2010)

Figure 5-1 - Schematic of Typical Oil Spill Waste Processing



After collection, waste material will usually be moved from the beach itself to temporary storage facilities within about 5km of the shore. In extreme emergency circumstances, *ad hoc* arrangements may have to be made to receive and store wastes derived from beach clean-up operations. Typically, however, material will be transported from the beach, or from intermediate collection areas behind the beach, to temporary storage areas.

5.2 General Principles

Most oil spill management plans are based on the following overall principles. Flow charts 5-1 to 5-4 below describe the process:

1. Containment and recovery of as much oil and oil/water as possible from the sea (this includes the use of dispersants and in-situ burning where permitted, and the collection of liquid phases from the surface and immediate sub-surface of the sea. (See for example, MCA Manual of Oil Spill Response, MCA Marine Pollution Clean-up Manual, various ITOPF reports)
2. Cleaning of the shoreline using whatever equipment and resources can be most effectively and efficiently applied. Recovery of as much oil as possible, and minimisation of the waste generated consistent with achieving required objectives. The tighter the control of these operations, the lower the yield of waste, and the more readily the wastes produced are treatable (See for example, MCA Manual of Oil Spill Response; Draft Oil Spill Waste Management Decision Support Tool", REMPEC 2010; Guidelines for Oil Spill Waste Minimization and Management, IPIECA 2004). Waste minimization must start with the first response operations on the site and remain a permanent effort. Information and control of the personnel and companies working on site is essential. Other important elements are:
    a. Use appropriate cleanup techniques to minimise the volume of sediments collected.
    b. Prefer in situ washing techniques instead of the removal of oiled sediment (e.g. surf washing, sand flushing, etc.).
    c. Avoid additional contamination:
        i. Prevent soil contamination by using liners under drums, tanks and at bottom of storage pits, and
        ii. Control the accesses to the cleanup sites and protect them using lining and/ or geotextiles
3. If the shoreline cannot be cleaned in situ sufficiently to require no further treatment (including allowing wave action to complete an initial clean up), collect affected materials and transfer to a local, temporary storage area to remove them from the immediate area and allow the clean up/beach restoration process to continue. Wastes produced should be segregated into similar materials and stored separately at the temporary storage location. (See for example, MCA Manual of Oil Spill Response; Draft Oil Spill Waste Management Decision Support Tool", REMPEC 2010; Guidelines for Oil Spill Waste Minimization and Management, IPIECA 2004). (See section 5.3 for further information on storage).
4. Use the facilities at the temporary storage site to separate liquids from solids (ie by settlement and decanting of the liquids), and to separate oil from water as much as is practicable.
5. If feasible, permitted and viable, treat the wastes produced by this action at the temporary storage location sufficiently to allow direct usage/disposal or transfer to existing (permitted) waste processing facility. Transfer the "treated" material to its appropriate destination in compliance with regulations
6. If not feasible, permitted and viable, transfer to second (intermediate) storage location where processing can take place – again to allow direct usage/disposal or transfer to

existing (permitted) waste processing facility. This will probably include consolidation of waste from a number of different temporary sites to a common intermediate storage site.

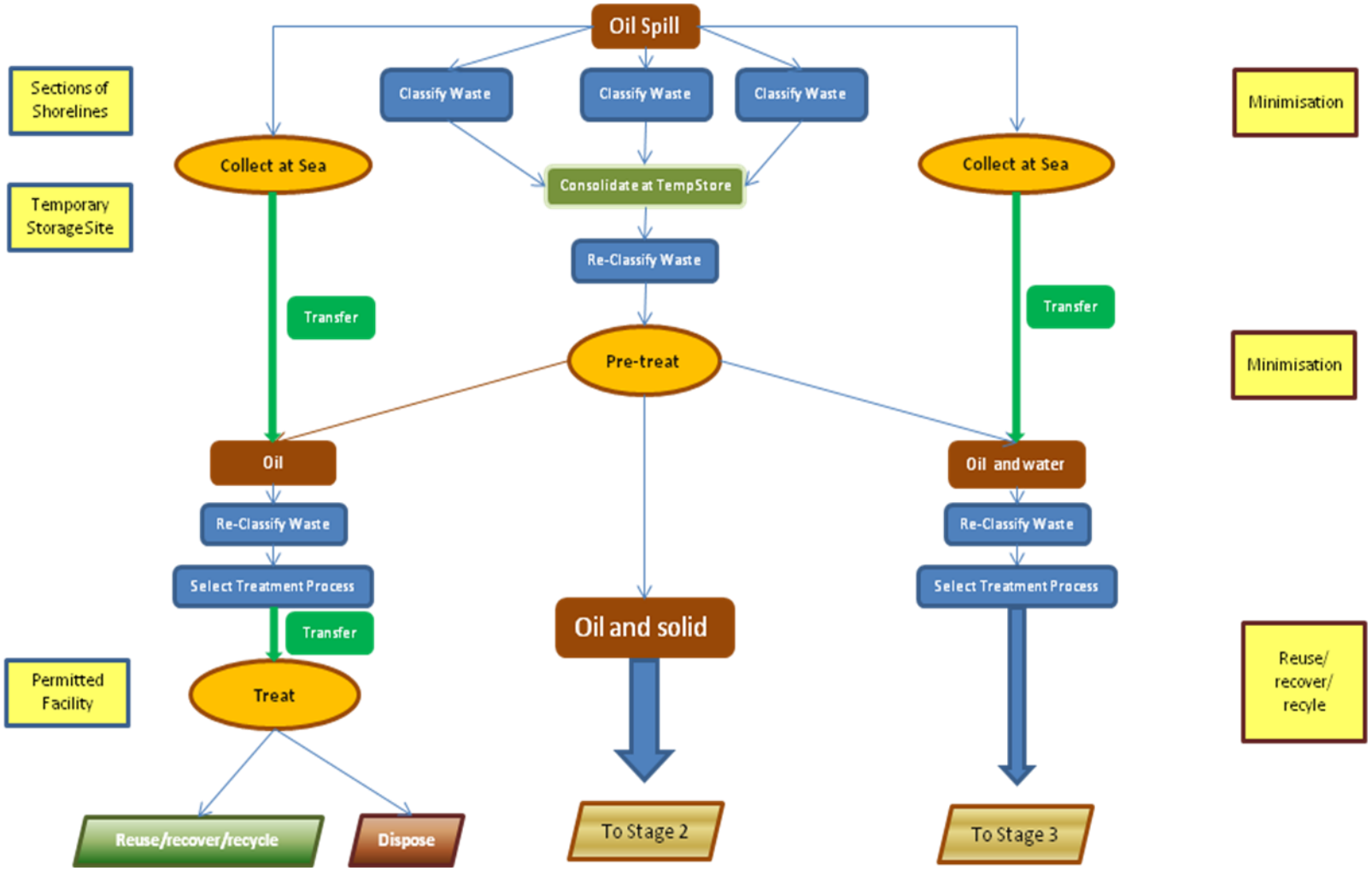
7. When treatment is complete, transfer the "treated" material to its appropriate destination.
8. If any residual waste exists after stage 7 which, with further treatment could be rendered suitable for usage/disposal or transfer to existing (permitted) waste processing facility, but the treatment for which cannot be provided at the intermediate storage location, transfer this to a third location, where such treatment can be undertaken.
9. If necessary, waste material may also be stored at other locations pending treatment, subject to compliance with appropriate regulations.

Overarching the whole process are the most fundamental elements of the management of spill response which can be summarised as follows:

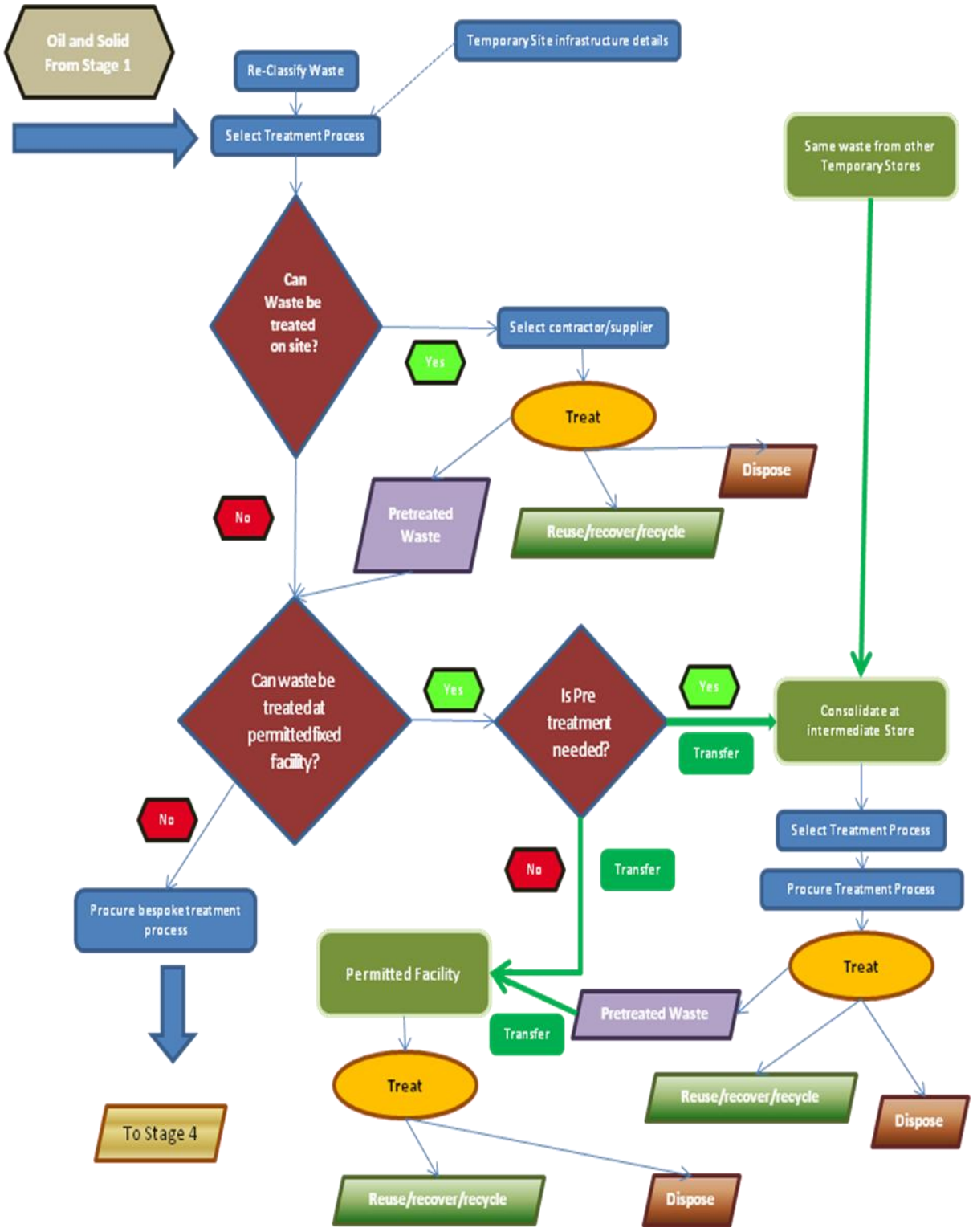
- Solutions need to be proportionate, pragmatic, timely and deliverable under difficult circumstances – for example the "ideal" process may not be available or sufficient access to deliver it may not exist and an alternative which is adequate may have to be used for expediency.
- Deployment of the most appropriate technology will often be secondary to the risk of environmental damage, necessitating the taking of actions which may render waste less easily treatable than in its "original" form.
- Political pressure (from local or national organisations) applied by interested groups, some of whom may have only superficial knowledge of the difficulties involved may need to be managed and the profile of actions may need to be high
- Solutions need to fit within the existing regulatory framework - whilst contingencies are built into the legislation to allow for actions taken in an emergency (providing these actions can be shown to be taken to protect human health and minimise pollution), all other activities must comply with the relevant legislation – for example, the "waste hierarchy", the use of permitted processes and facilities etc.

The variety of treatment processes which may be required and the inherent complexity of selection which this entails are shown in Figure 5-2, which is a typical oil spill treatment flow sheet.

Flow Chart 5-1 - Stage 1 of Waste Treatment Process



Flow Chart 5-2 - Stage 2 of Waste Treatment Processing



Flow Chart 5-3 - Stage 3 of Waste Treatment Processing

Flow Chart 5-4 - Stage 4 of Waste Treatment Processing

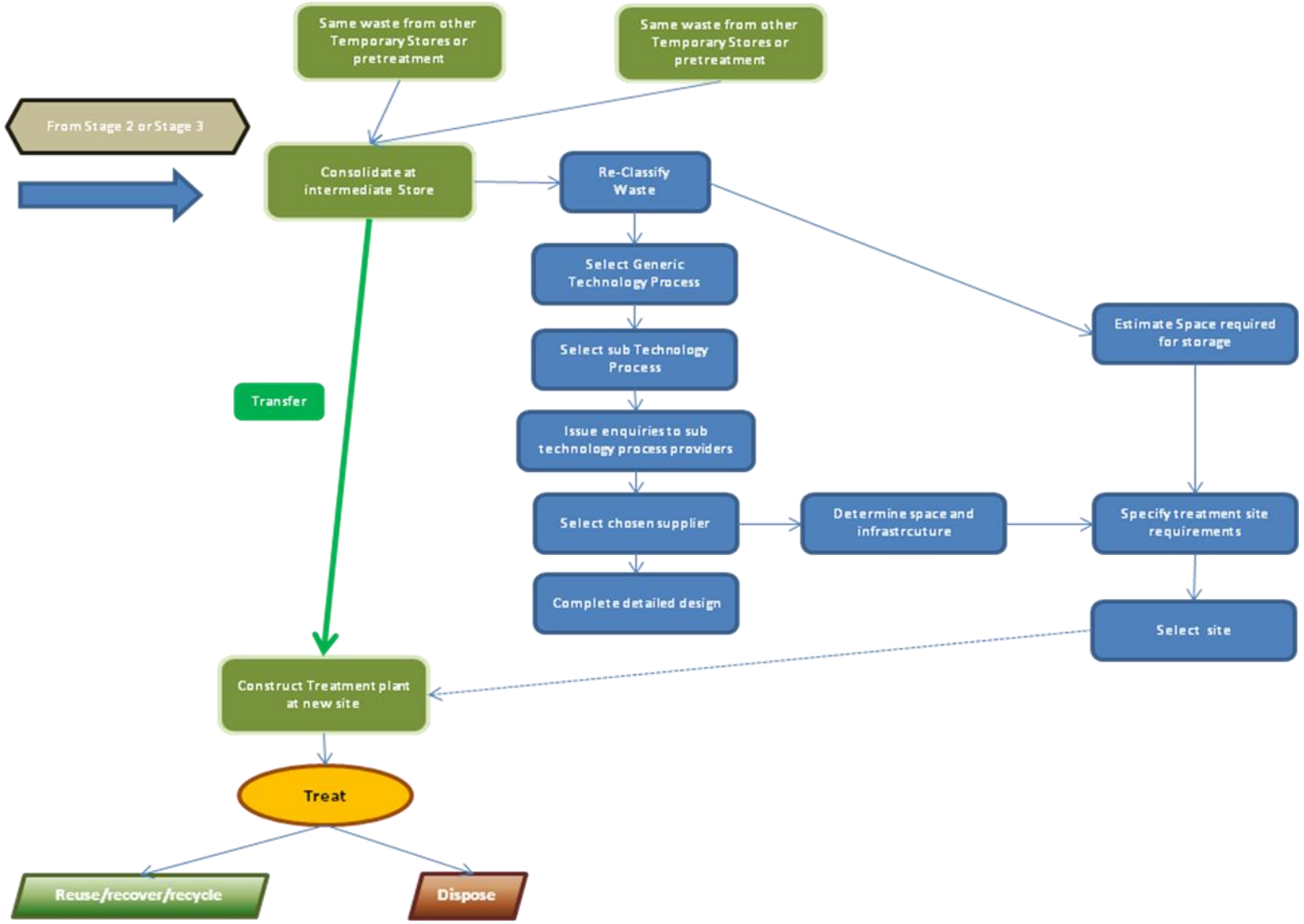
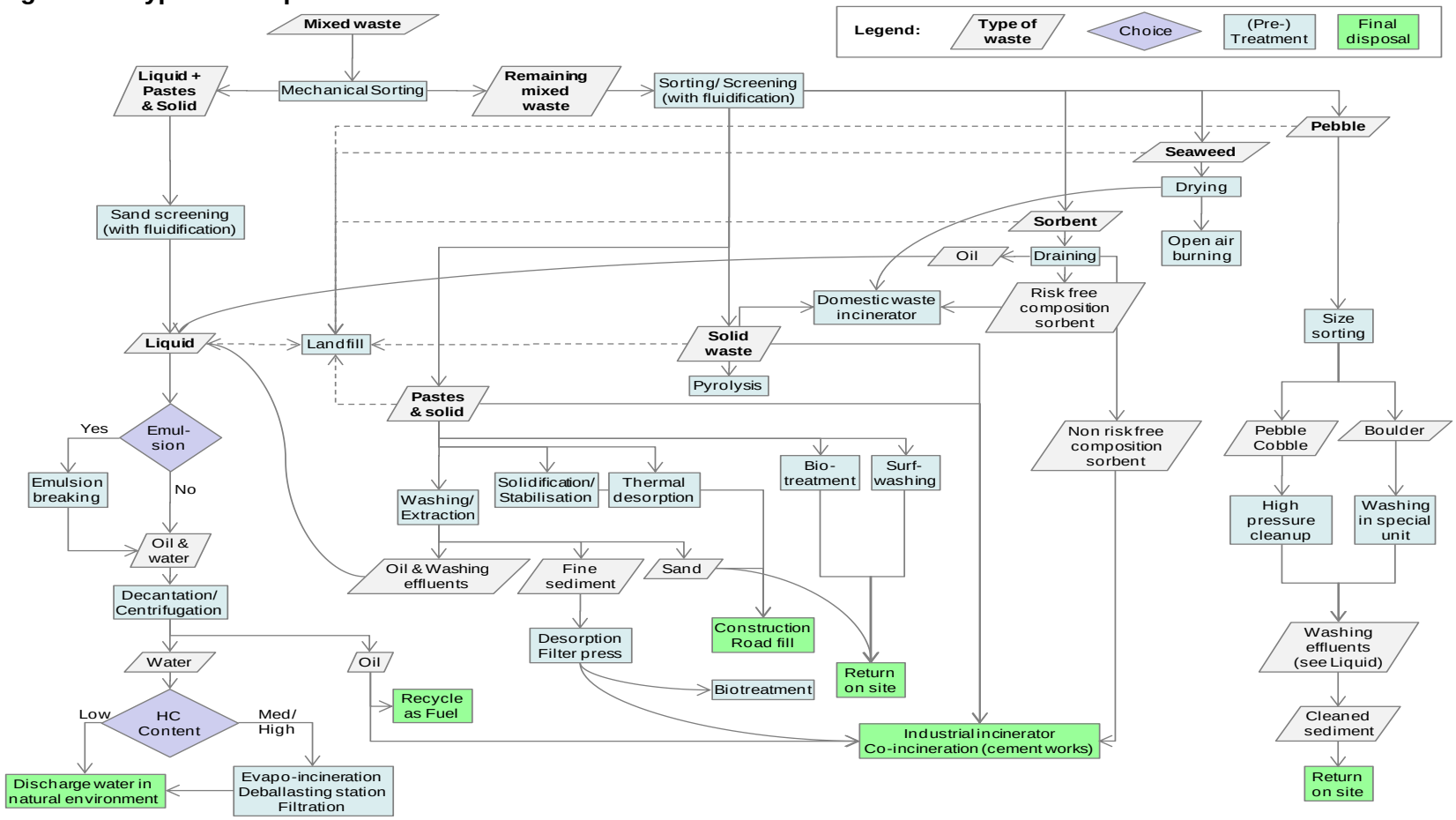


Figure 5-2 Typical Oil Spill Treatment Flow Sheet[4]



[4] Source REMPEC

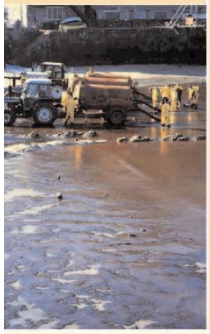
5.3 Waste Generated

The various processes outlined above will produce different types of waste, as shown in Figure 5-3 below (source "Guidelines for Oil Spill Waste Minimization and Management". International Petroleum Industry Environmental Conservation Association, London, Report Series Vol. 12, IPIECA 2004)

The characterisation of waste volumes and types is critical to the selection of processing techniques and is discussed in more detail in Section 6.

Figure 5-3 - Primary Clean-up Techniques and Waste Generated

Clean-up technique		Effect on waste stream	Type of waste generated
Dispersant application 	Dispersant chemicals are used to break down the oil slick into small droplets so that the diluting effect of the ocean is better able to reduce hydrocarbon concentrations. This strategy will not work with all oils and is not appropriate for use in certain environments.	Waste concentrations are minimal as the oil is suspended in the water column and allowed to biodegrade naturally.	• No hydrocarbon waste is generated. • PPE • Empty dispersant drums/considerations
At sea response operations 	Recovery devices, e.g. booms and skimmers, are deployed from ships or small craft to recover oil from the sea surface. Suitably sized storage systems may be needed which, in the case of highly viscous or waxy oils, will require heating elements. Transfer systems and reception facilities will also be needed to sustain operations over the long term.	Recovery operations will potentially give rise to a large quantity of waste oil and water for treatment. The volume of the storage systems available must be consistent with the recovery capacity of the skimmers. The type of oil spilled will have an effect on the resultant waste; viscous and waxy oils in particular will entrain debris and can create large volumes of waste. They can also present severe handling difficulties.	• Oiled equipment/vessels • Oiled PPE and workforce • Recovered oil • Oily water • Oiled vegetation • Oiled sorbent materials • Oiled flotsam and jetsam • Animal carcasses

Shoreline clean-up 	Oils are recovered from shorelines either using mechanical or manual means. Manual recovery is the preferred method because it has the effect of minimizing the amount of waste generated. Machines can be used to transport the waste from the shoreline to the primary storage site. Portable tanks or lined pits can be used to consolidate recovered oil at the operating site. The shoreline type, and degree of access to it, will dictate the types of strategies used which, in turn, will determine the amount of waste recovered.	The type of spilled oil will often have a profound effect on the amount of oily waste generated. Waste segregation and minimization techniques are critical to ensure an efficient operation. These should be established at the initial recovery site and maintained right through to the final disposal site otherwise waste volumes will spiral out of control. Waste sites should be managed in such a way as to prevent secondary pollution.	• Oiled equipment/vessels
			• Oiled PPE and workforce
			• Recovered oil
			• Oiled vegetation
			• Oily water
			• Oiled sorbent materials
			• Oiled beach material:
			  • sand
			  • shingle
			  • cobbles
			• Oiled flotsam and jetsam
			• Animal carcasses
			• Oiled transport

In-situ burning 	This involves a strategy of burning spilled oil using fire booms to thicken the oil layer to sustain combustion. Weathering and emulsification of oil will inhibit the process. The strategy cannot be used on all oil types or in all environments. The resultant air pollution and the production of viscous residues can limit the application of the strategy.	*In-situ* burning can reduce the amount of oil in the environment. However, the remaining material may be more persistent.	• Burnt oil residues • Oiled/fire damaged boom • Oiled vessel • Oiled PPE

Figure 5-4 below shows examples of typical waste in the above categories (source Draft Oil Spill Waste Management Decision Support Tool", REMPEC 2010)

Figure 5-4 - Examples of Different Types of Waste

Liquids

(source : Cedre)

Pastes & solids (sand...)

(source : Cedre)

Polluted pebbles & stones

(source: Cedre)

Polluted sorbent

(source : OTRA)

Polluted sea weed

(source : OTRA)

Polluted solid waste

(source : OTRA)

Polluted fauna

(source : OTRA)

5.4 Storage Requirements

Probably the key responsibility of a marine local authority in respect of oil spill waste processing is the identification and provision of sites where the waste generated by the clean-up activities on the shore line can be temporarily stored. The responsible local authority may also be responsible for selecting and procuring sites where waste material can be stored for longer periods, whilst awaiting the availability of treatment capacity in existing facilities or the construction of a bespoke treatment facility.

After collection, waste material will usually be moved from the beach itself to temporary storage facilities within about 5km of the shore. In extreme emergency circumstances, *ad hoc* arrangements may have to be made to receive and store wastes derived from beach clean-up operations. Typically, however, material will be transported from the beach, or from intermediate collection areas behind the beach, to temporary storage areas. To meet their

obligations, local authorities should therefore identify and select suitable sites within their area, and make plans for the construction and management of these sites, should they be required.

Such storage facilities need to be constructed and configured to minimise environmental impact. Details of this are extensively addressed in the MCA Document "Development of a Protocol for the Treatment and Disposal of Oily Waste in the UK - Task 4: Designing Infrastructure for the Handling of Large Quantities of Oily Waste" to which it is recommended that reference be made. However, this document does not address some of the issues which are of great significance in waste processing, and thus the approach to providing the relevant information to assist in the selection of the optimum process is presented in section 7 of this part of the report. More general information about temporary storage sites is useful in setting some of the other parts of this guide in context, and these are therefore described in the following paragraphs.

5.4.1 Temporary Storage Sites (TSS)

The MCA guidance was prepared to help local authorities with the task of making plans and preparations for the handling, storage and disposal of the oily waste products that are generated during the clean-up of coastal oil spills. During most incidents, the volume of liquid waste recovered from the shore will be much greater than the original volume of oil spilled, due the processes of emulsification and the incorporation of sediments and other material. The guidance document therefore concentrates on temporary facilities for the storage of large volumes of liquid oily wastes.

Information is provided on various types of storage facilities indicating their advantages and disadvantages.

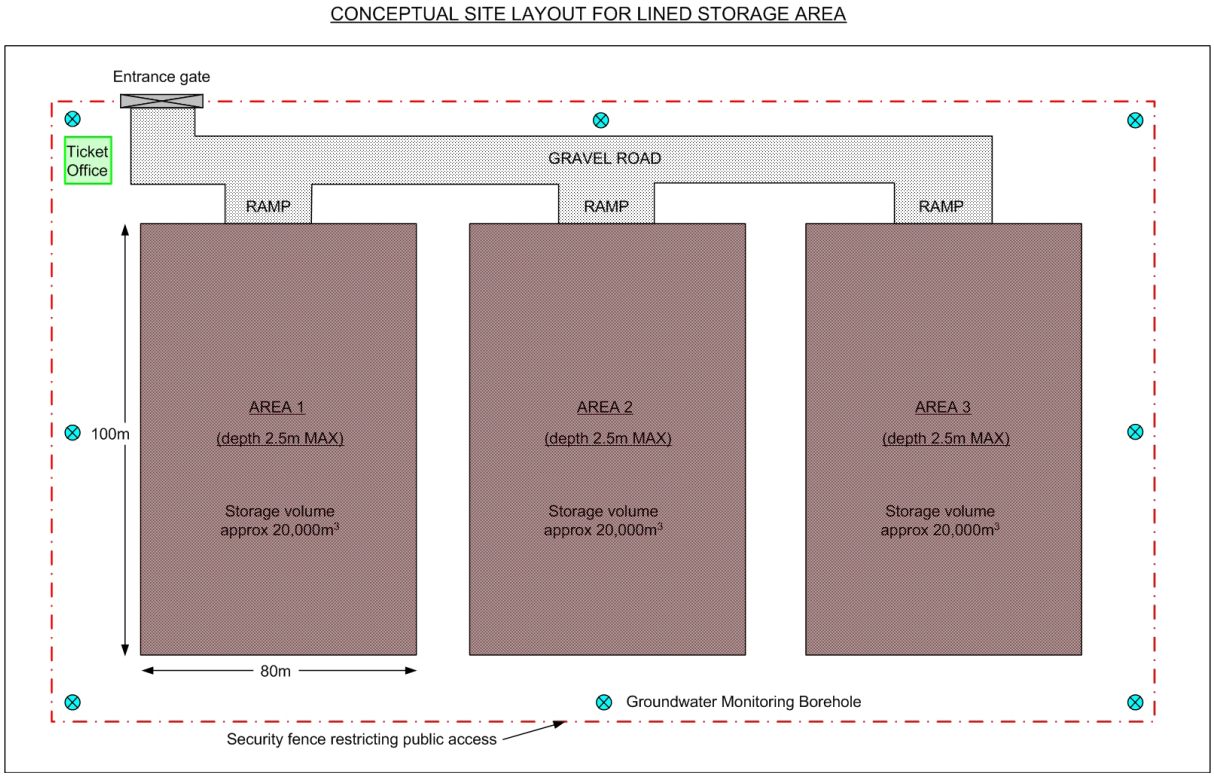
The planning, design, construction, operation and eventual decommissioning of temporary facilities for the storage and handling of oily wastes must comply with UK national legislation and regulations, including duty of care, health and safety, waste oil storage and treatment, movement and management of oily waste and environment and planning.

The aims of such an arrangement of temporary waste storage facilities are to:

i. Provide "buffer" capacity so that the beaches can be kept clear to allow cleaning and restoration activities to proceed as quickly as possible.
ii. Minimise the need to handle/transport waste repeatedly, thus maximising the economics of transportation and reducing the associated nuisance and disturbance this may cause.
iii. Provide facilities in which wastes can be progressively segregated, and pre-treated if appropriate.
iv. Provide facilities for reducing the bulk of waste material. Settlement ponds, for example, can promote the separation of oily water so that oil may be skimmed off and sent for recycling, and the water can be discharged back to the environment.
v. Provide a flow of waste material into the ultimate treatment and/or disposal facilities that can be controlled and adjusted to match the processing capacity of the disposal site(s).
vi. Monitor, track and record all the different types and amounts of waste that are recovered.

Figure 5-5 below shows the arrangement of a typical temporary storage area (source MCA, 2007. RP 549: Development of a Protocol for the Treatment and Disposal of Oily Waste in the UK - Task 4: Designing Infrastructure for the Handling of Large Quantities of Oily Waste)

Figure 5-5 Typical Temporary Storage Area



Criteria for site selection are outlined below (sources: IPIECA, IMO, Cedre, ITOPF):

- close proximity to the site of clean-up,
- good access to roads for heavy trucks (unpaved track may require to be reinforced and restored afterwards),
- sufficient space to ensure segregation of various waste is possible and, if necessary, storage of machinery unsuitable for roads,
- be at a distance from natural sensitive area (or with additional containment measures if it is unavoidable to locate the storage in a sensitive area), and
- agreement of the site owner and/ or local authority.

Management of the site must ensure:

- correct labelling for each waste category,
- quantification of waste by category,
- security to prevent unauthorized dumping, and
- complete removal of oil and restoration of the site at the end of operation

It is probable that some temporary storage facilities will not have the necessary space or infrastructure to enable pre-treatment to be carried out. It is also likely that in some instances, pressure to “clean up” the shoreline will result in ineffective sorting and segregation of waste types. In these cases, waste will need to be transferred to intermediate storage facilities with greater space and/or infrastructure for processing. If space and infrastructure can be provided to enable preliminary treatment to be carried out at the

temporary site, however, this will be of benefit in the overall processing plan and will comply with the requirements of the Waste Hierarchy and environmental regulator preference.

5.4.2 Intermediate and Long-Term Storage

The table below provides considerations and criteria for intermediate and long term storage (source Draft Oil Spill Waste Management Decision Support Tool", REMPEC 2010)

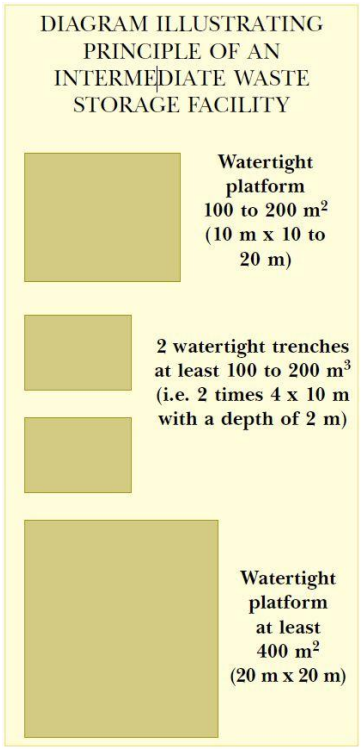
Table 5-1 - Criteria for Intermediate and Long Term Storage

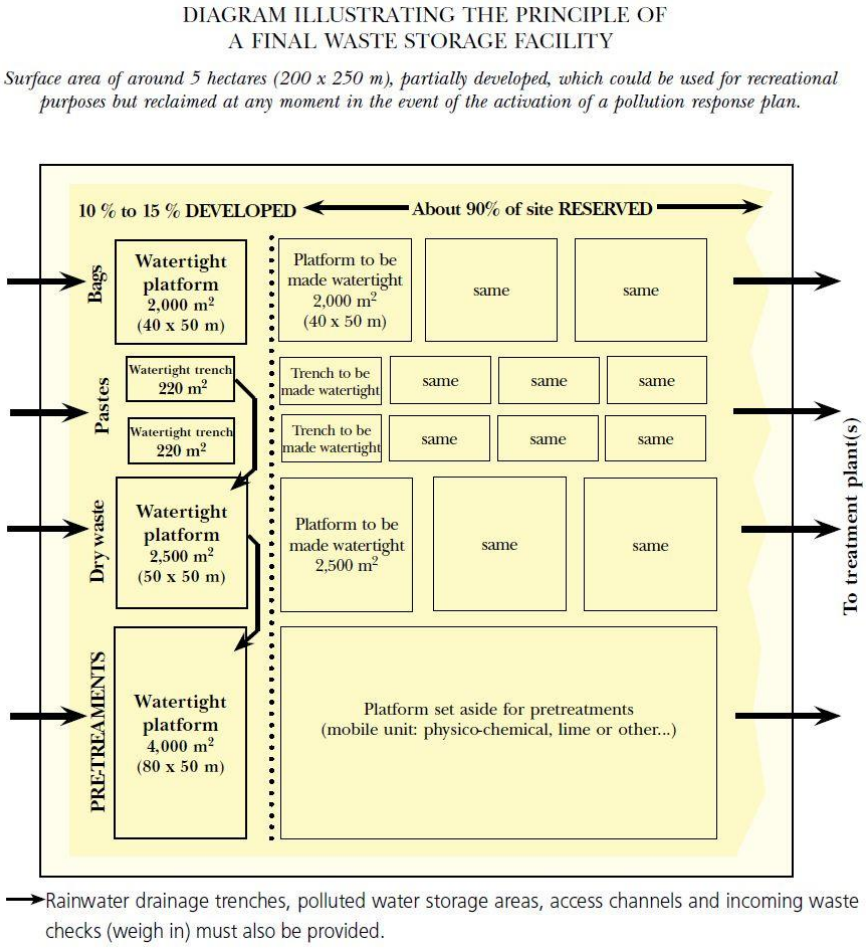
Criteria	Intermediate storage	Long Term storage
Occupancy	•Plan on occupying for 0 to 1 year (more in extreme cases).	•Plan on occupying for up to 5 years. •There may be legal restrictions.
Example of storage capacities	•1,500–3,000 m2 surface area. •Storage pits (100–200 m3). •Storage for debris, bags, barrels, tanks etc.	•20,000–100,000m2 surface area. •Storage pits (1,000–10,000 m3). •Sorting, pre-treatment, stabilization.
Distance from recovery/ transfer sites	•Not more than 5 km if possible, 30 to 50 km maximum.	•Not more than 50 to 100 km; or one hour by road from previous storage.
Land conditions	•Flat and graded to accommodate settling tanks. •Rain runoff collection facilities may be required.	•Flat and graded to accommodate settling tanks. •Build appropriate rain runoff facilities.
Access and earthworks	•Access by heavy lorries necessary, plan for decontamination areas for the vehicles.	
Regulatory requirements	•Comply with local land occupation and environmental regulations. •Plan for long term availability and potential occupation.	
Hydrogeological conditions	•Load-bearing capacity must be adequate. •Impermeable subsoil, either naturally or artificially. •Avoid groundwater systems.	
Environmental conditions	•At a safe distance from populated areas (50 m or more). •Beware of the impacts of lorries. •Avoid protected areas, cultural or archaeologically sensitive sites.	
Management and maintenance conditions	•Supervise all traffic on site. •Track all waste. •Sort waste. •Assess quantities. •Organize final disposal contracts. •Water management. •Security to prevent unauthorized dumping. •Site restoration.	

Figure 5-6 below shows typical layout arrangements for intermediate and long-term storage sites (source Draft Oil Spill Waste Management Decision Support Tool", REMPEC 2010)

Figure 5-6 Examples of Arrangements at Intermediate and Long-term Storage Sites

Example of set up of intermediate storage sites	Example of set up of long term storage sites





5.4.3 Intermediate Storage Sites

Criteria for intermediate storage site selection are:

- be located close to the coast, and of easy access;

- be pre-identified and listed in the relevant contingency plan. The proposed intermediate sites should be approved by the environmental regulator and permitted where appropriate
- have no legal issues. All required authorizations should be obtained prior to their use.

The set-up of intermediate storage sites will depend on the volume and nature of waste collected in each region, and to be stored (e.g. simple storage place for containers and bags, or specifically built pits). The intermediate sites should be separated into different areas, one for each type of OSW requiring storage. Particular attention will be given to limit and recover any run-off water or leachate (liquid that drains or 'leaches" from a landfill and/ or a waste storage).

Intermediate storage requires continuous management during all operations:

- competent supervisors on site,
- continuous recording of lorries incoming and leaving the site,
- health and safety management (suited PPE for the personnel on site, clear marking of the different areas on site, limitation of the traffic, limitation of the spreading of the pollution, etc.),
- environmental sound management (leak proof container, ground and soil protection, monitoring of leachate, management of run-off water, waste handling, etc.),
- identification of the waste stored on site and continuous tracking of the waste entering and leaving the sites (at least volume/ weight, nature, packaging, producer, origin etc.),
- up to date documentation on all the waste transferred by the site, and
- complete rehabilitation of the site once all waste has been evacuated.

5.4.4 Long-term Storage

Intermediate storage is not recommended for long periods (from an environmental point of view). It is recommended that material be transferred to "long term storage" when required, for example:

- If the total volume of waste exceeds the treatment capability in the country;
- If installations have to be adapted (or built) to provide the necessary pre-treatment or treatment depending on the type of waste and treatment chosen;
- When negotiating contracts for the treatment (or the export of waste) may be a lengthy process.

Long term storage enables:

- the storage of waste for year(s) in a secured and environmentally suited location,
- time for the treatment and final disposal facilities to be completed for all the categories of waste collected,
- the further sorting of the waste (once the treatment options are finalized), and
- supplying waste to the treatment installations at a rate matching their treatment capability.

Long term storage sites should be pre-identified during the planning process and be officially approved by the environmental regulator. Large areas will be required to receive waste from major pollutions. Due to the potentially large amount of waste that may be stored on the site

for a long period, a risk assessment should be carried out to choose a site where potential infiltration of oil and oily water into the ground would have the least impact.

The Long term storage sites will have to be set up and managed accordingly to the long period of use of the site. Reception facilities will be manned and secured on a 24/7 basis during the cleanup operations. A complete waste tracking system during the operations, i.e. waste movement on site, and environmental site monitoring system must be implemented. Once reception of waste is completed, the site must be checked regularly, with regular analysis of the soil and ground water quality.

The final rehabilitation of the site will be carried out after a complete environmental assessment of the impacts of the waste storage and should include soil and ground water remediation if necessary.

6 TECHNOLOGIES USED FOR OIL SPILL WASTE PROCESSING

6.1 Overview

The choice of an oil spill waste treatment method depends on:

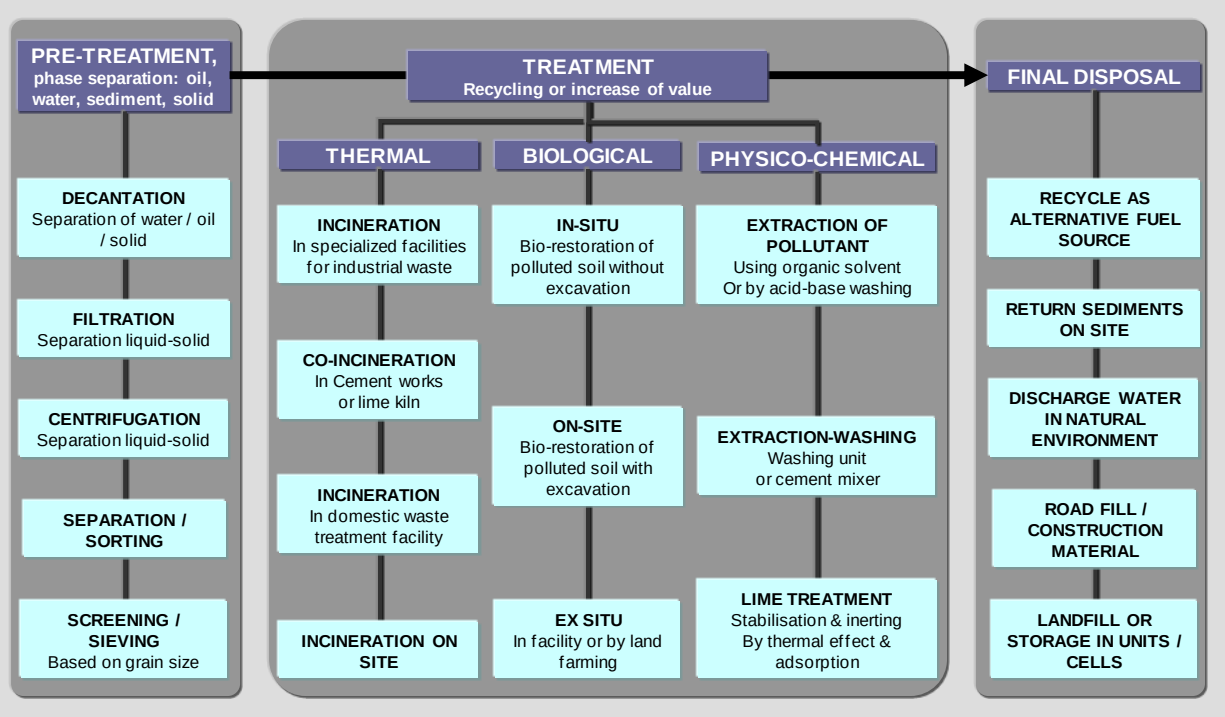
- the type and volume of waste, and
- the facilities and treatment techniques available
- their rate of processing capability

Each spill involves a particular type of oil, which will undergo weathering, and be recovered on various shoreline locations, thus producing different types of waste.

However, based on past experience, spills involving persistent crude oil or refined products usually produce the same main categories of waste. To manage these wastes, various types of treatment may be implemented.

Each main treatment process or facility usually requires a pre-treatment, i.e. a preparation of the waste to ensure that it will be accepted by the treatment facility. Each pre-treatment is specific and depends on the treatment chosen and on the entry criteria of the treatment facility. The figure below was developed by the Centre de documentation, de recherché et d'experimentations sur les pollutions accidentelles des eaux (CEDRE) to outline the main types of treatment and pre-treatment for oil spill waste.

Figure 6-1 Typical Oil Spill Waste Treatment Processes



(Source: Cedre)

6.2 Classification of Technologies

The MCA guide (Development of a Protocol for the Treatment and Disposal of Oily Waste in the UK Task 4: Designing infrastructure for the handling of large quantities of oily waste, MCA 2007) identifies nine "generic" technologies (reprocessing; oil-water separation; emulsion breaking; stabilization; bioremediation; sediment-washing; thermal treatment; heavy fuel use and landfill) which can be used to process all or part of waste from an oil spill.

However, the broad MCA categories contain a number of quite different technologies, with varying constraints of available capacity. For example, "sediment-cleaning" is carried out on quite a small scale (tens of cubic metres per hour of waste) by a small number of specialist refinery waste contractors, but less-sophisticated quarry-type equipment is available which can treat thousands of cubic metres per hour.

Three of the MCA category names have therefore been amended. "Sediment-washing" has been changed to "sediment cleaning" to include some quarry solids handling techniques which go beyond simple washing, and stockpiling has been included along with stabilisation to cover techniques which allow an urgent problem to be set aside for later treatment with no impact on the environment. The "Thermal Treatment" category has been split into two – thermal treatment being used to refer to processes such as thermal desorption, and an additional category "Incineration" created. This has been done because in terms of the treatment process, thermal desorption would be expected to be carried out by bringing a mobile unit to the waste, be that at a temporary or an intermediate storage site, whereas incineration will take place at a fixed location. This makes distinction between certain of the technologies easier.

The revised list of generic technologies used in this guide is therefore:

- Reprocessing,
- Oil-water separation,
- Emulsion breaking,
- Stabilization and stockpiling,
- Bioremediation,
- Sediment cleaning,
- Thermal treatment (desorption),
- Heavy fuel use
- Incineration
- Landfill

Note that stabilisation is not taken to include the processes known as stabilisation which blends solid material with liquid wastes in an attempt to make them suitable for landfill. In terms of this protocol, this process is not differentiated from landfill, and doubt it would be acceptable as a proposal to the UK regulators.

Explanations of what these technologies are, and how they operate are shown in Table 6-1, below. Table 6-2 contains similar descriptions of "sub technologies" of these generic technologies and more detailed information on options may be found in the data sheets included in Part 4 of this report (modified from REMPEC).

Table 6-1 – Generic Technologies for Processing Oily Waste

Generic Technology	General Description
Reprocessing	Oils substantially free of solids and water may be sent to a refinery as a feedstock for reprocessing into fuel
Oil-water separation	Separation of the oil and water phases in a mixture reduces waste volumes. This is usually achieved by gravity settlement, or what might be viewed as enhanced gravity settlement (centrifuges etc.), though flotation may also be used.
Emulsion breaking (oil/water emulsion)	Oil and waste can form an intimate stable mixture known as an emulsion. Emulsions cannot be separated into their components without destabilisation. The use of chemicals, heating, or a number of other techniques can effect this destabilisation
Stabilization/Storage/ Stockpiling	It may be expedient to render oily wastes suitable for longer term storage, or to store those wastes which are already reasonably stable. Mixing with quicklime can render sandy wastes into relatively stable solid form. Extreme conditions can turn some wastes into a glass suited to long-term storage.
Bioremediation	The organic component of wastes (including the oil present) can be food for microorganisms under a range of conditions. Bioremediation processes harness this technique to clean up contaminated materials.
Sediment cleaning	Oils can be washed from the surface of solid materials, and oil soaked into materials can be recovered in this way through size reduction prior to washing. Hot water and solvents can be used to enhance washing processes.
Thermal treatment	Oils can be mobilised, or volatilised by heat. There are a number of processes available to us which can carry out these operations to varying degrees.
Incineration	Oils can be partially or fully oxidized (burnt) by heat. Incineration is taken to include gasification and pyrolysis
(Heavy) fuel use	Oily wastes can be used as fuel and less oily wastes as feedstock in a number of industrial processes such as cement making.
Landfill	Wastes can be deposited at permitted landfills

Table 6-2 – Sub-Technologies for Processing Oily Waste

Generic Technology	Sub Technology	General Description
Reprocessing	None available	
Oil-water Separation	Sedimentation	In a sedimentation or settlement tank, heavy particles sink and light particles float. Techniques exist for enhancing operation of such processes, such as the inclined plates used in the API separator.
	Centrifugation	A centrifuge creates a high gravitational field, separating light and heavy particles in a smaller space than a sedimentation tank. It can potentially separate two liquid phases from accompanying solids in a single stage. It has small passages within it which are unsuited to use with gross solids.
Emulsion Breaking (oil/water emulsion)	Chemical	Alteration of pH, and the use of specific surface-active chemicals can destabilise many emulsions.
	Physical	Some emulsions can be broken by heating, and some by vigorous agitation.
	Electrochemical	As the stability of emulsions is based in the mutual electrical repulsion of particles, electrical methods known as electrocoagulation may be used to separate oil and water phases. This technique is less well proven than the others here.
Stabilization/Storage/ Stockpiling	Lime Stabilisation	Quicklime's reaction with siliceous materials can be used to temporarily stabilise wastes with a high solids content. This technique should not be used for liquid wastes.
	Vitrification	Solid wastes, (especially sandy materials) can be turned into a glass by the use of very high temperatures, to produce a highly stable end product.
	Storage	Materials which are naturally stable under environmental conditions, or have been stabilised can be stored. This technique might be expedient if there are larger volumes of waste, and high time pressure.
Bioremediation	In-situ	Bioremediation can be carried out without transporting contaminated materials away from site, with the possible addition of nutrients or oxygenating material.

Generic Technology	Sub Technology	General Description
	Land Farming	The wastes are mixed with soil and additives and spread relatively thinly over the land to promote a fairly low-intensity biological/chemical oxidative degradation of the organic material present.
	Anaerobic Digestion	AD proceeds in the absence of oxygen, using organisms which either do not require it, or are poisoned by it. There are variants which can cope with fairly dry materials, but it is most commonly used with wet wastes.
	Composting	Composting is another aerobic process, involving mixing with soil and additives as with land farming, but with the process intensified by piling up into a static aerated pile, turned windrows, or in an aerated containment vessel.
	Biopile	The Biopile differs from composing in that it represents a further intensification of a static aerated pile by means of containment and controlled irrigation.
Sediment Cleaning	Steam	High-pressure steam jets may be used to remove oil from solid material.
	Flotation	Oil particles tend to float, a tendency which can be enhanced by attaching tiny air bubbles to them via a recycled stream of pressurised, aerated effluent. This process can be used to clean up oil-contaminated sands. Hot water may be used to enhance oil removal.
	Screening	Filters may be used to separate solid particles from liquids. The solids may either be washed on the screen, or as a separate process.
	Sorting	Oil concentrations tend to be higher in the finer sediments. Sorting out larger particles with mineral processing equipment yields a stream of coarser solids with a lower oil content.
	Mills/Shredders/ Shearing Machines/ Crushers	Size reduction equipment, (usually with a minerals processing pedigree) can be used to facilitate washing, or prepare material for further treatment.
	Pressure washing	Hand or automated washing with hot or cold water or solvents under pressure can remove much of the oil from coarse sediments.
Thermal Treatment	Drying	Oily grass and seaweed can be dried to facilitate burning in shallow piles where environmental conditions permit.

Generic Technology	Sub Technology	General Description
	Thermal Desorption	Relatively low temperature heat treatment can be used to remove oils by vaporisation. The technique is most suited to soil decontamination.
Incineration	Gasification/ Incineration	Heating under pressure in the presence of oxygen (in the same way as town gas used to be made) converts organic materials into a mixture of carbon monoxide and hydrogen known as syngas, which can be burned.
	Pyrolysis/ Incineration	Heating under pressure in the absence of oxygen can decompose organic materials present in solid wastes into smaller, more volatile molecules. The resulting gas stream can be burned, but there are additionally liquid and solid wastes produced.
	Incineration: Municipal	Some municipal incinerators can treat a percentage of solid or liquid oily wastes.
	Incineration: Industrial	Commercial incinerators exist to burn more hazardous wastes, in addition to the other industrial uses described in the “heavy fuel use” section. Such commercial incinerators are likely to be more expensive, and have smaller capacities than their municipal equivalents.
	Evapo-incineration	Mixtures of oil and water can be heat treated to evaporate off the water, and the residual oily condensate burned.
(Heavy) Fuel Use	Cement/Lime Kiln	Essentially solid wastes can be used as either mineral feedstock or fuel in cement production, and liquid wastes can be used as fuel. Whilst a wide range of feedstock and fuel can be used, the system has to be set up for each input, and only larger and more homogeneous batches will be attractive to operators.
	Power Plant/Glass Industry/Smelting Industry	Liquid wastes with a high calorific value can be used as fuel in the glass and metals processing industries.
Landfill	None available	There are not so much sub-technologies for landfill as subtypes. Based on physical form and level of contamination, landfilled materials will meet acceptance criteria for inert, non hazardous or hazardous (in increasing order of cost) landfill sites or cells. Liquid wastes may not be landfilled, and some pre-treatment may be required for all types.

7 LOCAL AUTHORITY PLANNING FOR WASTE PROCESSING

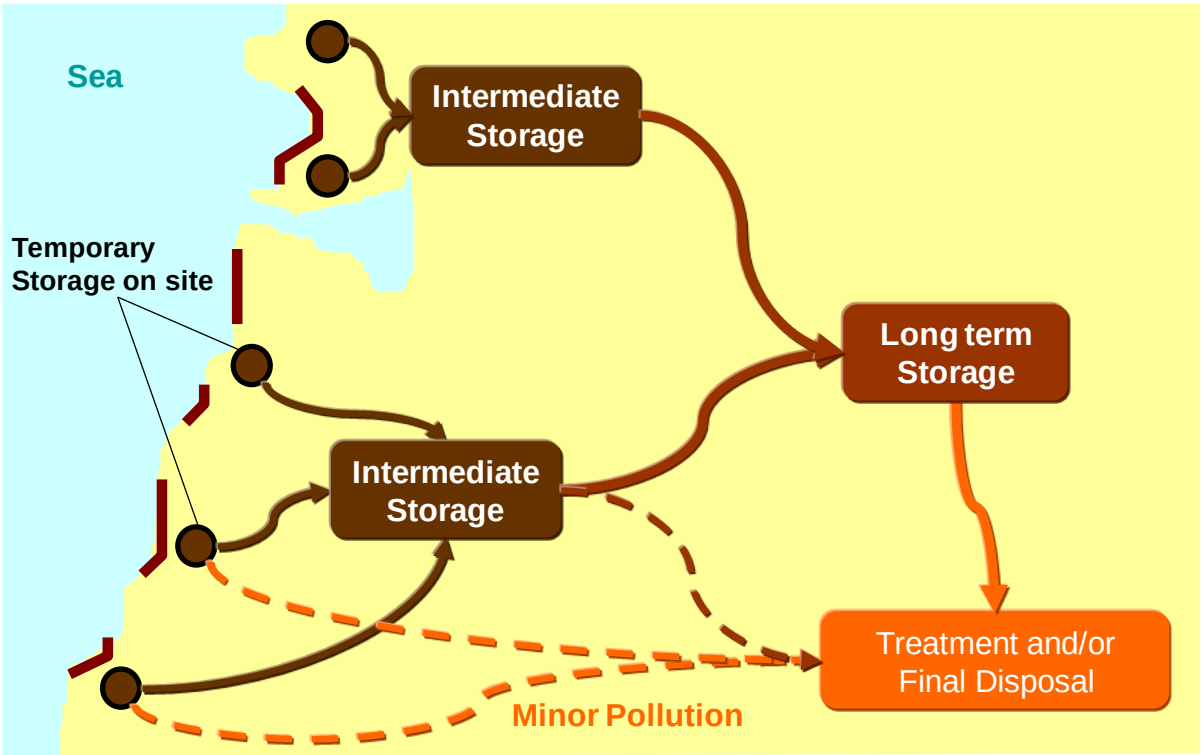
7.1 Introduction

Section 4 of Part 4 of the MCA Report "Development of a Protocol for the Treatment and Disposal of Oily Waste in the UK" sets the context for the requirement for temporary storage sites.

"National and local oil spill contingency plans stipulate how different types of contaminated material should be collected and stored on the beach itself. They stress the need to begin segregating waste into different waste streams so that it can be handled, stored and transported appropriately, safely and effectively. In general, the immediate arrangements for collection will be dictated by the nature of the material, the amounts present, and the logistics of moving each type of waste stream from the beach. Bags and small skips, for example, would be used to hold "dry" material, whereas drums or small tanks would be used to hold "liquids". As clean-up operations gather pace, it is likely that relatively large volumes of material will be retrieved from the shore, and to allow beach clean-up to proceed unhindered this material will have to be continually removed from the beach. It is unlikely that it would be practicable or cost-effective to take this material to the site(s) where it would be ultimately treated and/or disposed of, so temporary or intermediate storage facilities will be required".

The network of waste recovery areas, intermediate storage points and treatment facilities that may be involved in the clean-up operations is represented schematically in Figure 5-1, repeated below for convenience.

Figure 7-1 - Schematic of Typical Oil Spill Waste Processing



7.2 Storage Sites

After collection, waste material will usually be moved from the beach itself to temporary storage facilities within about 5km of the shore. In extreme emergency circumstances, *ad hoc* arrangements may have to be made to receive and store wastes derived from beach clean-up operations. Typically, however, material will be transported from the beach, or from intermediate collection areas behind the beach, to temporary storage areas. To meet their obligations, local authorities should therefore identify and select suitable sites within their area, and make plans for the construction and management of these sites, should they be required.

The aims of such an arrangement of temporary waste storage facilities, identified in the MCA document are to:

- Provide “buffer” capacity so that the beaches can be kept clear to allow cleaning and restoration activities to proceed as quickly as possible.
- Minimise the need to handle/transport waste repeatedly, thus maximising the economics of transportation and reducing the associated nuisance and disturbance this may cause.
- Provide facilities in which wastes can be progressively segregated, and pre-treated if appropriate.
- Provide facilities for reducing the bulk of waste material. Settlement ponds, for example, can promote the separation of oily water so that oil may be skimmed off and sent for recycling, and the water can be discharged back to the environment.
- Provide a flow of waste material into the ultimate treatment and/or disposal facilities that can be controlled and adjusted to match the processing capacity of the disposal site(s).
- Monitor, track and record all the different types and amounts of waste that are recovered.

7.3 Provision of Waste Processing-specific Information

The MCA guide addresses all the issues surrounding the planning, selection and implementation of the provision of storage. In addition, however, the site may be used as the location at which preliminary or final processing of the waste takes place. The regulatory authority’s expressed preference for treatment is that if possible the waste should be processed on the shore; if this is not posssible, and if this is also not posssible at the temporary storage location, the material should be transferred elsewhere for treatment. This guide assumes that material has been or will be processed as well as possible on the shore and that treatment is required for the waste arising from this process and that which cannot be treated on the shoreline.

To follow regulatory preference, the next stage would be to make an assessment as to whether permitted, mobile equipment exists and is available with which the material at a temporary store could be treated – this will require assessment of:

a) Which permitted mobile systems could treat the waste (assessed using data from mobile equipment permit holders and analysis of waste)

b) Which of the treatment systems which could treat the waste is available for immediate deployment?

c) Whether the necessary facilities/infrastructure exists, or could be provided, at the temporary storage facility to enable the available, permitted equipment to operate satisfactorily (for example, power, effluent disposal etc)

d) If feasible based on stage 3a), 3b) and 3c) above, whether the impact of use of the necessary mobile unit(s) would be acceptable to the local population and the environmental regulator (noise, odour impact) and whether the processing could take place as quickly as required to have an acceptable (to the local population or politicians) outcome in terms of the time taken to remove the waste

e) If there are multiple storage locations where the same equipment could be used and its application would be feasible, would the rate of treatment allow the system to treat one site, then move on to the next and still treat all the sites within an acceptable time scale?

f) The use of non-permitted equipment at the temporary storage location is considered by the EA as being acceptable if this can be demonstrated to have overall environmental benefit - discussions would need to be held with the regulator's representative to estbalish whether this would be applicable in any specific situation.

The section above in **bold** identifies the elements of this process where specific information in the Local Authority's plan can make a significant difference to the ability of the oil spill response team to plan and optimise the waste processing activities.

If required, details on how this information is used can be found in Part 3 of this report, but Section 7.3 below outlines the data which Local Authorities should seek to establish and record as part of their contingency planning.

7.4 Temporary Storage Site Waste Processing Information

Table 7-1 below indicates the information which will be required by the oil spill response team to assist in developing the optimum strategy for processing waste from individual storage sites and collectively for a number of such sites.

The table below has been completed with example data. A blank template is included in Appendix D.

Table 7-2 – Temporary Storage Site Information

TEMPORARY WASTE STORAGE LOCATION INFORMATION SHEET			
The storage location information sheet is used to compile information concerning the waste which can be stored at a temporary waste storage site. The sheet should be completed in its entirety in as much detail as possible as each question provides valuable information to ensure the best form of treatment is selected for the waste.			
SITE DETAILS			
Site Name	Bognor Regis 2	Site Reference	ABC 1234
Address	The Promenade	Postcode	BR 23 4DF
		Grid Reference	
Site Contact	Norman Smith	Landline	01283 757106
Mobile	07777 99700	Email	
Site Emergency Contact		Fax	
Details of the 'catchment area' which the storage site would cover (receive waste from): Bognor East beach and Bognor West beach			
SITE ACCESS			
Is there road access to the site e.g. for cars, lorries etc?	yes / ~~no~~	If yes, what is the maximum size the road vehicle can be to gain access by road and how close is the road to the site? Access for 25 tonne vehicles, 38 ft long. Road adjacent to site	
Is there rail access to the site e.g. for trains, freights etc?	~~yes~~ / no	If yes, what is the maximum tonnage of the rail vehicle and how close are the tracks to the site?	
Is there port access to the site e.g. for boats, ships etc?	~~yes~~ / no	If yes, what is the maximum size the floating vessel can be to gain access via the port and how close is the port to the site?	
By inland waterway access to the site e.g. for boats, ships etc?	~~yes~~ / no	If yes, what is the maximum size the floating vessel can be to gain access by inland waterway and how close is the waterway to the site?	

TEMPORARY WASTE STORAGE LOCATION INFORMATION SHEET		
Are there multiple Entrances?	~~yes~~ / no	If yes, which should be used?
Is keyfob/keypad access used?	~~yes~~ / no	If yes, is there emergency access (e.g. via security guard, site contact)?
Is there a barrier and/or height restriction?	~~yes~~ / no	If yes, what is the maximum height and/or width for a vehicle to access the site?
Is 24 hour access to the site required and/or permitted?	yes / ~~no~~	If yes, by whom, on what basis, etc. Currently open access – no physical restrictions
Can local access roads/routes be used by large vehicles, including roads between local access to the site and main trunk roads? Are there any other vehicle restrictions? YES		

WASTE HANDLING AT THE SITE		
What is the approximate size of the site? (m^2) 2500		What is the maximum height at which the waste can be stored? (m) 2.5 m
How much could be used for storage? (m^2) 2000		What is the maximum height at which the waste can be stored? (m) 2.5 m
Is the storage area to be segregated?	Yes / ~~no~~	If yes, into how many sections? 4
Are details of the size of each section known?	Yes / ~~no~~	If yes, please provide details Each 750 m3
Is there any type of waste which the site could not store?	Yes / ~~no~~	If yes, please provide details Volatile
Could waste stored on the site migrate off site (e.g. via wind, leaching, rainwater run-off etc.)		If yes, please provide details YES

TEMPORARY WASTE STORAGE LOCATION INFORMATION SHEET	
If yes, what measures could be used to prevent migration of waste (e.g. bunding, fencing etc.)	If yes, please provide details Bunding, barrier
Is there a water supply on site?	If yes, please provide details Yes, > 20 m3/hr
Is there a drainage connection on site?	If yes, please provide details Yes. Connected to surface water run-off - can clean water at up to 30 m3/hr
Is there a power supply on site?	If yes, please provide details Yes, 40 kW
Is there space on site to allow for segregation of the waste?	If yes, please provide details YES
Are there any sensitive receptors (e.g. to noise, smell) nearby (e.g. housing, school)?	If yes, please provide details YES, School 20 m
Will the site be completely rehabilitated after the waste has been completely removed?	If no, please provide details and reasons YES
Name & Reference of nearest intermediate storage facility if known **Not known**	
GENERAL INFORMATION	
What is the site normally used as/for?	
Can the normal site use/activity be stopped whilst the site is used for storage?	If yes, how long for (approx)?
	If no, how much of the site (m^3) can be used for storage whilst normal operations continue?
Describe the availability of the site to be used as a waste storage site on the following scale	
(1 - available 24-7) (2 - Available, causing no/little interference with normal site usage) (3 - Available, causing manageable disruption to site) (4 - Available, but would cause significant disruption) (5 - Available only in case of emergency) 4	

TEMPORARY WASTE STORAGE LOCATION INFORMATION SHEET		
Is there a weighbridge?	~~yes~~ / no	

APPENDICES

Appendix A - Relevant Legislation

Title	Applicability
Control of Pollution (Amendment) Act 1989 c.14	Requires carriers of controlled waste to register with the Environment Agency or SEPA and outlines the penalties (including seizure and disposal) for vehicles shown to have been used for illegal waste disposal. AND AMENDMENTS
Controlled Waste (Duty of Care) Regulations (Northern Ireland) 2002 SR 271	Creates a duty of care for controlled waste that requires all producers, carriers and managers of waste to keep records and use waste transfer notes. AND AMENDMENTS
Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations (Northern Ireland) 1999 SR 362	Details the system for registering carriers of controlled waste and for seizing vehicles used for the illegal disposal of waste.
Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991 SI 1624	Introduces a registration system for carriers of controlled waste.
Controlled Waste Regulations (NI) 2002 SR 248	Defines household, industrial and commercial waste, for waste management licensing purposes. AND AMENDMENTS
Controlled Waste Regulations 1992 SI 588	Defines household, industrial and commercial waste for waste management licensing purposes. AND AMENDMENTS
Council Decision 2003/33/EC	Establishes acceptance criteria and procedures for allowing wastes into landfill sites.
Environment Act 1995	Establishes the Environment Agency and SEPA as the regulatory bodies for contaminated land, control of pollution, conservation or enhancement of the environment and fisheries.
Environmental Permitting (England and Wales) Regulations 2007 SI 3538	Introduces a new system for environmental permits for industrial activities and waste operations, including landfill and waste incineration and sets out the powers, functions and duties of the regulator.
Environmental Permitting (England and Wales) Regulations 2010 SI 675	Provides a consolidated system for environmental permits and exemptions for industrial activities, mobile plant, waste operations, mining waste operations, water discharge activities, groundwater activities and radioactive substances activities. AND AMENDMENTS

Title	Applicability
Environmental Protection (Duty of Care) Regulations 1991 SI 2839	Imposes a duty of care on any person who imports, produces, carries, keeps, treats or disposes of controlled waste to ensure there is no unauthorised or harmful depositing, treatment or disposal of the waste. AND AMENDMENTS
Environmental Protection Act 1990	Establishes in England, Scotland and Wales the structure and authority for waste management and control of emissions into the environment. Defines the legal framework for duty of care for waste, contaminated land and statutory nuisance.
EU Directive on the Landfill of Waste 1999/31	Sets out measures to prevent and reduce the impact of landfill on the environment. Defines which types of waste need pre-treating, bans certain wastes from landfill and sets up a permit system for landfill sites.
Hazardous Waste (England and Wales) Regulations 2005 SI 894 and amendments	Details requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.
Hazardous Waste (Wales) Regulations 2005 SI 1806	Details requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.
Hazardous Waste Regulations (Northern Ireland) 2005 SR 300 and amendments	Details the regime for controlling and tracking the movement of hazardous waste.
Landfill (Scotland) Regulations 2003 SSI 235 and amendments	Make changes to the waste control regime to cover agricultural waste. Classifies landfill sites, details the permits needed to create and operate a landfill site and the requirements for care after site closure.
Landfill Allowances Scheme (Northern Ireland) Regulations 2004 SR 416	Assigns landfill limits to councils, sets out how to borrow and transfer limits between councils and how the scheme will be monitored by the NIEA.
Landfill Allowances Scheme (Scotland) Regulations 2005 SSI 157	Sets up administration and arrangements for allocating, banking, borrowing and transferring landfill allowances. Makes SEPA the monitoring authority and sets out duties for waste disposal and landfill operators to keep records and make returns to SEPA.
Landfill Regulations (Northern Ireland) 2003 SR 496 and amendments	Introduces permits to create and operate a landfill, and sets out which categories of waste can be accepted at each class of landfill site. Also sets out a pollution control regime.
List of Wastes (England) Regulations 2005 SI 895 and amendments	Provides the European Waste Catalogue list of codes used to classify wastes.

Title	Applicability
List of Wastes (Wales) Regulations 2005 SI 1820	Provides the European Waste Catalogue list of codes used to classify wastes.
List of Wastes Regulations (Northern Ireland) 2005 SR 301 and amendments	Requires the List of Wastes to be used when determining if a material or substance is waste or hazardous waste and for classifying and coding wastes for the waste control regime.
Marpol 73/78 is the International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" is short for marine pollution and 73/78 short for the years 1973 and 1978.)	Marpol 73/78 is one of the most important international marine environmental conventions. It was designed to minimize pollution of the seas, including dumping, oil and exhaust pollution. Its stated object is: to preserve the marine environment through the complete elimination of pollution by oil and other harmful substances and the minimization of accidental discharge of such substances.
Pollution Control and Local Government (Northern Ireland) Order 1978 SR 1049 (including updates)	Regulates waste on land, abandoned vehicles, noise nuisance, noise abatement zones, sulphur content of oil fuel used in furnaces and engines, cable burning, and pollution of the atmosphere and water. Other aspects have been revoked.
Pollution Prevention Guideline 1 General guide to the prevention of pollution	Businesses and individuals are responsible for complying with environmental regulations and for preventing pollution of air, land and water. Responsible waste management can ensure that you comply with the relevant regulations and reduce waste.
PPG 2 Above ground oil storage tanks	These guidelines will help you look after your above ground oil storage tanks safely and to minimise the risk of causing pollution.
Pollution Prevention Guideline 8 Safe storage and disposal of used oils	These guidelines are intended to help everyone that handles used oils – from people carrying out a single engine oil change to large industrial users.
PPG 18 Managing fire water and major spillages	These guidance notes have been drawn up to assist in the identification of the equipment and techniques available to prevent and mitigate damage to the water environment caused by fires and major spillages.
Pollution Prevention Guideline 21 Pollution incident response planning	These guidelines set out best practice for producing an incident response plan to deal with an environmental incident on your site.
Pollution Prevention Guideline 26 Storage and handling of drums and intermediate bulk containers (IBCs)	The Agencies publish guidance on fixed oil storage tanks and for containers directly connected to a point of use (PPG2; Reference 2). However, other containers of oil, chemical or other potentially polluting materials that are handled or stored incorrectly can also lead to pollution, through accidental leakage or spillage.

Title	Applicability
Special Waste (Scotland) Regulations 1997 SI 257 and amendments	Establishes that managers of specified waste facilities operated by local councils who meet certain criteria should be treated as technically competent for special waste facilities.
Special Waste Regulations 1996 SI 972 and amendments	Provides a definition of 'special waste' in Scotland, to cover all hazardous waste, and regulates waste carriers by requiring them to complete and keep consignment notes.
Transfrontier Shipment of Waste Regulations 2007 SI 1711	Sets out rules for shipping waste, including within the European Community and importing and exporting to and from countries outside the EC.
Waste (Scotland) Regulations 2005 SSI 22	Extends controlled waste to cover mine, quarry and agricultural waste. Categorises waste as household, industrial or commercial. Requires anyone involved in depositing, disposal or recovery of mine, quarry or agricultural waste to be authorised.
Waste and Contaminated Land (Northern Ireland) Order 1997 SI 2778 (including updates)	Sets out the waste management regime covering waste carrier registration and identifying and remedying contaminated land.
Waste Collection and Disposal (Amendment) Regulations (Northern Ireland) 1997 SR 52	Amends 1992/254. Implements EC Directive 91/156/EEC on waste and makes it an offence to carry out an exempt activity without registering with the local council.
Waste Incineration (Scotland) Regulations 2003 SSI 170	Prevents the operation of certain waste incineration installations or mobile plants without authorisation.
Waste Incineration Regulations (Northern Ireland) 2003 SR 390	Amends the Pollution Prevention and Control Regulations 2003, particularly on incineration and co-incineration of waste.
Waste Management (England and Wales) Regulations 2006 SI 937	Extends controlled waste to cover mine, quarry and agricultural waste. Categorises waste as household, industrial or commercial. Bans householders from treating, keeping, disposing of controlled waste if it could pollute the environment.
Waste Management Licensing (Scotland) Regulations 1996 SI 916	States that managers of specified waste facilities operated by local councils are 'technically competent' if they meet certain age and experience criteria. AND AMENDMENTS
Waste Management Licensing (Water Environment) (Scotland) Regulations 2006 SSI 128	Amends 1994/1056 to align it with regulations to control activities affecting the water environment in Scotland.
Waste Management Licensing Regulations (Northern Ireland) 2003 SR 493	Covers applications for waste management licenses, which authorise the deposit, disposal and treatment of controlled waste. Includes conditions on the use of certain mobile plant

Title	Applicability
Waste Management Licensing Regulations (Northern Ireland) 2003 SR 493 and amendments	Covers applications for waste management licences, which authorise the deposit, disposal and treatment of controlled waste. Includes conditions on the use of certain mobile plant.
Waste Management Licensing Regulations 1994 SI 1056 and amendments	Covers applications for waste management licences, which authorise the deposit, disposal and treatment of controlled waste. Includes conditions on the use of certain mobile plant.
Waste Management Regulations (Northern Ireland) 2006 SR 280	Extends the controlled waste regime to bring mine, quarry and agricultural waste within waste management control. Categorises waste as household, industrial or commercial. Amends existing legislation to further implement Directives on waste and landfill.

Appendix B - European Waste Catalogue Codes

The possible EWC categories for waste streams arising from oil spill clean-up operations are as follows:

05 Wastes from Petroleum Refining
05 01 wastes from petroleum refining
05 01 02* desalter sludges
05 01 03* tank bottom sludges
05 01 04* acid alkyl sludges
05 01 05* oil spills
05 01 06* oily sludges from maintenance operations of the plant or equipment
05 01 07* acid tars
05 01 08* other tars
05 01 09* sludges from on-site effluent treatment containing dangerous substances
05 01 10 sludges from on-site effluent treatment other than those mentioned in 05 01 09
05 01 11* wastes from cleaning of fuels with bases
05 01 12* oil containing acids
05 01 13 boiler feedwater sludges
05 01 14 wastes from cooling columns
05 01 15* spent filter clays
05 01 16 sulphur-containing wastes from petroleum desulphurisation
05 01 17 bitumen
05 01 99 wastes not otherwise specified
13 Oil wastes and wastes of liquid fuels
13 05 oil/water separator contents
13 05 01* solids from grit chambers and oil/water separators

13 05 02* sludges from oil/water separators 13 05 03* interceptor sludges 13 05 06* oil from oil/water separators 13 05 07* oily water from oil/water separators 13 05 08* mixtures of wastes from grit chambers and oil/water separators
13 08 oil wastes not otherwise specified 13 08 01* desalter sludges or emulsions 13 08 02* other emulsions 13 08 99* wastes not otherwise specified
14 Waste organic solvents, refrigerants and propellants
14 06 waste organic solvents, refrigerants and foam/aerosol propellants 14 06 05* sludges or solid wastes containing other solvents
15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
15 02 absorbents, filter materials, wiping cloths and protective clothing 15 02 02* absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances 15 02 03 absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02
16 Wastes not otherwise specified in the list
16 07 wastes from transport tank, storage tank and barrel cleaning 16 07 08* wastes containing oil 16 07 09* wastes containing other dangerous substances 16 07 99 wastes not otherwise specified
17 Construction and demolition wastes (including excavated soil from contaminated sites)
17 05 soil (including excavated soil from contaminated sites), stones and dredging spoil

19 Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use
19 02 wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation
19 02 03 pre-mixed wastes composed only of non-hazardous wastes 19 02 04* pre-mixed wastes composed of at least one hazardous waste 19 02 05* sludges from physico/chemical treatment containing dangerous substances 19 02 06 sludges from physico/chemical treatment other than those mentioned in 19 02 05 19 02 07* oil and concentrates from separation 19 02 08* liquid combustible wastes containing dangerous substances 19 02 09* solid combustible wastes containing dangerous substances 19 02 10 combustible wastes other than those mentioned in 19 02 08 and 19 02 09 19 02 11* other wastes containing dangerous substances 19 02 99 wastes not otherwise specified
19 03 stabilised/solidified wastes
19 03 04* wastes marked as hazardous, partly stabilised 19 03 05 stabilised wastes other than those mentioned in 19 03 04 19 03 06* wastes marked as hazardous, solidified 19 03 07 solidified wastes other than those mentioned in 19 03 06
19 12 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 13 wastes from soil and groundwater remediation 19 13 01* solid wastes from soil remediation containing dangerous substances 19 13 02 solid wastes from soil remediation other than those mentioned in 19 13 01 19 13 03* sludges from soil remediation containing dangerous substances 19 13 04 sludges from soil remediation other than those mentioned in 19 13 03

Appendix C Relevant Health and Safety Legislation

Regulation	Application
Health and Safety at work Act 1974	This act requires site operators to assess the degree of foreseeable risks and apply preventive measures to reduce those risks. To reduce health and safety risks, site operators are required to inform workers of any hazard that they are not aware of, and approach emergency services for assistance
Personal Protective Equipment at Work Regulations 1992	This regulation requires Site operators to provide Personal Protective Equipment (PPE) for their employees where required. All the personnel must use PPE, particularly during oily waste treatment activities.
Manual Handling Regulations 1992	These regulations require employers to avoid manual handling operations where there is a risk of injury. Site operators are required to conduct risk assessments concerning the health and safety of their employees during shoreline clean up and waste disposal activities.
Management of Health and Safety at Work Regulations 1999	Under these regulations, site operators are required to implement effective planning, organising, control and monitoring of health and safety of their employees. In addition, they are required to set a suitable regime for health surveillance and to investigate any condition that might affect health of their employees.
Provision & Use of Work Equipment Regulations 1998 (PUWER 98)	The requirements of these regulations cover most risks that can result from the use of work equipment and from the use of mobile work equipment. These regulations do not place any duties on site employees. They require employers or contractors to use suitable work equipment in order to prevent any risk to their health and safety.

Appendix D - Temporary Waste Storage Location Information Sheet 1

TEMPORARY WASTE STORAGE LOCATION INFORMATION SHEET			
The storage location information sheet is used to compile information concerning the waste which can be stored at a temporary waste storage site. The sheet should be completed in its entirety in as much detail as possible as each question provides valuable information to ensure the best form of treatment is selected for the waste.			
SITE DETAILS			
Site Name		Site Reference	
Address		Postcode	
		Grid Reference	
Site Contact		Landline	
Mobile		Email	
Site Emergency Contact		Fax	
Details of the 'catchment area' which the storage site would cover (receive waste from):			
SITE ACCESS			
Is there road access to the site e.g. for cars, lorries etc?	yes / no	If yes, what is the maximum size the road vehicle can be to gain access by road and how close is the road to the site?	
Is there rail access to the site e.g. for trains, freights etc?	yes / no	If yes, what is the maximum tonnage of the rail vehicle and how close are the tracks to the site?	
Is there port access to the site e.g. for boats, ships etc?	yes / no	If yes, what is the maximum size the floating vessel can be to gain access via the port and how close is the port to the site?	
By inland waterway access to the site e.g. for boats, ships etc?	yes / no	If yes, what is the maximum size the floating vessel can be to gain access by inland waterway and how close is the waterway to the site?	
Are there multiple	yes / no	If yes, which should be used?	

TEMPORARY WASTE STORAGE LOCATION INFORMATION SHEET		
Entrances?		

Is key fob/keypad access used?	yes / no	If yes, is there emergency access (e.g. via security guard, site contact)?
Is there a barrier and/or height restriction?	yes / no	If yes, what is the maximum height and/or width for a vehicle to access the site?
Is 24 hour access to the site required and/or permitted?	yes / no	If yes, by whom, on what basis, etc.
Can local access roads/routes be used by large vehicles, including roads between local access to the site and main trunk roads? Are there any other vehicle restrictions?		

WASTE HANDLING AT THE SITE		
What is the approximate size of the site? (m^2)		What is the maximum height at which the waste can be stored? (m)
How much could be used for storage? (m^2)		What is the maximum height at which the waste can be stored? (m)
Is there any type of waste which the site could not store?	yes / no	If yes, please provide details
Could waste stored on the site migrate off site (e.g. via wind, leaching, rainwater run-off etc.)		If yes, please provide details
If yes, what measures could be used to prevent migration of waste (e.g. bunding, fencing etc.)		If yes, please provide details
Is there a water supply on site?		If yes, please provide details

Is there a power supply on site?	If yes, please provide details

Is there space on site to allow for segregation of the waste?	If yes, please provide details
Are there any sensitive receptors (e.g. to noise, smell) nearby (e.g. housing, school)?	If yes, please provide details
Will the site be completely rehabilitated after the waste has been completely removed?	If no, please provide details and reasons
Name & Reference of nearest intermediate storage facility if known	
GENERAL INFORMATION	
What is the site normally used as/for?	

Can the normal site use/activity be stopped whilst the site is used for storage?	If yes, how long for (approx)?	
	If no, how much of the site (m^3) can be used for storage whilst normal operations continue?	
Describe the availability of the site to be used as a waste storage site on the following scale		
(1 - available 24-7) (2 - Available, causing no/little interference with normal site usage) (3 - Available, causing manageable disruption to site) (4 - Available, but would cause significant disruption) (5 - Available only in case of emergency)		
Is there a weighbridge?	yes / no	