FORTH PORTS LIMITED

OIL SPILL CONTINGENCY PLAN

"CLEARWATER FORTH"

VERSION 01

CONTROLLED DOCUMENT

NB: Copies of the plan are uncontrolled if printed.

2021

Post Holder Responsible for this plan:
Marine Compliance Manager
Forth and Tay Navigation Service
Grangemouth Docks
Grangemouth
FK3 8TQ

Tel: 01324 498584
Email: ftns@forthports.co.uk
website: https://www.forthports.co.uk/marine/emergency-plans/

FORTH PORTS LIMITED
OIL SPILL CONTINGENCY PLAN
MCA Approval Document

ABD/3302/2100043

Maritime & Coastguard Agency

DECLARATION FOR THE ISSUE OF APPROVAL FOR AN OIL SPILL CONTINGENCY PLAN

PARTICULARS OF PORT / ~~HARBOUR~~ / OIL-HANDING FACILITY *

Name of Port / ~~Harbour~~ / Oil-Handling Facility *	CLEARWATER FORTH
Category of Port	A & B
Name of ~~Operater~~ / Company *	FORTH PORTS LIMITED
Address	Forth & Tay Navigation Service
	Grangemouth Docks
	Grangemouth
Post Code	FK3 8TQ

DECLARATION

I declare that the Oil Spill Contingency Plan submitted by the above is relevant and complete in every respect in accordance with the requirements of the Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations 1998 and the Guidelines issued by the Maritime and Coastguard Agency.

Date of Plan: 15 October 2021 — Plan version (where applicable): Version 1

MCA File reference: MPCU 023 / 025 / 003

The Plan shall be accepted as valid until: 14 October 2026

ABERDEEN (Office)	(Signature of Counter Pollution Officer)
15 October 2021 (Date)	GARY SPARK (Name of Counter Pollution Officer)
	Official Stamp
(Signature of Authorised Official reviewing the declaration)	(Name of Authorised Official reviewing the declaration)
Date	

* Delete as appropriate

MSF3302 / Rev0715 1/1

Approval Number: | 3303 / / ABD/3302/2100043

Maritime & Coastguard Agency

APPROVAL OF OIL SPILL CONTINGENCY PLAN

Issued in accordance with the requirements of
the Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations 1998,
under the authority of the Government of
the United Kingdom of Great Britain and Northern Ireland
by the Maritime and Coastguard Agency
an Executive Agency of the Department for Transport.

Name of Port / ~~Harbour~~ / Oil-Handling Facility *	CLEARWATER FORTH
Category of Port	A & B
Name of ~~Operator~~ / Company *	FORTH PORTS LIMITED
Address	Forth & Tay Navigation Service
	Grangemouth Docks
	Grangemouth
Post Code	FK3 8TQ

APPROVAL

Pursuant to the Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations 1998, the Oil Contingency Plan submitted by the above is hereby approved by the Secretary of State for the Department for Transport.

Date of Plan: **15 October 2021** Plan version (where applicable): Version 1

This Plan is valid until: **14 October 2026**

Issued by the Maritime and Coastguard Agency.

Issued at: **ABERDEEN** (Place of issue)

Signed: _____ (Signature of duly authorised official issuing the Approval)

Date: **15 October 2021** (Date of issue)

Name: **GARY SPARK** (For and on behalf of the Secretary of State)

Official Stamp

* Delete as appropriate

MSF3303 / Rev0715

Record of Amendments

AMENDMENT NUMBER	DATE	PAGE NUMBERS AMENDED	AMENDED BY
1	June 2021	Amendments throughout – full review including appendices	S. Cameron

CLEARWATER FORTH DISTRIBUTION LIST	
Copy No.	
1	FORTH PORTS, HARBOUR MASTER (MASTER COPY)
2	FORTH AND TAY NAVIGATION SERVICE
3	MARITIME & COASTGUARD AGENCY CP&SO (ABERDEEN)
4	INEOS GRANGEMOUTH MARINE ASSURANCE MANAGER
5	INEOS GRANGEMOUTH INCIDENT MANAGEMENT ROOM
6 & 7	FORTH PORTS, MEC (x2)
8	INEOS FORTIES PIPELINE SYSTEM

A controlled copy of Clearwater Forth is maintained on the Internet via the following link:
https://www.forthports.co.uk/marine/emergency-plans/

Forth Ports Limited will advise the following organisations of any changes to the plan by email:
MARINE SCOTLAND
NATURESCOT
SCOTTISH ENVIRONMENT PROTECTION AGENCY (SEPA)
FIFE COUNCIL
CLACKMANNANSHIRE COUNCIL
FALKIRK COUNCIL
WEST LOTHIAN COUNCIL
THE CITY OF EDINBURGH COUNCIL
EAST LOTHIAN COUNCIL
FORTH PORTS PUBLIC RELATIONS PROVIDER
INEOS FORTIES PIPELINE SYSTEM
INEOS GRANGEMOUTH
TARGE TOWING LTD
SHELL (UK) EXPLORATION & PRODUCTION
ADLER AND ALLAN
POLICE SCOTLAND
SCOTTISH FIRE & RESCUE
SCOTTISH SOCIETY FOR PREVENTION OF CRUELTY TO ANIMALS
SCOTTISH SOCIETY FOR PROTECTION OF BIRDS
INTERNATIONAL TANKER OWNERS POLLUTION FEDERATION
DEPARTMENT OF TRANSPORT (MARINE ACCIDENT INVESTIGATION BRANCH)
SCOTTISH POWER PLC
FPS MARINE LABORATORY
FORTH PILOTS

CONTENTS OVERVIEW

Section 1: Definition of Plan and Responsibilities

1.1 Policy Statement

Under the *Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998*. (OPRC Regulations) Forth Ports Limited has a statutory duty to prepare for and respond to pollution incidents "at sea" within its area of jurisdiction and to take every possible action to prevent oil impacting on the shoreline. In this respect, there must also be a dedicated oil spill plan in place, which is co-ordinated with the national system.

Clearwater Forth is the oil spill contingency plan and co-ordination scheme for response to oil pollution incidents in the Firth of Forth Harbour Area. The plan is written in accordance with the requirements of the above legislation and lays down procedures that will be adhered to by Forth Ports Limited in order to fulfil these requirements.

1.2 Purpose, Scope and Responsibility of Clearwater Forth

Oil in the context of this plan includes petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products.

The purpose of the plan is to provide guidance to Forth Ports Limited response teams with respect to the steps to be taken when an oil pollution incident has occurred in the Forth Ports Harbour Area.

The Forth Ports Limited Harbour Area includes the waters of the Forth Estuary and Firth of Forth between the Kincardine Bridge to the west and a line joining the North and South Carr beacons to the east (Map 1). The Forth Ports Limited area of jurisdiction also includes the following ports:

- Port of Leith;
- Port of Grangemouth;
- Port of Methil;
- Port of Burntisland;
- Port of Rosyth;
- Port of Kirkcaldy;

Supplementary information is provided in Appendix 11 and Appendix 12 for site specific detail for the Ports of Grangemouth and Leith.

Where a spillage is a part of a wider emergency, such as vessel grounding or collision, then the emergency should be addressed utilising the appropriate emergency procedures that may include:

- Forth Ports Limited Marine Emergency Plan (Emergency Forth)
- Shipboard Oil Pollution and Emergency Plan (SOPEP).
- Where oil is approaching the shoreline or has beached, protection of sensitive areas and amenity beaches and shoreline clean up will be co-ordinated by local authorities based on arrangements outlined in their shoreline clean-up oil spill contingency plans.
- The plan identifies the risks and resources of the Forth Ports area and recommends methods by which the resources can best be protected from oil spills to sea. In accordance with the *Contingency Planning for Marine Pollution Preparedness and Response Guidelines for Ports* (Maritime and Coastguard Agency, August 2020 update) this plan includes the following:
    - Identification of responsibilities and lines of communication;
    - Command and control arrangements (allowing for upgrading or downgrading of response actions);
    - Reporting arrangements;
    - Response actions and tactical response plan;
    - Identification of ecologically sensitive areas, commercial and recreational amenity sensitive areas and identifying from these sensitivities, priority protection areas;
    - Identification of available counter pollution resources;
    - Contact lists.

The Appendices provide the following information:

- Places of Refuge
- Compensation and Legal Matters
- Equipment Inventories
- Media guidance and holding press statements
- UK Approved Treatment Products
- Incident Log Proforma and MCA Annual Return Forms
- MCA STOp Notices
- Marine Hazard Safety Data Sheets

1.3 Consultations

This plan has been prepared in consultation with:

- Maritime and Coastguard Agency (MCA)
- NatureScot
- Scottish Environment Protection Agency (SEPA)
- Marine Scotland
- Local Authorities with a shoreline on the Forth
- INEOS Forties Pipeline System
- INEOS Grangemouth
- Shell

1.4 Oil Spill Planning Legislation

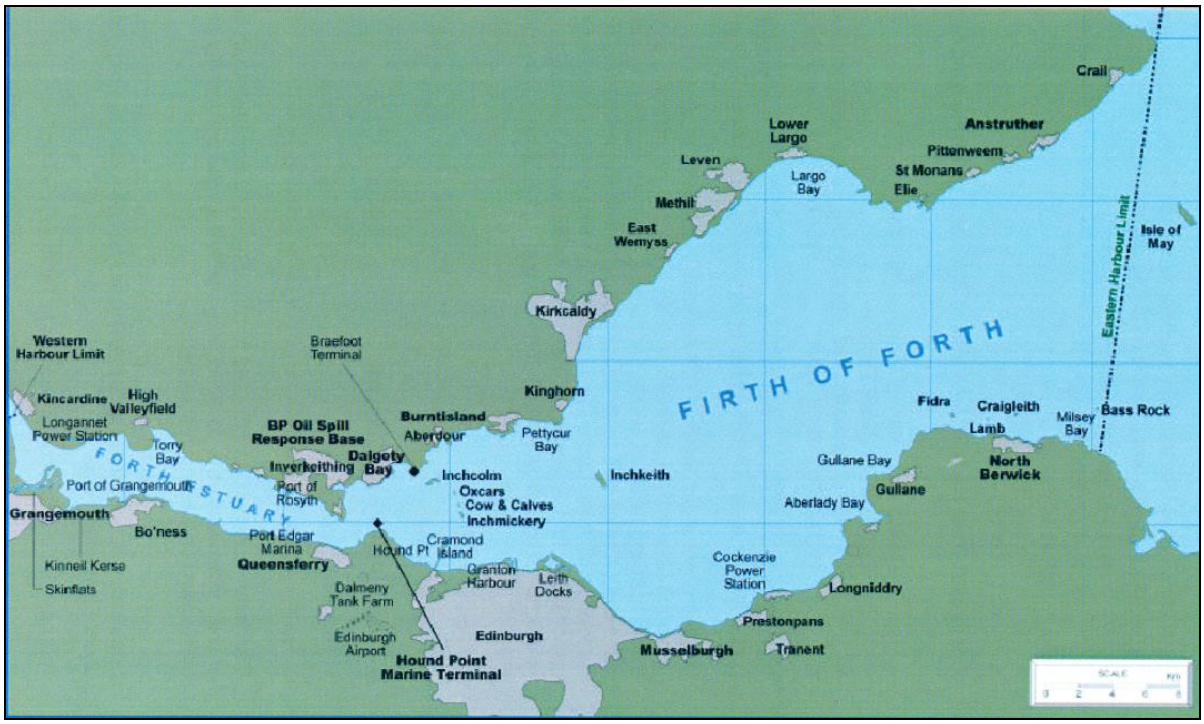
The Clearwater Forth oil spill planning has been drawn up to be in compliance with current oil spill planning legislation. Key legislation governing planning for ports and harbours is outlined in summary form in Table 1.1 below.

Table 1.1 Summary Key Legislation Governing Accidental Oil Pollution Events

Legislation	Key Elements	Key Offences
Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention Regulations) 1998	Requirement for harbours and ports to have in place dedicated oil spill plans and an oil spill response system that includes an element of pre-positioned equipment, training and regular exercise.	Failure to submit an oil spill plan Failure to maintain the oil spill plan in terms of the legislation Failure to report an accidental oil spill Failure to have in place and utilise Tier 2 response resources
Section 293 of the Merchant Shipping as amended by the Merchant Shipping and Maritime Security Act 1997	Gives government powers to intervene in the event of an incident involving a salvage operation in a harbour area.	Failure to comply with a direction given by the Secretary of State's Representative (SOSREP) Obstruction of direction from the SOSREP
Marine Safety Act 2003	Provides powers of intervention and direction to the Secretary of State's Representative for Maritime Salvage and Intervention working with the MCA's Counter Pollution and Response Branch. This intervention includes direction for places of refuge.	Failure to comply with a direction given by the Secretary of State's Representative (SOSREP) Obstruction of direction from the SOSREP

1.5 Use of Plan

This Plan is specifically for operations within Harbour area, for all vessels entering the jurisdiction area (map 1). The Plan is designed to initiate an appropriate oil spill response in the event of an incident. It details a tiered response strategy that is in accordance with UK legislative requirements and takes into account the spill risk associated with the operation; the nature of the hydrocarbons that could be spilt; the prevailing meteorological and hydrographic conditions and the environmental sensitivity of the surrounding areas.



Map 1: Forth Ports Limited Harbour Area

1.6 Responsibilities and Definition of Ports, Harbours and Oil Handling Facilities

Forth Ports Limited is the Statutory Harbour Authority for the Firth of Forth area.

The Firth of Forth Harbour Area also contains several oil handling facilities:

- Hound Point Marine Terminal (INEOS FPS)
- Braefoot Bay (Shell Expro)
- INEOS Grangemouth
- INEOS FPS RLPG (berth within Grangemouth operated by INEOS FPS which handles Refrigerated Liquefied Petroleum Gas)

In addition there are a number of small ports and harbours in the Firth of Forth Harbour Area.

Under the *Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998*, a number of the ports, as well as the oil handling facilities, within the harbour area are required to have in place dedicated oil spill contingency plans that will enable the facility / port to respond to oil spills. Under Clearwater Forth these facilities and ports accept responsibility for responding to Tier 1 spills within their areas of jurisdiction. These facilities and ports are outlined in Table 1.2 overleaf and include.

Clearwater Forth will be activated to co-ordinate the response to larger spills. The oil handling facility areas will therefore be covered by both their individual facility plans and Clearwater Forth.

For spills from the smaller ports that are not required to have dedicated resources, response to all spills into the sea will be made by Forth Ports Limited under Clearwater Forth. This tiered plan activation is outlined in Table 1.2 overleaf.

Table 1.2: Tiered Response Plans for the Firth of Forth Harbour Area

Facility	Definition of Facility Type	Plan Responsibility
Port of Rosyth	Port comprised of riverside berths	Tier 1 - Clearwater Forth (CWF) Tier 2 - CWF Tier 3 - CWF / MCA National Contingency Plan
Port of Leith	Port enclosed by lock gates	Tier 1 – CWF Tier 2 – CWF Tier 3 – CWF / MCA National Contingency Plan
Port of Methil	Port is open to tidal conditions but can be enclosed by dock gates	Tier 1 - CWF Tier 2 - CWF Tier 3 - CWF / MCA under National Contingency Plan
Port of Burntisland	Port is open to tidal conditions but can be enclosed by dock gates	Tier 1 - CWF Tier 2 - CWF Tier 3 - CWF / MCA under National Contingency Plan
River traffic and anchorages		Tier 1 - CWF Tier 2 - CWF Tier 3 - CWF / MCA under National Contingency Plan
Port of Grangemouth	Enclosed port with major oil handling facility	Tier 1 - CWF Tier 2 - CWF Tier 3 - CWF / MCA under National Contingency Plan
Hound Point Marine Terminal	Crude oil loading terminal	Tier 1 – Hound Point MT OSCP Tier 2 – Hound Point MT OSCP / CWF Tier 3 – Hound Point MT OSCP / CWF / MCA National Contingency Plan
Braefoot Bay	Loading terminal for LPG and gasoline	Tier 1– BBMT OSP Tier 2 – CWF / BBMT OSP Tier 3 – CWF / MCA under National Contingency Plan
Port of Kirkcaldy	Port is open to tidal conditions	Tier 1 - CWF Tier 2 - CWF Tier 3 - CWF / MCA under National Contingency Plan
Newhaven	Harbour is open to tidal conditions	Tier 1 - CWF Tier 2 - CWF Tier 3 - CWF / MCA under National Contingency Plan

1.7 Activation of the Clearwater Forth

1.7.1 Categorisation of Oil Pollution Incidents

The scale of response required for a spill incident will depend on the category of spill. Oil pollution incidents are categorised in Table 1.3.

Table 1.3 Definition of Oil Spill Tiers for Clearwater Forth

Tier	Scale of Incident	Mobilisation level
Tier 1	Small operational type spills that may occur within a location as a result of daily activities. These spills will be dealt with using local resources.	Will be dealt with by Forth ports or local responder (Methil & Burntisland); Spills from small ports not required to have dedicated oil spill plans will be dealt with by Clearwater Forth; 3rd party spills or vessels in transit will be dealt with by Forth Ports Limited.
Tier 2	A medium sized spill were immediate resources are insufficient to cope with the incident and further resources may be called in on a mutual aid basis.	Will be dealt with by dedicated port/facility plan in conjunction with Clearwater Forth Requires mobilisation of further resources and may involve local government
Tier 3	A large spill were substantial further resources are required.	A Tier 3 spill is beyond the resources of both local and regional resources and is an incident that requires the involvement of the Maritime and Coastguard Agency (MCA) and activation of the National Contingency Plan.

1.7.2 Plan Activation

Clearwater Forth will be activated to provide the response to Tier 1 spills as specified in Table 1.3 above. The degree to which the incident response organisation will require activation to respond to Tier 1 spills will be at the discretion of the Forth Ports Limited Chief Harbour Master.

In the event of a large spill in the Firth of Forth Harbour Area, (Tier 2 & 3) Clearwater Forth will be implemented, and the response to the incident will be co-ordinated by Forth Ports Limited. The decision to escalate an incident from a Tier 1 to Tier 2 incident will lie with the Chief Harbour Master or his deputy and will depend on a range of factors which may include oil type (e.g. heavy fuel oil, crude oil, and refined products), prevailing metocean conditions, and equipment resources required for the response.

The decision to escalate an incident from Tier 2 to a Tier 3 lays with the MCA's duty Counter Pollution and Salvage Officer (CPSO) in consultation with the Chief Harbour Master. Aberdeen MRCC will have informed the duty CPSO if there is any pollution or threat of pollution i.e. a drifting ship, a grounded ship etc. The CPSO will then decide the relevant course of action, and instigate the appropriate level of response.

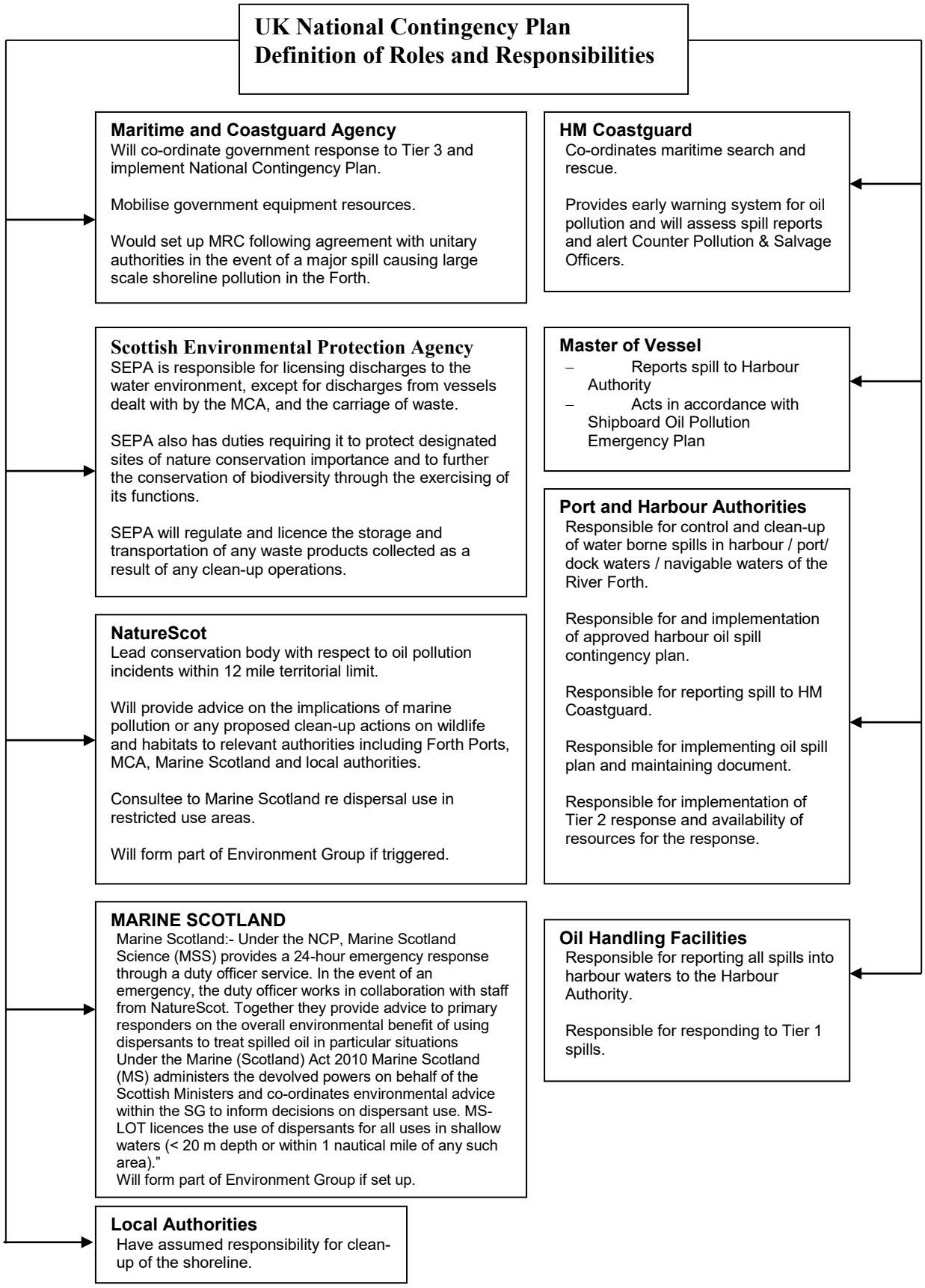
1.8 Oil Pollution Responsibilities & Contingency Plan Activation for the Forth Ports Harbour Area

In the U.K. there is an established national system in place for responding promptly to oil pollution incidents with this system detailed in the National Contingency Plan. The Maritime and Coastguard Agency (MCA) is the competent U.K. authority responsible for responding to pollution from shipping and offshore installations and for implementing the National Contingency Plan. The "*National Contingency Plan; a Strategic Overview for Responses to Marine Pollution from Shipping and Offshore Installations"* was published under a slightly different title in January 2000, with the latest reissued version in September 2014. The NCP sets out revised command and control procedures for incident response. These procedures have built-in thresholds to allow for flexibility of response to different degrees of incident. This system as it applies to harbour areas has oil pollution responsibilities shared amongst:

- Harbour and port authorities
- Oil handling facilities
- Government Departments and Agencies:
    - Maritime & Coastguard Agency (MCA)
    - Scottish Environment Protection Agency (SEPA)
    - Marine Scotland
    - NatureScot
- Local authorities
- The oil pollution responsibilities of these organisations are summarised in Figure 1.1 and are laid out in detail in the NCP, which should be referred for additional detail as, required. The September 2014 version of the NCP is solely electronic with the core document containing hyperlinks that point to additional information. This new format allows for updating of new information and better practices to be undertaken quicker and therefore be more readily available without the need for a length updating exercise. An extract of clean-up responsibilities from the NCP is as follows:

Location of Pollution	Responsibility for Ensuring Clean-up
On the water, jetties, wharves, structures, beach or shoreline owned by the harbour authority within the port/harbour area	Harbour authority
Shoreline (including land exposed by falling tide)	Local authority
Jetties, wharves, structures, beach or shoreline which is privately owned	Owner of the property/land
All other areas at sea (inside the EEZ/UK pollution Control Zone and the UK Continental Shelf	MCA

Figure 1.1 Definitions of Oil Pollution Responsibilities for Clearwater Forth



1.9 Clearwater Forth Contingency Plan Interfaces

The contingency plans that would be activated in response to the range of possible oil pollution incidents in the Forth Ports Harbour Area. This Hound Point Oil Spill Plan describes the contingency procedures that would be initiated by Forties Pipeline System (FPS) in the event of spillages arising from export operations at Hound Point Marine Terminal or spills from vessels from first line ashore until last line gone at Hound Point Terminal. In the event of a major spill Forth Ports will assume the overall command and co-ordination of the incident through Clearwater Forth while FPS On-Scene Commander will support the FPS on-site response. FPS will also contribute to the CWF response.

Interfacing Plans:

- Falkirk Council Oil Spill Plan
- INEOS FPS - Hound Point Marine OSCP
- Shell - Braefoot Bay Marine Terminal Pollution Response Contingency Plan
- East Lothian Council Oil Pollution Plan
- Fife Harbours Oil Pollution Emergency Plan
- Edinburgh Council Oil and Chemical Pollution Emergency Plan
- Babcock OPRC

1.10 Oil Spill Response Training and Exercises

Forth Ports Limited has implemented a rolling programme of training and exercising for all personnel likely to be involved in the response organisation to a spill incident. Each year, a review of training is undertaken and any specific oil spill training needs addressed.

Identified key personnel in the response organisation attend oil spill response courses and personnel already trained attend refresher courses at three yearly intervals. Training records are held by Forth Ports training department.

Training includes oil spill management training, practical response training and foundation courses. Key oil spill response personnel undergo training depending on their position as specified in Table 1.4.

The training courses for Forth Ports Limited are to UK national oil spill response training standards (every three years) and are tailored courses focusing on marine and management issues of oil spill response within the Firth of Forth area as well as the general principles of oil spill response.

Table 1.4: Firth of Forth Oil Spill Response Training Arrangements

Position	Course	UK Accreditation Level
Chief Harbour Master	Response Management	MCA 5P
Senior Harbour Master	Response Management	MCA 5P
Harbour Master	Response Management	MCA 5P
Marine Manager	On Scene Commander	MCA 4P
Deputy Harbour Master	On Scene Commander	MCA 4P
Marine Compliance Manager	On Scene Commander	MCA 4P
Marine Officer	On Scene Commander	MCA 4P
Assistant Harbour Master	First Responder	MCA 2P
Marine Services Resource Manager	First Responder	MCA 2P
Conservancy Manager	First Responder	MCA 2P
Conservancy Surveyor	First Responder	MCA 2P
Operations Supervisor	First Responder	MCA 2P
Tug Crew	First Responder	MCA 2P
Coxswain	First Responder	MCA 2P
Port Marine Operative	Basic Response	MCA 1P
Console Controllers	Basic Response	MCA 1P
Lock side Staff	Basic Response	MCA 1P
Vessel Traffic Services Operator	Basic Response	MCA 1P
All Personnel	Refresher Course (as required)	MCA R

1.10.1 Drills and Exercises

Exercises are regularly conducted at every level to test the response and validate the plan. Exercise programmes follow the recommendations in the MCA Guidelines for OPRC plans and are as follows:

Table 1.5 Forth Ports Limited Exercise Programme

Exercise Type	Description	Frequency
Oil Spill Modelling Software Test	Oil spill release simulation	Monthly
Notification exercises	Exercising MEC control communications	Twice per year
Mobilisation Exercise	Equipment deployment and clean-up involving small boat handling and Tier 1 equipment deployment. Can involve tier 2 contractor.	Twice per year
Table-top Exercise	Test the emergency management knowledge and capability. Can be used to test co-ordination with local authorities and the emergency services. Can be combined with an equipment mobilisation / deployment exercise.	Once per year
Incident Management / Tier 2 exercises* These exercises will normally be conducted as joint exercises with Clearwater Forth partners	Multi agency response and communications exercise	Annually

Annual returns of post incident / exercise reports and annual return form will be made by the Marine Compliance Manager. The MCA pro-formas for these reports are provided in Appendix 5. Logs of all reports are maintained by the Harbour Master Forth Inner. Both training and exercise records are updated annually.

1.11 Document Control and Review Procedure

This controlled document will be revised and re-issued in accordance with the OPRC Guidance requirements and the *Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998*. OPRC guidelines require the plan to be reviewed on at least an annual basis in order to remain valid and accurate. All revisions must be submitted to MCA for approval. Hard controlled copies of the revised plan will be sent to the organisations listed in `Document Control`. A controlled copy will also be placed on the website and an email notification of the revision sent to the listed organisations.

OPRC requirements are as follows:

- Each organisation must fully review its oil spill plan every five years *BUT*
- Where any major change occurs which could affect the validity of the plan or its effectiveness then the plan must be reviewed, amendments made and resubmitted within 3 months of such a change occurring. Such changes would include:
    - A change in the risk i.e. with construction of port facilities; introduction of new third parties;
    - Changes in environmental sensitivities, which would change designation of priority protection areas.

Responsibility for plan revision lies with the Forth Ports Limited Marine Compliance Manager. In particular CWF will be reviewed 9 months before the approval expiry date.

1.12 Environmental Statement

As part of Forth Ports Limited, the Marine Department is committed to fulfilling its' environmental duties as required by the Harbours Act 1964 and other compliance obligations. Ports are required by Government policy to adopt an appropriate balance between conservation of the environment and enabling sustainable economic growth.

Forth Ports Marine Department provide Navigation and Conservancy in the Firths of Forth and Tay and Pilotage and Towage services in the Firth of Forth. To fulfil its commitment to the protection of the environment, including through the prevention of pollution, the department commits to continual environmental improvement, and aims to achieve these commitments through the following:

- Committing adequate resources to departmental activities to allow for effective environmental stewardship to be carried out in line with the provision of departmental services.

- Pursuing continual environmental performance improvement through the company's procurement process by reviewing the environmental performance attributes of plant and equipment prior to selection.

- Undertaking a biennial review of selected department activities to identify opportunities for improving environmental performance.

- Ensuring that all departmental activities, as well as the activities of those carrying out work on behalf of the department, at least match adopted compliance obligations, and where possible exceed them.

- Executing an annual competency review to ensure that there are sufficient human resources within the department to allow for adopted environmental commitments and statutory responsibilities to be effectively met.

- Undertaking and regulating marine movements in such a way as to safeguard water users, the marine and adjacent land environment and local communities.

- Maximising response capabilities by regularly exercising contingency plans (whether pollution prevention or emergency plans) and ensuring that selected emergency exercise scenarios drive continual improvement in departmental and other stakeholder capabilities.

- Undertaking appropriate assessments under the Habitats Directive for new projects, as required.

- Where appropriate, consulting with identified interested parties such as relevant statutory authorities, regulators and stakeholders, as well as local community groups where there are areas of common interest.

- Maintaining membership of the Forth Estuary Forum and Tay Estuary Forum and taking an active role in the management of these organisations and the initiatives they develop.

- Ensuring that all waste is disposed of responsibly, or where practical, recycled or re-used.

- Communicating this Environmental Policy to identified interested parties such as Marine Department staff and where necessary provide guidance and appropriate training.

- Reviewing this Policy at regular intervals.

Section 2: Risk Assessment

2.1 Approach and Methodology

This risk assessment has been carried out for the Forth Ports Harbour Area to:

- Identify sources of potential oil pollution in the Firth of Forth;
- Provide an estimate of the likely frequency of oil spills in various size ranges;
- Identify and rank key areas of relative oil spill risk in the Firth of Forth Harbour Area.

As data on numbers and amounts of spills in UK ports and harbours are incomplete, detailed statistical analysis is not feasible. Emphasis is therefore placed in the following assessment on identifying trends and providing a qualitative estimate of oil spill risk. The following approach and databases have been used to develop the risk assessment:

1. The Advisory Committee on Pollution of the Sea (ACOPS) maintains a database of confirmed cases of marine oil pollution annually. This database is the most consistent available record for spills in ports, harbours, estuarine areas and nearshore waters. Because however the spill reports to ACOPS are based on submission of questionnaires, it cannot be taken as a complete record of all spills and is not therefore treated in this analysis as a complete historical database of all spills into ports and harbours. The data can, however, be used to identify trends. Data has therefore been extracted from the ACOPS reports to provide an indication of the main sources of oil pollution in UK ports, harbours and estuarine waters. The data in the ACOPS reports reveals a high degree of consistency between years of reporting.
2. Field survey, identification and mapping of the point sources of risk; analysis of the Harbour records of traffic; and identification of the types of hydrocarbons that can be spilt from the point sources has formed a fundamental basis for the risk assessment. Risk assessment data for oil handling facilities and oil tanker traffic has been based on data for product carriers, small crude oil and large crude oil carriers from ITOPF, Lloyds Register of Shipping World Fleet Statistics, World Casualty Statistics and BP data.
3. Environmental database and the priority protection areas in the Forth Ports Harbour Area.
4. Slick trajectory analysis to determine times to beaching given a range of oil spill scenarios.

2.2 Sources of Marine Pollution for Ports, Harbours and Nearshore Waters in the UK

The ACOPS empirical data provides an overview of spills in UK ports, harbours and nearshore waters as it is not confined to data on spills associated with tankers alone. Reported locations of all vessel-source oil discharges are provided for UK ports and harbours and nearshore waters in Table 2.1 and Figure 2.1.

Table 2.1 Total Incidents Reported and Distribution by Marine Zone (extract ACOPS 2017)

Enumeration Area	Open Sea	Tidal river / estuary	Bay / nearshore waters	Beach / shore	Port / harbour	Total
Eastern Scotland	2	-	-	-	17	19

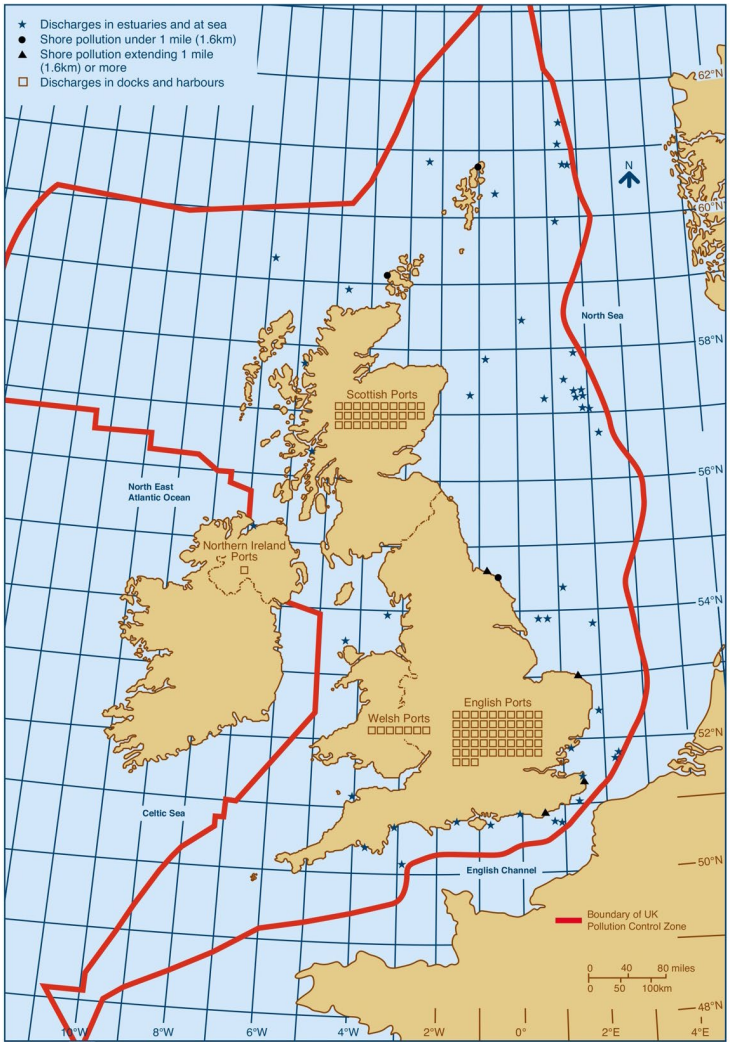


Figure 2.1: Locations of reported oil discharges attributed to vessels (ACOPS, 2017)

Twenty discharges from vessels were recorded in the Eastern Scotland region during 2017, four fewer than the previous year's total. Seventeen of these spills occurred in port and harbours and two in the open sea/nearshore. The sources of pollution in identified cases included fishing vessels, offshore support vessels, coastal tanker, offshore oil and gas installation, pleasure craft and other types of vessels (http://www.acops.org.uk, accessed 2017).

2.3 The Firth of Forth Spill Report Data

As with the data for the UK, spills from `other vessels` are the most commonly occurring sources of spillage; spills from tankers and oil handling facilities do occur but represent a small percentage of the total number of spills.

Bunker oil and diesel oil are the hydrocarbons most commonly spilt, although in predominantly small quantities such spills groups together bunker, diesel, fuel and gas oils.

2.4 Shipping and Tanker Oil Spill Data- Worldwide

The number of large spills has decreased significantly over the last few decades during which records have been kept. The average number of major spills for the decade 2010-2019 is 1.8 which is less than a tenth of the average for years in the 1970s. 54% of the large spills recorded in the 1970s. This figure has decreased each decade to 8% in the 2000s. No large spills were recorded in 2020. A decline can also be observed with medium size spills (7-700 tonnes) in Figure 2.5.

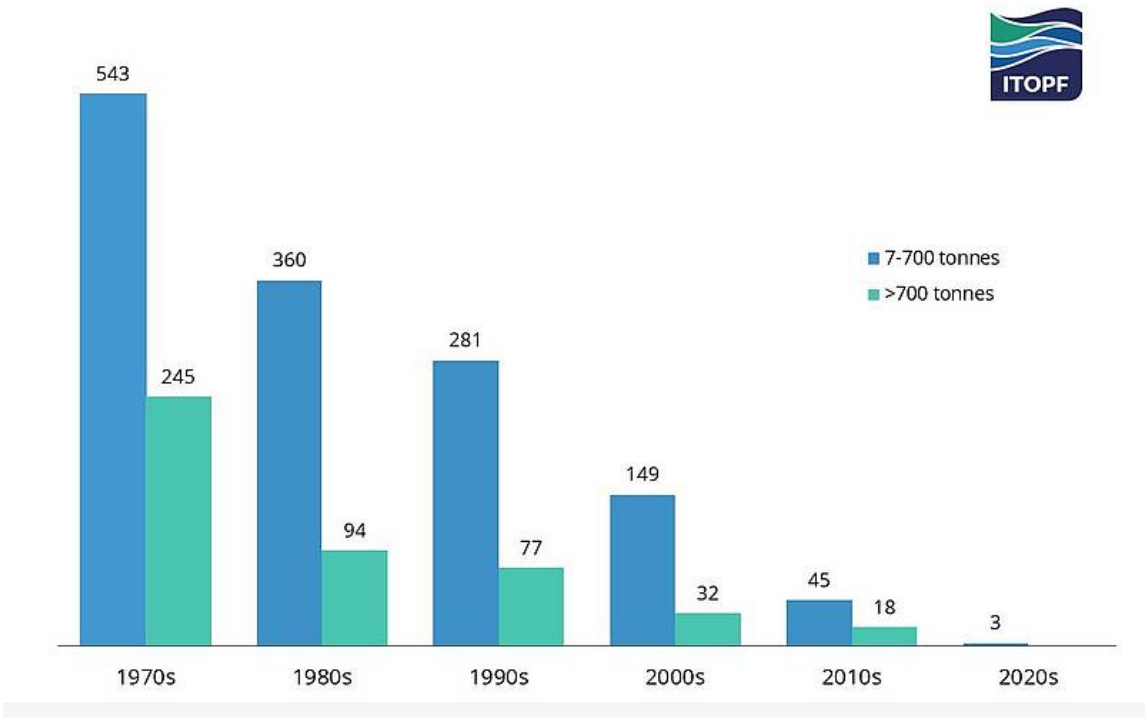


Figure 2.5: Number of medium and large spills per decade from 1970 to 2020 (ITOPF, 2020).

2.5: Shipping and Tanker Spill Risk- Firth of Forth

2.5.1 Forth Estuary Spill Risk Assessment

Most spills from tankers result from routine operations such as loading, discharging and bunkering which normally occur in ports or at all terminals (ITOPF). Data from the Forth Estuary suggests that the trend identified for the ITOPF worldwide data is reflected in the likely spill risk for the Forth Ports Harbour associated with tanker operations and oil terminals and jetty operations (Forth Estuary Oil Spill Risk Analysis Report No. HSQ/SE/90/025). Sources of spills associated with these facilities and associated operations include:

- Leak / failure of risers to jetties
- Leaks from valves and pipe work on jetties
- Loading arm / connection seals leakage / failure
- Vessel tank overflow
- Vessel sea valve leakage
- Structural damage to vessel due to collision or grounding.

The Hound Point Marine Terminal in the Firth of Forth Harbour Area has a separate Oil Spill Contingency Plan. This includes an oil spill risk assessment for tanker operations at the Hound Point Jetties.

At INEOS Grangemouth there is a fully operational tanker berthed at Jetty E1. This vessel acts as a Floating Storage Unit (FSU). Daughter vessels berth alongside the FSU to load and discharge oil products. Four Yokohoma fenders of appropriate specification will be positioned alongside the FSU before the Daughter vessel berths.

Table 2.2: Spill frequency data for shipping, including vessels in transit

Jetties	Spill Range	Expected Frequency
Oil tanker spill	Spills of 900 tonnes	1.5×10^{-3}
	spills of up to 2400 tonnes	1.3×10^{-3}
	spills of up to 4500 tonnes	5.2×10^{-3}
	spills of up to 9000 tonnes	2.4×10^{-3}
	spills of up to 12000 tonnes	7.3×10^{-5}
	spills of up to 15000 tonnes	1.3×10^{-6}
Total risk		**1.04×10^{-2}**

The above table provides a quantitative assessment of leak occurrence frequency for various spill sizes for shipping incidents in the Firth of Forth, including vessels in transit. The spill risk assessment suggest that, for traffic associated with the 2 jetties, the risk is one major spill every 100 years.

2.6: Oil Spill Modelling

A range of spill scenarios have been modelled for the Firth of Forth using oil spill modelling software:

Table 2.3: Slick trajectory analysis summary of results

LOCATION: 0.25 NAUTICAL MILES NORTH EAST OF GRANGEMOUTH DOCKS ENTRANCE			
Oil type and volume	**State of Tide**	**Wind Direction & Speed**	**Location of Beaching and Time Taken**
Heavy fuel oil 50 tonnes	Spring ebb.	225° (S.W) 09 Knots (F. 3)	Initial impact: Longannet Point Time taken: 1 hour 10 minutes
Forties blend 10 tonnes	Neap flood	090° (E) 09 Knots (F.3)	Initial impact: 0.8 nautical miles south of Kincardine Bridge Time taken: 5 hours 12 minutes
Forties blend 10 tonnes	Neap flood	300° (E.N.E) 09 Knots (F.3)	Initial impact: Foreshore of Grangemouth Refinery Time taken: 3 hours 49 minutes
LOCATION: HOUND POINT OIL TERMINAL			
Forties blend 10 tonnes	Spring ebb	225° (S.W) 10 Knots (F.3/4)	Initial impact: Inchcolm Island Time taken: 2 hours
Forties blend 10 tonnes	Spring flood	090° (E) 10 Knots (F.3/4)	Initial impact: North Queensferry Time taken: 1 hour
Forties blend 10 tonnes	Neap flood	225° (S.W) 30 Knots (F. 7)	Initial impact: North west of Ross Point Time taken: 3 hours
Forties blend 100 tonnes	Neap ebb	090° (E) 30 Knots (F.7)	Initial Impact: North Queensferry to Port Laing Sands Time taken: 55 minutes

LOCATION: BRAEFOOT TERMINAL			
Heavy fuel oil 100 tonnes	Spring flood	315° (N.W) 9 Knots (F.3)	Initial impact: Dalgety Bay Time taken: 52 minutes
Heavy fuel oil 100 tonnes	Neap ebb	000° (N) 19 Knots (F.5)	Initial impact: Braefoot Terminal foreshore and beyond Time taken: 52 minutes (all oil ashore in 4 hours)
LOCATION: FAIRWAY BUOY (APPROXIMATELY 7 NAUTICAL MILES NORTH EAST OF LEITH DOCKS)			
Oil type / volume	State of Tide	Wind Direction & Speed	Location of Beaching and Time Taken
Heavy fuel oil 100 tonnes	Neap ebb	180° (S) 9 Knots (F.3)	Initial impact: Largo Bay Time taken: 47 hours
Heavy fuel oil	Spring flood	090° (E)	Initial Impact: Inchcolm Island

100 tonnes		19 Knots (F.5)	Time taken: 13 hours 16 minutes
LOCATION: OPEN WATER APPROX 4 NAUTICAL MILES NORTH OF Nth BERWICK) 056° 08′ 09″ N - 002° 44′ 32″ W			
Heavy fuel oil 100 tonnes	Neap ebb	000° (N) 15 Knots (F.4)	Initial impact: North Berwick Time taken: 5 hours 12 minutes
Forties blend 100 tonnes	Spring flood	135° (S.E) 15 Knots (F.4)	Initial impact: East end of Largo Bay Time taken: 6 hours

The data suggests that under a range of tidal conditions and wind speeds, oil spilt from the above point sources will beach rapidly and, in several cases, within 2 hours of the spill taking place.

2.7: Risk Assessment for the Forth Ports Harbour Area

The Risk Assessments for CWF are now included in the Forth Ports Risk Assessment matrix which is kept live online. The latest version of Risk Assessments can be found on the Forth Ports website.

2.8: Risk Management

Forth Port Limited as a Statutory Harbour Authority complies with the provisions of the Port Marine Safety Code this compliance being independently audited. Within the Port Marine Safety Code Safety Management System a wide range of procedures based on risk assessment are in place to ensure that risks to vessels, and therefore risks of major and minor liquid hydrocarbon spillages to sea, are reduced to "As Low as Reasonably Practicable" (ALARP). These include the following:

Forth and Tay Navigation Service is manned 24 hours a day, 365 days a year by five fully qualified Assistant Harbour Masters and five fully qualified VTS Officers. The service they provide includes radar surveillance of the Forth Estuary from the Eastern Port Limits (Tantallon Castle on the south shore to Fife Ness on the north shore). Their duties include enforcement of the Forth General Directions and Navigation Byelaws. These ensure a safe and speedy passage of all commercial and naval shipping.

Forth Ports monitor shipping with AIS, CCTV, VHF and Radar. The radars covering the Forth Estuary are located at Gullane, Leith, Burntisland, Grangemouth and Rosyth. In addition, Forth and Tay Navigation Service personnel monitor meteorological and tide stations located at strategic positions around the Forth and maintain and update an Integrated Port Operating System (IPOS) that records all details of ship voyages in the estuary. Radar picture and IPOS database can be viewed and accessed by the Harbour Masters in the main ports in the Estuary.

As responsible operators, INEOS Grangemouth and Forth Ports exercise extensive precautions to prevent accidental spillages associated with operations at the Port of Grangemouth. As part of these precautions, INEOS Grangemouth ensures strict attention to controls for tanker arrival, berthing, loading and departure and to operating and maintenance procedures at the jetties. These controls include ship vetting, mooring procedures during berthing (including tug provision), jetty regulations, preloading checklists for jetties, visual inspections and safety checklists for the vessel, constant supervision and checks during (un)loading and the provision of a dedicated OSCP.

<u>Procedures (including but not restricted to the following):</u>

1. At least 24 hours before a ship arrives on the Forth it must provide pre-arrival information e.g. Name, IMO number etc. A ship must have a passage plan to the port to which they are stemmed. Checks are made at the Eastern Limits of the Firth and recorded on the VHF, the checks verifying the information sent in the pre-arrival message.

2. Ship wishing to bunker must comply with the Forth Ports Bunkering Procedure. This procedure can be viewed on the Forth Ports website.

3. The Marine Guidelines and Port Information document contains comprehensive guidelines for the safe docking and undocking of vessels in the Harbour Area and for safety in transit. This information can also be viewed on the Forth Ports website.

4. Jetty regulations and Oil Spill Contingency Plans of the Marine Terminals at Hound Point and Braefoot Bay.

Section 3: Incident Management System

3.1: Firth of Forth Incident Command System

The management response to larger oil spill incidents in the Firth of Forth Harbour area will invariably require a co-ordinated response by a range of organisations which, depending on the source and location of the incident, may include:

1. Police Scotland;
2. East Lothian, Edinburgh, West Lothian, Falkirk, Clackmannan and Fife Councils;
3. INEOS Forties Pipeline System (Hound Point Marine Terminal);
4. Shell (Braefoot Bay Terminal);
5. MRCC;
6. Marine Scotland;
7. Scottish Environment Protection Agency;
8. NatureScot;
9. Maritime and Coastguard Agency;
10. Secretary of State's Representative (SOSREP);
11. Towage contractors and salvors;
12. INEOS Grangemouth.

As the Clearwater Forth response for oil pollution incidents is likely to require the integration of a multiple agency response, the management system has a unified command structure. This is designed to allow all parties who have responsibility in a multi-jurisdictional incident to contribute to:

- the process of determining overall incident objectives;
- selection of response strategies;
- joint planning for tactical situations.

There is therefore a mechanism for joint decision making by Forth Ports Limited in consultation with participating members of Clearwater Forth to ensure that maximum use is made of all available resources within the Clearwater Forth Scheme.

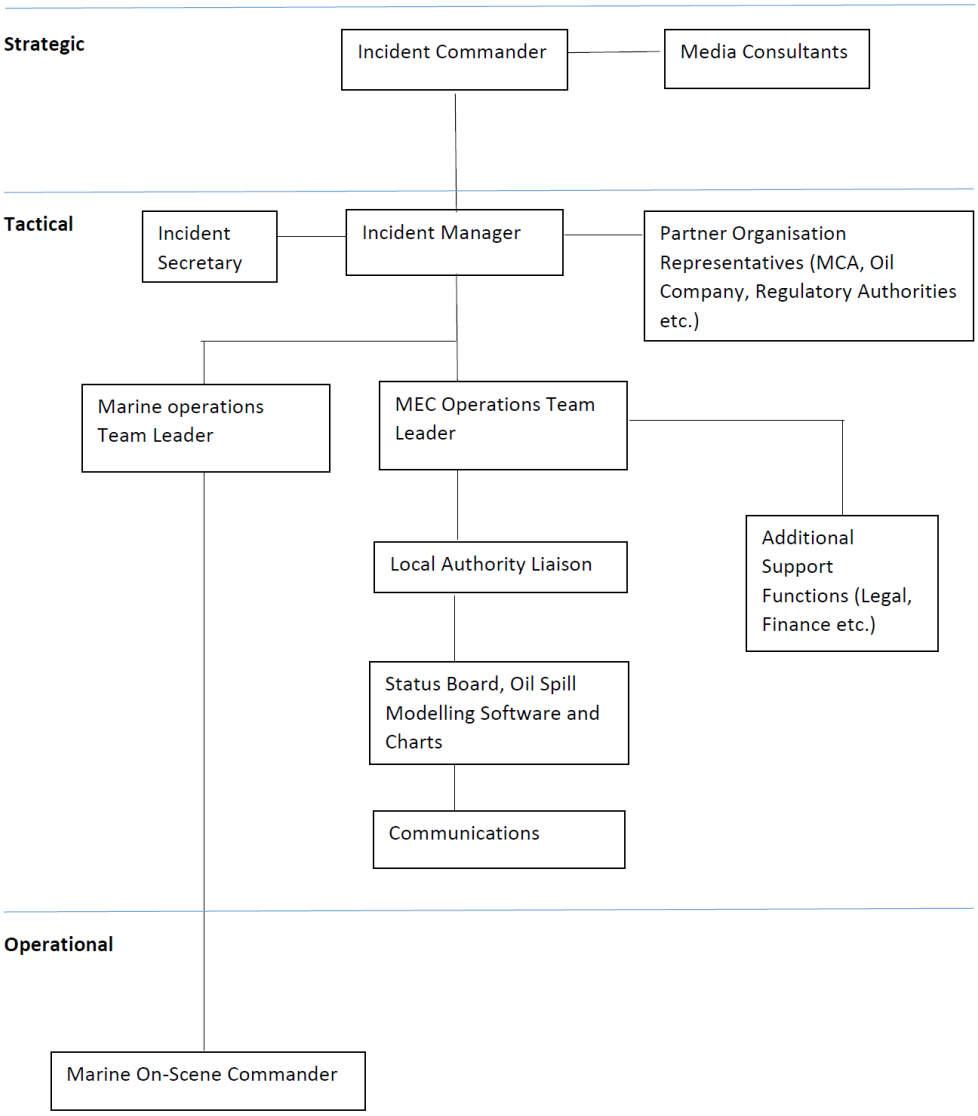


Figure 3.1 Clearwater Forth Incident Management Team Organisations

3.2: Clearwater Forth Incident Management Team

The Clearwater Forth Incident Management Team (IMT) has a structure as shown in Figure 3.1. This is divided into "Strategic", "Tactical" and "Operational" levels to conform to the normal practice in Integrated Emergency Management. The IMT will normally operate from the Marine Emergency Centre at Forth and Tay Navigation Service.

The Incident Commander (IC) is in overall charge but delegates the tactical management of the response to the Incident Manager. The Incident Commander is then able to consider matters from a strategic aspect and will liaise with other organisations at executive levels such as the Strategic Co-ordination Groups. The IC will also deal with the media through the company's media consultants.

The Incident Manager is responsible for the response to the incident at a tactical level. He will consult with the IC regarding the development of the incident including whether to mobilise additional support functions in the IMT. He will co-ordinate the activities of the Team Leaders and any additional Support Functions. He will brief the partner organisation representatives on their arrival.

In particular he will ensure that the Incident Secretary maintains the Incident Log and directs the preparation of the SITREPs. The Incident Manager will ensure that the process of the IMT operates effectively.

The Marine Operations Team Leader reports to the Incident Manager and is responsible for all-tactical command and co-ordination of the waterborne response in accordance with the joint approved incident action plan. Typically this Team will manage containment, recovery and clean up.

Units within the Marine Operations Team include Marine On-Scene Commander & the members of the water borne response team at the scene of the incident.

The MEC Operations Team Leader reports to the Incident Manager and is responsible for the efficient running of the MEC. This includes the collection, evaluation, and use of information about the development of the incident and status of resources. The Incident Manager will rely on him to assess the situation and develop potential plans of future action.

The MEC Operations Team Leader will ensure that communications are established with the Local Authority IMT, that the status boards and charts are kept up to date and that the oil spill modelling software predictions are run. FTNS staff will be trained in the various roles and called in as required by the scale of the incident.

Support Functions from Forth Ports and representatives from partner organisations may join the IMT as required by the nature of the incident. This may include for example personnel from ship managers or owners, the emergency services or Local Council Emergency Planning Officers.

Depending upon the circumstances of the incident, the Incident Manager and teams may be required to co-ordinate actions with the Salvage Control Unit which implies the close co-ordination of search and rescue, salvage and oil pollution response operations.

Teams may be further subdivided into Units (managed by Unit Heads) as required by the nature and size of the incident and supplemented by additional support teams as indicated in Figure 3.1. It will be the responsibility of the Incident Manager to make a decision as the requirements of the units. This system pertains to all levels of plan activation from Tier 1 to Tier 3 spills.

Tier 3 Incidents

During Tier 3 incidents, advice and support will be provided to the Incident Management Team by the MCA. The presence of the duty Counter-Pollution and Salvage Officer (CPSO) within the Marine Emergency Centre would be the most effective method of providing such support.

In addition, the following Unit will be required to support the Incident Management Team:

The *Public Relations and Information Unit* will provide information on the incident to the public and news media. This group will prepare news releases, pre-agreed under the unified command structure, and will handle all inquiries from the media and other non-government agencies.

3.3 Team Expansion and Down-Manning

If, because of the size of the incident, an additional support function is not directly staffed then that functional responsibility becomes the direct responsibility of the incident. If therefore the Incident Manager can manage all the areas of responsibility required for the incident response, no further response personnel will be required. If the incident is of a size that one or more of the areas of functional responsibility require independent management then an individual must be assigned to that function.

In the Incident Management Team, sub units should be no larger than 3-7 personnel. Team functions likely to require larger manning levels are subdivided into Units, led by Unit Heads.

According to the circumstances of the case additional groups such as a "Scientific and Technical Advice Cell (STAC)" might be established to advise the Incident Management Team. However additional groups are unlikely to be present in the MEC with the exception of a liaison officer.

3.4: Matrix of Roles

In order to ensure integration of all participating members into the functional teams and units, functions have been pre-planned for Forth Ports and participant members. The allocation of functional roles is not intended to be definitive and is likely to change dependent on the nature of the incident and the availability of participants able to respond.

The MEC Team leader is responsible to the Incident Manager for ensuring that a duty roster is prepared to ensure that the MEC continues to operate efficiently over an extended period. This may include ensuring that additional personnel are available to carry out the duties as specified in table 3.1 through the following measures (but not limited to these)

1. Standing down personnel who have reported for duty as part of the initial response.
2. Contacting personnel who are on their rest days or on leave.
3. Arranging for assistance from qualified personnel from other Forth Ports Limited operations (e.g. Dundee or Tilbury).
4. Suspending operations on a temporary basis to free-up personnel including recalling personnel from training courses.

The MEC Team Leader is also responsible to ensure that suitable accommodation is available for personnel who have been brought in from other areas. In addition personnel who have been on duty for an extended period may require to rest before travelling home. During a protracted, long running incident then all available trained personnel (large pool of responders) will be called upon and management personnel will be placed on rotations. Back up resources can be sources from anti-pollution contractors. Accommodation and facilities/ resources will be provided where required and will be the responsibility of the Logistics Team as per the action cards.

Catering requirements can be met through the normal company procedures; tea, coffee and other refreshments are always available.

Table 3.1: Incident Response Functions Matrix

Tier 1 Tier 2 Tier 3	Incident Commander	INCIDENT Manager	MARINE Operations Leader	MEC Operations Leader	Additional Support Functions	Partner Organisation
Chief Harbour Master (CHM)	1 & 2 & 3					
Marine Manager (MM)	1 & 2 & 3 (CHM Depute)	1 & 2 & 3	1 & 2 & 3			
Senior Harbour Master (SHM)	1 & 2 & 3 (CHM Depute)	1 & 2 & 3	1 & 2 & 3			
Deputy Harbour Master (DHM)/Marine Compliance Manager (MCM)	1 & 2 & 3 (CHM Depute)	1 & 2 & 3	1 & 2 & 3	1 & 2 & 3		
Assistant Harbour Masters (AHM)	1 & 2 & 3 (Until Relieved)	1 & 2 & 3 (Until Relieved)	1 & 2 & 3 (Until Relieved)	1 & 2 & 3		
Vessel Traffic Service Officers (VTSO)				1 & 2 & 3 (Sitreps etc)		
Marine Officer	1 & 2 (Until Relieved)	1 & 2 & 3 (Until Relieved)	1 & 2 & 3 (Until Relieved)	1 & 2 & 3	1 & 2 & 3	
Conservancy Manager			1 & 2 & 3	1 & 2 & 3	1 & 2 & 3	
Available Forth Ports Staff					1 & 2 & 3	
Secretary to the CHM		1 & 2 & 3 (Incident Secretary)				
Forth Ports Limited PR Consultants	1 & 2 & 3 (Media)					
Police Scotland						2 & 3
MCA MRCC Aberdeen		1 & 2 & 3				2 & 3
INEOS Forties Pipeline System (FPS)						2 & 3
INEOS Grangemouth						2 & 3
Shell						2 & 3
NatureScot						2 & 3
Marine Scotland						2 & 3
SEPA						2 & 3
Council EPO's						2 & 3
Council OPCO's						2 & 3
Council Waste Disposal Officers						2 & 3
MCA						2 & 3

3.5: Incidents Involving Mobilisation of the Salvage Control Unit and the Secretary of State's Representative (SOSREP)

3.5.1: SOSREP

Section 293 of the Merchant Shipping as amended by the Merchant Shipping and Maritime Security Act 1997 gives the Secretary of State powers to intervene in the event of an incident where there is a significant threat of pollution to the UK's pollution control zone, territorial waters or coastline. This legislation has arisen in the event that a salvage operation for a vessel is required and that the spill must minimise spillage of oil and must not interfere with pollution response operations.

In accordance with the recommendations contained within "Lord Donaldson's Review of Salvage and Intervention and their Command and Control" a recommendation was made that a single representative should be authorised to act on behalf of the Secretary of State for Trade and Industry. This is the Secretary of State's Representative (SOSREP).

In the case of ports and harbours the SOSREP's duties are in respect of salvage only. SOSREP will formally intervene if the salvor does not act in the public interest, tacit approval can be given by SOSREP under the proviso that SOSREP is kept informed of all intended actions. The SOSREP's role is to represent the over-riding interests of the State and to prevent or reduce pollution. His role does not extend to dealing with the clean-up operation, this responsibility remains with the operator through their own oil spill response arrangements, detailed in the OSCP.

Incidents involving the SOSREP, or his deputy, include incidents involving a vessel where there is, or may be a risk of, significant pollution, or where the Harbour Authority is failing or has failed to implement effective control and preventative operations. This means that the SOSREP, or deputy SOSREP, could be activated even in the event that an incident has not yet occurred but where is there is a risk of such pollution occurring.

The SOSREP could therefore become involved in any of the Tiers of Incident defined in Section 1.

3.5.2: Notification of Incidents

When the MCA (Aberdeen MRCC) is notified of an incident where there is or may be a risk of significant pollution, they will immediately inform and liaise with the duty CPSO to:

1 evaluates the scale of the incident;

2 decide if the SOSREP should be notified of the incident.

The final decision to notify SOSREP will be the responsibility of the Duty CPSO.

3.5.3: Intervention

Once SOSREP or MCA has decided that it may be necessary to intervene in an incident, he will advise the parties in charge of the casualty, or to whom directions are likely to be given, accordingly. Initial intervention is likely to follow a prior warning to the casualty or her owners that the powers of Intervention may be exercised. This will be accompanied by an offer of help from the MCA and a request for information about the situation and the Master's intentions.

Initial intervention is likely to be a formal Direction that the owners/salvors plans and intentions are submitted to and approved by SOSREP.

The process of intervening means that the Secretary of State can then issue specific "Directions" to certain specified persons or bodies including:

- **Masters**
- **Owners**
- **Salvors**
- **Pilots**
- **Operators**
- **Managers**
- **Insurers**
- **Persons in Control of Land**
- **Harbour Authorities**

Under the Dangerous Vessels legislation SOSREP could also give Directions to a Harbour Master for the purposes of securing the safety of any person or vessel. This will override Directions which may already have been issued by the Harbour Master to a casualty.

The nature of the directions can be wide ranging provided they are for the purposes of preventing pollution or the risk of pollution and are as respects the ship or its cargo.

3.5.4: Establishment of the SCU

When intervention has been triggered, SOSREP will establish a Salvage Control Unit or SCU. This Unit is led by SOSREP who will oversee, control and if necessary, intervenes in salvage operations where there is a risk of significant pollution. SOSREP works with a very small team of advisors to encourage salvage contracts and requires that the salvor prepares a salvage plan for agreement by SOSREP prior to any action taking place.

The SCU will be located adjacent to the Marine Emergency Centre, FTNS Building, Grangemouth.

3.5.5: Composition of the SCU

The Salvage Control Unit (SCU) is a small group of key people. Normally they will be:

- SOSREP
- A Salvage Manager representing the on board Salvage Master

- The Harbour Master or Marine Manager if the incident is in or near a harbour or if his harbour is likely to be used as a place of safety to which the casualty may be brought
- An Owner's Representative
- A CPSO with expertise in pollution cleanup – this person will also liaise with the Maritime and Coastguard Agency's Marine Response Centre, which will be co-ordinating, the at sea cleanup.
- An Environmental representative – who will advise SOSREP and form the liaison with the various environmental groups,
- A personal Salvage Advisor who SOSREP has engaged.

This team will interact with an on-board team who will normally consist of:

- the Salvors,
- SOSREP's representative and
- in certain cases a Shipowner's Casualty Representative.

3.5.6: Places of Refuge

Places of refuge are locations into which a ship, which is in need of assistance can be brought, so that its condition can be stabilised and consequential pollution damage to the seas and coasts be averted. In addition, please refer to Appendix 6.

In the UK, the Marine Safety Act 2003 provides powers of intervention and direction to the Secretary of State's Representative for Maritime Salvage and Intervention (SOSREP), working with the MCA's Counter Pollution and Response Branch.

SOSREP oversees all incidents in UK waters where there is significant risk of pollution, and he or the MCA directs vessels to places of refuge when he judges it appropriate. When a ship in need of assistance requires a place of refuge, SOSREP will take account of all the factors which relate to the specific incident, such as the weather, the geographical whereabouts of the incident and the type of threat posed by the vessel and its cargo, with a view to determining the most appropriate place of refuge, minimising adverse consequences.

3.6: Incident Control Centre

The Forth Ports MEC will normally manage Tier 1 & 2 incidents in the first instance. As defined in the National Contingency Plan (NCP) however, a number of control centres could be mobilised to manage an oil spill incident. Those mobilised will depend on the incident and Tier of spill. The incident response centres that could be manned for oil pollution incidents are detailed in the diagram below. These include the additional centres that could be set up if SOSREP becomes involved in the incident.

The in - built flexibility in the NCP means that not all of these response cells will need to be set up in every incident. The response will be dictated by the scale and type of incident and will be mobilised by the Harbour Authority, MCA and SOSREP. As is described in the NCP, the MCA will set up their own MRC whilst the Harbour Authority will set up their own dedicated command and control centre which will liaise with the MCA MRC and with the SCU and via the ELO with the Environment Group.

3.6.1: Marine Emergency Centre

All incidents will be co-ordinated from the Marine Emergency Centre (MEC) at FTNS Building, Grangemouth.

3.6.2: Participant's Emergency Control Centres

The following participants emergency control centres will provide communications with MEC:

- Hawes Pier Forward Incident Support Room
- MRCC Aberdeen
- Braefoot Bay Terminal Emergency Response Centre
- Local Authority Response Centres
- INEOS Grangemouth Incident Management Room (IMR)
- INEOS FPS IMT

3.6.3: East of Scotland Regional Resilience Partnerships

In Scotland, on shore, the relevant Local Resilience Partnership will co-ordinate the multi-agency response to a marine emergency. The roles of local and regional partners, as well as regional and national support arrangements, will follow the guidance contained within 'Ready Scotland- Preparing Scotland' (http://www.gov.scot/Publications/2012/03/2940). Local and Regional Resilience Partnerships, dependent upon the scale of the incident or emergency, will cover the functions previously carried out by the Shoreline Response Centre. These partnerships will establish the required management teams at all relevant levels i.e. Operational,

Tactical and Strategic, and, if required, implement the linkages into Scottish national structures.

3.6.4: Environment Group

The Environment Group (EG) provides a single advisory line on public health and environmental issues at sea to all response cells. Where an incident poses a significant threat to health or the environment on land, the Resilience Partnership may establish a Scientific and Technical Advice Cell (STAC) and this may be integrated within the EG. At the outset of an incident, at sea, the MCA triggers the formation of an EG to provide advice requiring a local, regional or national response. Standing EGs cover the entire UK coastline and the MCA co-ordinates the geographical coverage of individual Standing EGs, their contact details and call out arrangements. The EGs comprise the statutory environmental regulators, fisheries departments, nature conservation bodies and public health bodies plus a range of specialist public sector and non-government organisations.

The EG framework enables a co-ordinated and timely input to any other more localised or specialised incident. The Group may be set up as a precautionary approach when the possibility of incident escalation has potential. In many major incidents the operational EG remains a 'virtual' Group responding with advice when requested. The EGs remit is advisory and it has no powers of direction or enforcement. Regulatory functions of individual members of the Group are exercised outside the Group structure and function.

Core members of EG will comprise as a minimum representatives from SEPA, NatureScot and Marine Scotland.

For further information regarding the EG please follow the hyperlink in Appendix 8. The STOp notice 1/14 explains the composition, structure and establishment.

3.6.5: Liaison between Emergency Control Centres

Certain incident scenarios involve different aspects of the response being managed by more than one agency or organisation from a number of emergency control centres. In these situations there will be a requirement for co-ordination of particular response activities, for example, the issue of press statements. Without a means of co-ordination, inconsistencies may develop in the contents of press releases that would be seen by the media as being a result of confusion and chaos. A means of co-ordination would reduce the possibility of other errors such as the wasteful duplication of response efforts and omissions in the overall response strategy. The most effective method of achieving this level of co-ordination is an exchange of appropriate representatives from the emergency control centres that have been activated. The representative would provide a mechanism for two-way exchange of information between organisations. Should one response organisation require information from another, their representative could handle the request. The representative will be able to direct the request for information to the most appropriate personnel saving time and ensuring that response personnel are not diverted from fulfilling their functions.

3.7: Communication Routes and Mobilisation

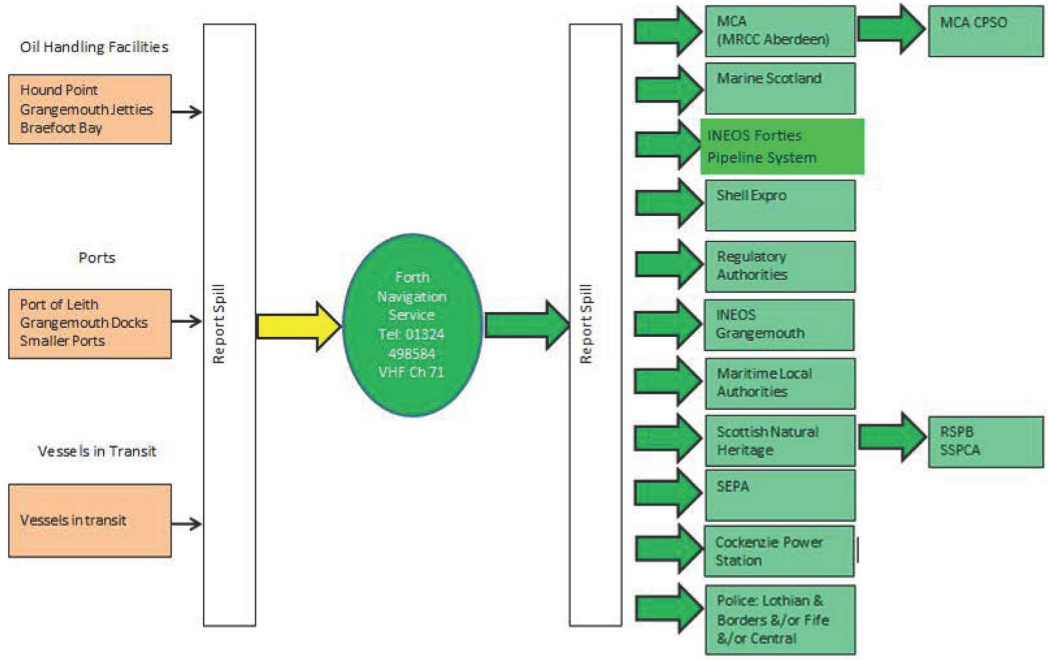
3.7.1: Forth Ports Limited Communications and Mobilisation Routes

Forth & Tay Navigation Services (FTNS) at The Entrance Lock, Grangemouth, will act as the initial point of contact for all spill incidents and from all potential sources of pollution. The FTNS Duty Officer will provide communications support including notification of the spill via POLREP to MRCC Aberdeen and initial request to spray dispersants.

3.7.2: Participant Call-out and Alerting Routes

Call-out of participants is carried out using an automated call-out system. The calls are made to mobile, text, telephone and email. See Figure 3.3 below.

Figure 3.3: Communication Routes for Clearwater Forth



3.8: Communication Systems

3.8.1: Forth & Tay Navigation Services

The incident management team will be activated by FTNS. FTNS is located at the entrance lock Grangemouth, FTNS maintains a continuous 24 hour listening watch of international marine VHF Channel 71.

3.8.2: MEC Grangemouth

The MEC at Grangemouth will maintain contact with the vessels involved in the incident on international marine VHF Channel 10, either directly, or through FTNS and MRCC Aberdeen. Feedback on the effectiveness of strategy and tactics must be provided to the decision makers in the MEC and also the On-Scene Commander and Tier 2 response contractors on the Firth if the response system is to adapt its strategy and tactics and remain goal directed. Communications with the MEC are also by telephone, email and facsimile.

3.8.3: MCA (MRCC Aberdeen)

MRCC Aberdeen maintains a 24 hour continuous watch on international maritime channel 16 and channel 0. MRCC's have the full range of VHF channels and will select working channel as appropriate after the initial call on Channel 16.

If the circumstances are such that the MEC cannot maintain direct communication with the vessel(s) involved in the incident MRCC Aberdeen may act as the VHF link between the vessel(s) and the MEC.

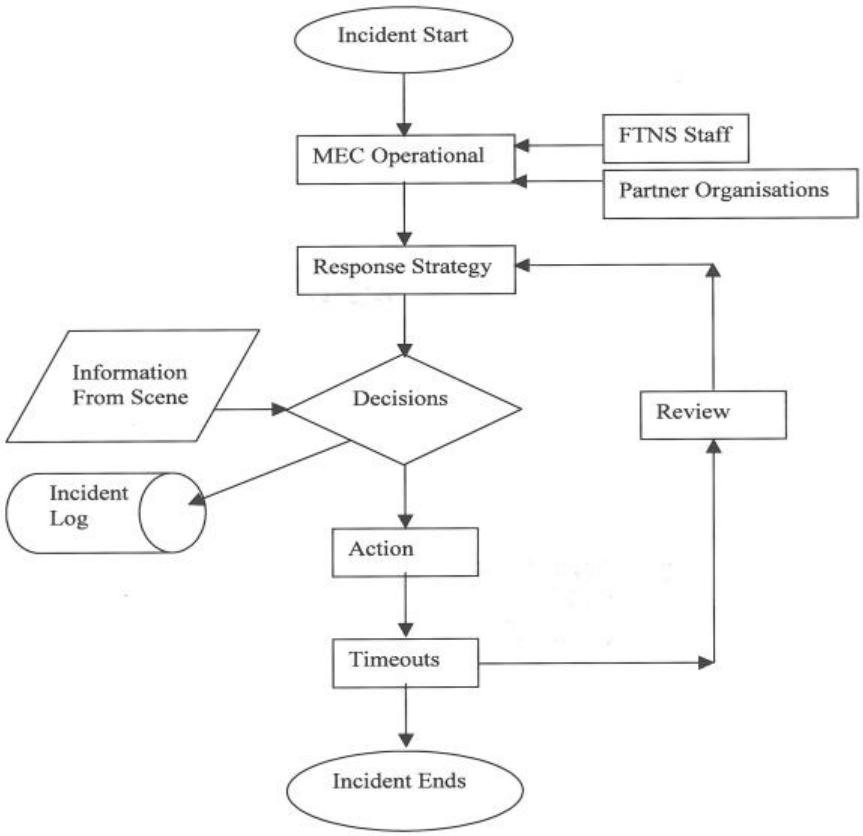
Coastguard stations also have direct telephone lines to the police, other CG stations, the military MRCC'S, Air Traffic Control, foreign RCC's and CG helicopter bases.

Rescue Centres keep a constant radio watch on the international VHF distress frequencies and also handle telex and facsimile messages through specially designed consoles. Each Centre has a fully fitted operations room with emergency planning, press and staff facilities, along with storage for rescue equipment, vehicles and boats. All have local radio antennae as well as control of remote antennae on high points to give increased VHF range.

3.8.4: Response Vessels

All communications between response vessels and the MEC will be made direct with the MEC. Alternatively, communications may be made through FTNS or MRCC Aberdeen if communications with the MEC cannot be maintained. Please refer to Appendix 2 for response vessels available for an oil spill.

3.9: MEC Incident Management Room Process



Section 4: Action Checklists

4.1: Use of Section

This section outlines the actions that may be undertaken by the Forth Ports response teams in the event of water borne hydrocarbon spill in the Harbour area or ports. It must be borne in mind, however, that co-ordinators and response teams must be prepared to adapt their actions as the incident develops and conditions and oil properties change. Action checklists provided are given in Table 4.1. **For spills within Grangemouth, separate actions cards can be located in Appendix 11 for INEOS Grangemouth staff.**

Table 4.1 – Action Plan Summary

Section	Responder	Remarks
4.2	Forth & Tay Navigation Services : Initiation of Tiered Response	
4.3	Initial Responder – Ports of Methil, Burntisland, Kirkcaldy, Grangemouth and Leith.	
4.4	Initial Responder - Firth of Forth Harbour Area	
4.5	Incident Management Team	4.5.1 Incident Manager - Tier 1 Incidents Ports of Methil, Burntisland, Kirkcaldy, Grangemouth and Leith 4.5.2 Incident Commander; All Spills Firth of Forth Harbour Area 4.5.3 Incident Manager – Ports T2 &3, All spills FoF Harbour Area. 4.5.3 Public Relations Unit
4.6	Marine Operations	4.6.1 Team Leader 4.6.2 On-Scene Commander
4.7	MEC Operations	4.7.1 Team Leader 4.7.2 Environment Unit 4.7.3 Health and Safety Unit 4.7.4 Waste Management Unit
4.8	Logistics Team	4.8.1 Logistics Team Leader 4.8.2 Equipment & Manpower Unit 4.8.3 Support Services Unit 4.8.4 Communications System Unit
4.9	Administration and Finance Team	4.9.1 Team Leader 4.9.2 Administration Unit 4.9.3 Claims and Insurance Unit
4.10	Legal Unit	

4.2: Forth & Tay Navigation Service- Initiation of Tiered Response Actions

To be carried out by Forth & Tay Navigation Service Duty Officer

ALL INCIDENTS

On receipt of an oil pollution report / alert from either personnel in the ports of Methil, Burntisland, Kirkcaldy, Grangemouth, Leith and Rosyth, or from personnel operating in the Harbour Area, proceed with the following:

1. Obtain as much information as possible from the caller so that you can complete the POLREP report (see Appendix 5). After taking details from caller, read them back to the caller to ensure accuracy.
2. Commence logging all details and times of incident on Log Sheets (see Appendix 5). This will be most important for any post-incident inquiries and can be forwarded to the MEC if required to assist with a seamless handover.
3. If required for larger incidents and in consultation with the Marine Management Team complete the *Request to use Dispersant form,* and forward to Marine Scotland. For spills in the ports, mobilise an Initial Responder; for spills in the Harbour area, mobilise an on-scene responder to proceed to the incident site to investigate the pollution report.
4. If possible, make an initial classification of the incident according to the following table:

Table 4.2 Tiers of Spill

Tier	Scale of Incident	Mobilisation level
Tier 1	Small spills which can be dealt with using local resources.	Will be dealt with by Forth ports or local responder (Methil, Kirkcaldy, Grangemouth, Leith & Burntisland). Spills from small ports will be dealt with by Clearwater Forth; 3rd party spills or vessels in transit will be dealt with by Forth Ports Limited.
Tier 2	Spills that require mobilisation of additional regional resources.	Will be dealt with by dedicated port/facility plan in conjunction with Clearwater Forth. Requires mobilisation of further resources and may involve local government
Tier 3	Major spill which requires a rapid large scale response; these will usually result from a loss of containment event.	A Tier 3 spill is beyond the resources of both local and regional resources and is an incident that requires the involvement of the Maritime and Coastguard Agency (MCA) and activation of the National Contingency Plan.

5. In the event of large scale pollution that is likely to cause a hazard to shipping, issue a warning to incoming/outgoing vessels both in the river, terminals and the ports of Rosyth, Methil, Kirkcaldy, Burntisland and Inverkeithing or if likely to be affected Port of Leith and Grangemouth. Before doing this confirm action with Marine Management Team.

6. Forward POLREP to Maritime & Coastguard Agency (MRCC Aberdeen) and SEPA by email or other available means. Do not delay sending POLREP if all information is not available. Follow-up proformas should be issued. An appropriate timing for follow-ups would be about every 6 hours OR in the event of a major change in the incident response. Computerised blank POLREPS are maintained by FTNS.

7. You are fully authorised to activate Clearwater Forth if you consider this to be necessary according to the particular circumstances of the case. It is better to over react rather than to mobilise resources later in the response when it may be too late. There may however be time to consult a member of the Marine Management Team to discuss the situation before taking this action.

8. Clearwater Forth activation will be conducted using the Forth Ports automated call-out system. This system will alert the Clearwater Forth community via telephone message, text, and email. All participants will be alerted within 5 minutes. On-scene time will vary depending on the location of the incident.

TIER 1 INCIDENTS

1. Call out / inform personnel as given in the Activation Matrix below.

Table 4.3 Tier 1 Activation Matrix

Duty Role	Duty Person (as applicable)	Contact Route (all numbers are 24 hours unless specified).
Incident Commander or Incident Manager	Chief Harbour Master (CHM) Or Senior Harbourmaster Or Harbour Master	Numbers held by FTNS
Maritime & Coastguard Agency (MRCC Aberdeen)	Duty Officer	Tel: 01224 592334 (24 hours)

TIER 2/3 INCIDENTS

1. Activate Clearwater Forth by initiating the automated communications system. Notification will be sent to internal and external contacts simultaneously via recorded telephone message, email and text message.

   Note: The Clearwater Forth activation matrix and corresponding contact numbers are also held on file by FTNS.

2. The Marine Emergency Centre at the MEC, FTNS Building, Entrance Dock, Grangemouth will be brought into operation following activation of Clearwater Forth.

3. Assist as directed by the Incident Manager.

4. Check the communication systems *Administration* to determine who has received a call. Endeavour to contact those organisations or individuals who have not received calls and pass a print - out to the MEC when manned. Table 4.3 Clearwater Forth Participants Activation Matrix.

Table 4.4 Clearwater Forth Participants Activation Matrix

CLEARWATER FORTH OSP ACTIVATION MATRIX

The personnel listed below will be called by the Cascade Callout

FORTH PORTS PERSONNEL	All numbers held by FTNS
Chief Harbour Master	
Senior Harbour Master	
Harbour Master	
Marine Manager	
Deputy Harbour Master	
Marine Officer	
Incident Secretary	
Telephonist / Clerk	
Marine Services Resource Manager	
Group Sustainability, Safety & Regulatory Manager	
Conservancy Manager	
Nominated additional Marine Personnel	
Forth Ports Limited Public Relations consultants	
Forth Ports Directors	
Legal Advisor	

External bodies who receive a call by FTNS include:

- MCA
- INEOS Forties Pipeline System – Kinneil Shift Leader (KSL)
- Ineos Grangemouth – Site Shift Leader
- Shell Expro
- Adler and Allan
- Marine Scotland
- NatureScot
- Scottish Environment Protection Agency (SEPA)
- East Lothian Council
- Stirling Council
- West Lothian Council
- Falkirk Council
- Clackmannanshire Council
- Fife Council
- City of Edinburgh Council
- ITOPF
- Police Scotland
- Longannet Power Station
- RSPB
- SSPCA
- Forth Road Bridge
- Forth Rail Bridge

Table 4.5 External Organisations Notification Matrix

Organisation/ Applicable Legislation	Contact Point	All Spills	Organisation / Agency Role
Local authorities	Fife Council The City of Edinburgh Council West Lothian Council East Lothian Falkirk Council Clackmannanshire Council Stirling Council Refer Appendix 10 for contact details.	✓	The relevant local authority should be notified of any spill that could result in shoreline pollution.
Scottish Environment Protection Agency (SEPA) (The Water Environment (Controlled Activities) (Scotland) Regulations 2011) SEPA are responsible for water quality in controlled waters – underground waters, inland waters & coastal waters within 3 miles of the shore and for the spread of oil inland from estuaries)	Emergency Hotline	✓	For spills in the water environment of the Forth, SEPA when notified can provide advice to mitigate or prevent further pollution where practicable. SEPA will regulate and licence the storage and transportation or any waste products collected as a result of any clean-up operations In general as a regulatory body SEPA will not be responsible for any clean-up operations leading to the restoration of normality. During an incident SEPA may require to take evidential samples for possible later legal action.
Marine (Scotland) 2010 Act; Marine Licensing (Exempted Activities) (Scottish Inshore Region) Order 2011; Marine Licensing (Exempted Activities) (Scottish Offshore Region) Order 2011). MARINE SCOTLAND are the controlling body for the waters of the marine environment and fisheries; are the licensing body;	Mobile and email	✓	Under the Marine (Scotland) Act 2010 Marine Scotland (MS) administers the devolved powers on behalf of the Scottish Ministers and co-ordinates environmental advice within the Scottish Government to inform decisions on dispersant use. MS-LOT licences the use of dispersants for all uses in shallow waters (< 20 m depth or within 1 nautical mile of any such area).
NatureScot Marine Scotland would consult with NatureScot as required re use of dispersants in waters which may impinge on statutory conservation areas	Telephone and mobile	✓	Telephone if spill exceeds 1 tonne. Would require immediate notification for spills which are likely to impact on designated conservation sites.

4.3: Initial Responder- Ports of Methil, Grangemouth, Leith & Burntisland

FTNS will decide who will be Initial Responder e.g. Pilot Vessel Skipper, Marine Personnel. If necessary consult Marine Management Team. When carrying out the incident assessment, the Proforma in Appendix 5.5 may prove helpful.

Responsibilities • Surveillance • Overseeing response to Tier 1 spills		
In the event of a spill occurring every effort must be made to contain the spill within the enclosed docks (consider closing the dock gates)		
Stage	**Actions**	**Additional Advice**
Response Initiation	❑ Ensure that an Incident Log is initiated and maintained. This will be important for post incident inquiries. ❑ Attempt to determine if any hazardous conditions exist prior to arrival on-scene. ❑ Proceed to incident site and check communications systems. **This is ESSENTIAL to ensure on-pass of information to response personnel.** ❑ Ensure that incident area is safe. If light products have been spilt there may be a vapour cloud. On no account enter area as there will be a danger of asphyxiation. Do not attempt to contain spills of these products ❑ Make assessment report to FTNS ❑ **Note that spill reporting to MCA and external authorities will be carried out by FTNS. Ensure that this is carried out** *It is a legal requirement under the Merchant Shipping (Oil Pollution Preparedness and Response Convention) Regulations 1998 to inform the Coastguard of spills into the Dock area. HM Coastguard will notify Maritime and Coastguard Agency of all spills*	FTNS Emergency Line: 01324 498 495 (24 hrs)
Initial Actions	❑ Proceed to assess situation at site and confirm source of pollution if possible. ❑ Confirm oil type (s) spilt and carry out spill assessment. In consultation with FTNS establish Tier of spill	The type of oil spilt will determine the intervention response required Tier 1 : small spills that can be dealt with using local resources

	❑ Consider suspension of any hot work certificates (grinding, welding etc.) in vicinity of spill ❑ In consultation with FTNS consider requirement to stopping ship movements; ❑ Determine if a response is required. If possible arrange for issue of Tier 1 equipment ❑ Ensure formal samples of spilt pollutant are taken and retained.	Tier 2 : spills that will require mobilisation of response contractors and equipment Tier 3 : Major spills requiring a large scale response For spills that are breaking up and naturally dispersing an intervention response other than monitoring may not be required. Procedures for sampling of spilt oil are provided in Section 5
Further Actions	❑ Consider additional resources e.g. Oil spill responder, On-scene commander activation to supplement initial response. ❑ If requested stay on-scene to assist response contractors and act as On –Scene Commander.	
Final Action / Stand Down	❑ Provide report to Harbourmaster who will pass on to the Chief Harbourmaster, Senior Harbourmaster, Harbour Master and Marine Manager , Forth Ports.	

4.4: Initial Responder- Firth of Forth Harbour Area

FTNS will decide who will be Initial Responder e.g. Pilot Vessel Coxswain, Marine Personnel. If necessary consult Marine Management Team. When carrying out the incident assessment, the Proforma in Appendix 5.6 may prove helpful.

Responsibilities • Surveillance • Assisting in intervention response as required		
Stage	**Actions**	**Additional Advice**
Response Initiation	❑ Obtain all available information on the spill from FTNS. ❑ Ensure initiation of Incident Log. This will be essential for post incident inquiries. ❑ Attempt to determine if any hazardous conditions exist prior to arrival on-scene. ❑ Proceed to incident site and check communications systems with FTNS / MEC / other vessels. **This is ESSENTIAL to ensure on-pass of information to response teams onshore.** If communications are proving difficult seek immediate help from FTNS ❑ Ensure that incident area is safe. If light products have been spilt there may be a vapour cloud. On no account enter area as there will be a danger of asphyxiation. Do not attempt to contain spills of these products	A Table of oil types and their likely behaviour when spilt is provided in Section 6 of this plan.
Initial Actions	❑ Proceed to assess situation at site and confirm source of pollution if possible. If applicable receive handover from Initial Responder Ports of Methil, Kirkcaldy, Burntisland and Rosyth ❑ Confirm oil type (s) spilt and carry out spill assessment. ❑ In consultation with FTNS attempt to establish Tier of spill ❑ Consider requirement to stopping ship	The type of oil spilt will determine the intervention response required Tier 1: small spills that can be dealt with using local resources Tier 2: spills that will require mobilisation of response contractors and equipment Tier 3: Major spills requiring a large scale response

	movements; inform FTNS	
Ongoing Activities	❑ Determine if an intervention response is required; relay information to FTNS. ❑ Ensure formal samples of spilt pollutant are taken and retained.	For spills that are breaking up and naturally dispersing an intervention response other than monitoring may not be required. Procedures for sampling of spilt oil are provided in Section 5.
Final Action / Stand Down	❑ If requested stay on-scene to assist response contractors and act as On–Scene Commander. ❑ On arrival of a relief On-Scene Commander carry out formal hand-over of incident response. Ensure handover is formally logged. ❑ Provide report and incident log to the Chief Harbourmaster, Senior Harbourmaster, Harbour Master and Marine Manager, Forth Ports.	

4.5: Command Team

4.5.1: Incident Manager Tier 1 Incidents - Ports of Methil, Kirkcaldy, Burntisland, Grangemouth, Leith and Rosyth

Note that the Initial Responder / On-Scene Commander may be able to deal with a Tier 1 without requiring to activate an Incident Manager.

Responsibilities • Overall responsibility for, and control of all aspects of the response to the incident..		
Stage	**Actions**	**Additional Advice**
Response Initiation	❑ On arrival at MEC. Accept situation report & handover of overall control from FTNS/ On-Scene Commander. Ensure handover formally logged (refer Appendix 5 for log). If considered appropriate attend scene rather than MEC Ascertain from On-Scene Commander Tier of Spill ❑ Ascertain from On-Scene Commander Tier of Spill. If there is any doubt as to the category of the spill attend scene. ❑ If incident large and associated with potentially toxic vapours and /or requirement for a search and rescue function MRCC Aberdeen will call-out emergency services. Confirm if this has taken place. ❑ If incident associated with a vessel, establish communication with vessel(s) / Ensure a VHF Channel has been designated for the Incident (Ch. 10 preferred if available).	Note that the Master of the vessel has a legal obligation to report all spills (or probable discharges) from his vessel to the Harbour Authority; failure to do so on his part could result in prosecution
Initial Actions	❑ Obtain results of spill assessment; establish incident response priorities and assess need to close area/affected port to traffic. Notify FTNS. ❑ If an intervention response is required mobilise Tier 1 equipment. Contact Adler and Allan and request they initiate deployment of Tier 1 Response Equipment ❑ Ensure Port Manager is kept informed of the situation.	For spills in one of the ports ensure liaison and regular SITREPs from initial responder For Response Operations refer to Section 6. Ensure that all recovered absorbents are correctly disposed of through Adler and Allan

Ongoing Activities	❑ If equipment is needed to be deployed contact local Adler and Allan. ❑ In the event of small quantities of non-persistent oil when deployment of absorbents would be impractical it will be sufficient to monitor the natural vaporisation and disposal ❑ Ensure FTNS are kept informed on the progress of the clean-up response. ❑ Monitor response effectiveness; adapt/review response strategy as necessary ❑ If circumstances change or new information comes to light be prepared to raise the status of the incident to a Tier 2 incident. ❑ If deemed necessary, check that formal samples of spilt pollutant have been taken and retained. ❑ Consider relieving Initial Responder / On-Scene Commander in a protracted incident.	
Final Action / Stand Down	❑ Confirm waterborne pollution has been cleared up to allow satisfactory operation of port area.	

4.5.2: Incident Commander All Spills Firth of Forth Harbour Area

The Incident Commander (Chief Harbour Master or Deputy) will be alerted as part of the activation of the MEC.

Responsibilities • Overall responsibility and management of strategic aspects of the response to the incident.		
Stage	**Actions**	**Additional Advice**
Response Initiation	❑ On arrival at MEC establish incident status from Incident Manager. ❑ Ensure that Incident Manager has sufficient resources to deal with incident.	For Tier 2 & 3 incidents there will be immediate activation of the MEC.
Initial Actions	❑ Hold initial meeting with PR Unit and Legal Advisors. ❑ Chair planning meeting as soon as feasible. ❑ Initiate interactions with Forth Ports Limited Head Office as required.	
Ongoing Activities	❑ Liaise with salvors, ship-owners as required. ❑ Liaise with SOSREP / MCA CPSO if in attendance. ❑ Ensure information is supplied to Public Relations Unit for preparation of regular, updated media releases; ❑ Authorise release of press statements & attend press briefing sessions/news conferences as requested ❑ Agree any proposed plans for moving stricken vessel; SOSREP may require the vessel to be moved to a place of refuge. Refer Section 3.5.6 for details and Appendix 6	Ensure that Planning Team has set up appropriate liaison between the team and local/national authorities (NatureScot, Marine Scotland, SEPA, local authorities, Environment Group (if set up). An SCU may be established if deemed necessary by SOSREP.
Final Action / Stand Down	❑ Confirm waterborne pollution has been cleared up to allow satisfactory operation of Harbour Area. ❑ Brief Forth Ports Limited Head Office. ❑ Conduct post incident briefing.	

4.5.3: Incident Manager Ports Tier 2&3 and All Spills Firth of Forth Harbour Area

This section applies to Methil, Kirkcaldy, Grangemouth, Leith, Rosyth and Burntisland Tiers 2 & 3 and Tier 1 upwards for all other spills in the Forth Harbour Area.

Usually the Initial Responder or On-Scene Commander will be able to deal with a Tier 1 without the need to activate an Incident Manager.

Responsibilities

- Overall responsibility for, and control of all tactical aspects of the response to the incident.

Stage	Actions	Additional Advice
Response Initiation	❑ On arrival at MEC establish incident status. Accept situation report & handover of response operations from FTNS Duty Officer. Ensure handover formally logged (refer Appendix 5 for log) ❑ If incident large and associated with potentially toxic vapours and /or requirement for a search and rescue function MRCC Aberdeen will call-out emergency services. Confirm if this has taken place. ❑ Ensure coverage of response team functions. ❑ Appoint Marine Operations and MEC Operations Team Leaders. ❑ Request Teams to maintain Status and Situation Reports. ❑ **Brief Incident** ❑ Establish communication with vessel(s) / port/ facility involved in incident and request their current status and intended actions. ❑ Ensure a VHF Channel has been designated for the Incident (Ch. 10 preferred if available). ❑ Request details of the incident from the On-Scene Commander ❑ If necessary, ensure samples are obtained ❑ Determine the status of the weather and marine conditions (refer Proformas in Appendix 5.7).	For Tier 2 & 3 incidents there will be immediate activation of the MEC. Pre-planned allocation of functions is given in Matrix of Roles, Section 3.4. These are intended as guide only. **Ensure communications systems are operational; for incidents in one of the ports ensure that communications between the Dock Office and MEC (if set up) are set up via a dedicated system. For the vessel involved and the Forth Ports response vessels it is ESSENTIAL to feedback information to the MEC; ensure the On-Scene Commander does this.**
Initial Actions	❑ Obtain results of spill assessment; establish	For spills in one of the ports ensure

	incident response strategy and priorities. ❑ Assess need to close area/affected port to traffic other than affected vessel and response tugs. Notify FTNS. ❑ If a dispersant spraying response is required **this will need a rapid response**. Authorise mobilisation of required number of response vessels as soon as possible.	liaison and regular sitreps from initial responder FTNS will have made the initial request to spray dispersant. Check how this is proceeding and pass to appropriate personnel to complete and pursue.
Ongoing Activities	❑ Receive situation & status. Hold regular meetings with all team leaders. ❑ Ensure that measures have been taken to warn river users (including fishermen and inshore fisheries) about incident. ❑ Ensure appropriate time outs to assess the situation. ❑ Determine requirements for relief arrangements. Ensure that all handovers are logged ❑ Authorise release of equipment for counter pollution response ❑ Liaise with salvors, ship-owners as required. ❑ Determine if cargo can be transferred if a vessel is involved with the spill; determine condition of vessel ❑ Liaise with MCA CPSO if in attendance. ❑ If salvage is involved in the response, liaise with Salvage Control Unit in MEC. ❑ Ensure information is supplied to Public Relations Unit for preparation of regular, updated media releases.	Ensure that Planning Team has set up appropriate liaison between the team and local/national authorities (NatureScot, Marine Scotland, SEPA, local authorities, Environment Group (if set up). Close co-operation between the salvage operations and oil pollution response operations will be essential for minimising the environmental impact of a marine casualty. SOSREP has the power to intervene and run the Salvage Control Unit if he feels that the salvage response is unsatisfactory. (Refer Section 3). Agree any proposed plans for moving stricken vessel; SOSREP may require the vessel to be moved to a place of refuge. Refer Appendix 6 for places of refuge in the Forth Note that if an Environment Group is convened liaison with the EG will be via an appointed Environment Liaison Officer
Final Action / Stand Down	❑ Confirm waterborne pollution has been cleared up to allow satisfactory operation of Harbour Area. ❑ Notify involved authorities of debrief meeting.	

4.5.4: Public Relations/ Information Unit

Responsibilities

- Provision of prompt accurate information to the news media at the incident site.
- Obtaining up to date information on the incident and preparing regular Press Releases in association with other involved authorities.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Public Relations/Media Unit Log.	Establish communication routes with Forth Ports media consultants.
Initial Actions	❑ Prepare to draft initial press statement having first established incident facts including: • Nature of incident • Location and time occurred or began • Facilities, vessels involved • Casualties suffered • Type of oil spilt and estimate of quantity • Cause of incident if known • Actions being taken to combat spill • Listing of agencies informed of spill ❑ Issue draft statement to involved third party for comment and approval. ❑ Issue initial press release. Bear in mind the following: • Provide clear, concise and exact information; • Address ONLY information known to be fact at the time; do not speculate or attempt to answer for others.	Sample Press Statements are provided in Appendix 3. Note that it is important that individuals having a legitimate interest in the incident are provided with relevant facts with maximum speed and minimum confusion. (Under no circumstances should any personnel data be released before notification of next of kin). Refer to Appendix 3 for sample press statements. Determine likely media reaction: • Local • National • International
Ongoing Activities	❑ Attend planning meeting; provide data to Incident Commander on media issues associated with incident. ❑ Arrange news conferences and/or interviews. ❑ Prepare ongoing press releases. ❑ Brief Command Team Leader/Team Leaders prior to press conferences.	Constantly monitor news/press coverage. In particular look for gross inaccuracies that should be corrected in the next press release/conference. **Ensure that an agenda is prepared for all press briefings and be prepared to terminate briefings.** **For major incidents the MCA press officer will also be present. Ensure close co-operation between involved parties**
Final Action / Stand Down	❑ Provide final press release and conference ❑ Provide Administration Unit with incident log.	Include copies of all press statements, photographic documentation, etc.

4.6: Marine Operations

4.6.1: Team Leader

Responsibilities

- Initial and continued assessment of pollution extent and characteristics.
- Establish source of pollution and determine possible methods of control.
- Determine most appropriate response strategy and implement.
- Liaison, as required with vessel owners, cargo owners, insurers, commercial salvors.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Marine Operations Incident Log. Receive appraisal and sitrep from FTNS and ensure the request to spray dispersant has been made. ❑ Assess status of incident. Confirm incident classification. ❑ If incident appears to be a Tier 3 spill and requires assistance from national resources, immediately contact MCA. ❑ Make a formal declaration on VHF 71 and other appropriate VHF channels that the MEC in now controlling the incident.	Refer Appendix 5 for Incident Log proforma. It is most important that LOGS ARE MAINTAINED.
Initial Actions	❑ Mobilise appropriate resources to undertake detailed site assessment. ❑ Nominate a team member to establish and maintain communications link with site. ❑ Assess need for and Implement traffic clearance zones. ❑ For spills that are not retained in the enclosed dock areas determine requirement for aerial surveillance. Note that Tier 2 spills may require and Tier 3 spills will always require aerial surveillance. Request Planning Team to make immediate contact with MCA to discuss surveillance requirements. ❑ Request MEC Team to obtain accurate weather forecasts and undertake Oil Spill Modelling.. ❑ Conduct assessment meeting with appropriate personnel: Formulate outline response strategy. Refer Section 6 for Oil Spill Response Map and Preferred Strategy of Response guidance and	❑ For spill assessment procedure refers to Section 5. ❑ It is crucial that good comms. links are maintained with incident site Aerial surveillance requires the use of specialist aerial surveillance aircraft (for specialist equipment refer Section 5). Specialist aircraft can be mobilised by the MCA. The CPSO will make the final decision to mobilise aircraft. ❑ Ensure that you are initiating a response appropriate to the oil type and the geographical area of the spill.

	Response Strategy for the Firth of Forth. ❑ Options include: • Natural dispersion, monitoring and reporting ; • Chemical dispersion; • Mechanical Containment and Recovery; • Shoreline Protection and Clean-up. ❑ Determine immediate and future equipment requirements. Place on stand-by / mobilise resources suitable for responding to outline strategy. ❑ If a dispersant spraying option is carried out request Environment Unit to ensure that Marine Scotland are kept informed of all dispersant spraying operations. ❑ Attend planning meeting / liaise with co-ordinating team in MEC. Develop detailed plan based on the outline response strategy ❑ Implement marine aspects of plan. ❑ Mobilise / place on stand-by further resources as required by the response.	❑ For the Tiered Equipment Response System refer to Section 6. This gives detail of response capability and mobilisation procedures.
Ongoing Activities	❑ Regular assessment of response ❑ Regular liaison with vessel, cargo owners and salvors (as appropriate). ❑ Monitor effectiveness of response strategy. ❑ Monitor levels of equipment & manpower. ❑ Attend regular planning meeting. ❑ Stand-down / place on standby / mobilise equipment as agreed at planning meeting. ❑ Provide information to PR Team.	
Final Action / Stand Down	❑ Ensure water-borne pollution has been cleared for satisfactory operation of the Harbour/Port Area. ❑ Stand-down remaining equipment and manpower. ❑ Provide Administration Unit with incident log.	

4.6.2: On-Scene Commander

Responsibilities

- Overall responsibility for optimum method for clean-up of the spill for the conditions that exist
- Continued on-site assessment of pollution extent and characteristics.
- Monitoring effectiveness of response strategy and deployed equipment.
- Close liaison with FTNS &/or MEC

Stage	Actions	Additional Advice
Response Initiation	❑ **If you have not been acting as Duty On-Scene Commander ensure that you have all details of spill surveillance and actions already undertaken.** ❑ Proceed to incident site and determine further response actions required. ❑ Always ensure safety of response team members.	Log handover and initiate own log If light products have been spilt there may be a vapour cloud. On no account allow response teams to enter as there will be a danger of asphyxiation. Do not attempt to contain spills of these products in the vicinity of a vessel
Initial Actions	❑ Confirm source and oil type (s) spilt and immediately notify FTNS/ MEC. ❑ Ensure formal samples of spilt pollutant have been taken and retained ❑ Determine if current communication systems are fit for purpose if not notify FTNS/Marine Operations Team Leader ❑ Determine likely method of pollution control bearing in mind location of spill and type of oil. Response strategy guidelines for spills in the Clearwater Forth area are given in Sections 6. **Any spill involving heavy fuel oil requires immediate mobilisation to site of Tier 2 response contractors**.	The type of oil spilt will determine the intervention response required. A table of oil types and preferred response actions is given in Section 5. Ensure that dispersants are NOT applied to areas where dispersant use is prohibited. Response strategies have been pre-agreed with plan consultees.
Ongoing Activities	❑ Ensure correct deployment of response equipment and vessels. This action may be enhanced BY USE OF AERIAL SURVEILLANCE. If so contact MEC and request appropriate assistance ❑ Monitor effectiveness of equipment deployed. ❑ Monitor equipment levels; make recommendations to FTNS/Marine Team Leader on requirements for more equipment and associated manpower required at site. ❑ Ensure that dispersants are NOT applied in areas where dispersant use is prohibited. Ensure that you are aware of the details in the response Strategy Map in Section 5. Ensure that dispersants are not used in the	

	enclosed dock areas ❑ If possible attend planning meetings. ❑ Determine requirement for specialised personnel at site.	
Final Action / Stand Down	❑ Provide Administration Unit with incident log. ❑ Ensure all equipment is recovered and handed over to Logistics for repair, cleaning and return. ❑ Provide Administration and Finance with list of damaged/lost equipment.	

4.7: MEC Operations

4.7.1: Team Leader

Responsibilities

- Planning and preparation of medium-long term planning objectives.
- Collection and evaluation of information on all aspects of the incident.
- Responsible for advising the CTL on liaison with various organisations and agencies involved in incident

Stage	Actions	Additional Advice
Response Initiation	Start Team Incident Log. Incident log provided in Appendix 5. A **Log Keeper** will be appointed to support this team function.	Log keeper should be directed to carry out following activities: • Maintain operation of white boards • Produce coherent log of events which cross references all relevant media releases, meeting notes, assessment reports, briefing notes etc.
Initial Actions	❑ Assess current situation from Command Team Leader & Marine Operations Team and develop situation map and resource status boards. ❑ Identify immediate problems and especially any facilities (e.g. power stations and the fishing community) which need to be informed of the possible approach of a slick or dispersed oil ❑ Obtain Material Safety Data Sheet from ship owner or oil company. ❑ If oil is likely to move into dock areas, inform docks in order that they can close dock gates and shut down impounding pumps. ❑ Obtain weather reports. Ensure these are updated at regular intervals. ❑ Carry out Oil Spill Modelling. ❑ From outline response strategy develop medium term plan with possible alternative strategies. ❑ As requested by Marine Operations contact MCA for aerial surveillance assistance. Contact details are provided in Section 8.	Ensure regular updates of situation map and resource status boards and attend planning meeting. This is most important for forward planning of incidents in both the ports and Firth of Forth **Power stations** are on the Activation List; however, ensure that they have been informed of any oil likely to approach water intakes; The Hound Point OSCP (available in the MEC) has a range of MSDS relating to oil products which are likely to be handled in the Harbour Area. Wind direction will be important in determining drift of the slick. Refer to Strategy and Sea Zones Section 6, Firth of Forth Harbour Area: Site Specific environmental database and Priority Protection Areas Section 9; and Response Strategy Options Section 6 for Ports of Rosyth, Methil, Kirkcaldy and Burntisland Aerial surveillance requires the use of specialist aerial surveillance aircraft (for specialist equipment refer Section 5). Specialist aircraft can be mobilised by the MCA. The CPSO will make the final decision to mobilise aircraft
Ongoing	❑ Arrange ongoing planning meetings, prepare brief agenda. Organise	Ensure incident boards are being kept up

Activities	attendees and ensure all team leaders briefed prior to meeting. ❑ Obtain regular weather forecasts and obtain up to date Oil Spill Models. ❑ Update situation map & resource status boards. ❑ Present data for the next operational period at planning meetings. ❑ In consultation with Incident Manager draw up emergency duty roster, and arrange accommodation and catering supplies.	to date with essential information • Weather and trajectory information; • Situation Map; • Resource Status Boards Obtain briefing data from Marine Operations
Final Action / Stand Down	❑ Close out resource status boards. ❑ Provide Administration Unit with incident log.	

4.7.2: Environment Unit

Responsibilities

- Liaise with external organisations
- Advise MEC & Marine Operations Team on key areas of environmental sensitivity
- Liaison with external authorities
- If Environmental Group is established determine a point of contact and ensure close working

Stage	Actions	Additional Advice
Response Initiation	❑ Start Unit Incident Log ❑ Determine current status of incident	Incident log proforma provided in Appendix 5. Log may be required for post incident inquiry. Ensure it is maintained
Initial Actions	❑ Obtain weather forecasts from Planning Team. ❑ Initiate running of slick predictions ❑ As soon as available pass results to Marine Operations and MEC Team. ❑ Refer to maps and tables in Section 9. and determine key environmentally sensitive sites in the vicinity of the incident site and along the predicted slick trajectory; including the fishing community and fish-farms ❑ Determine environmental requirements for aerial surveillance (e.g. bird concentrations); recommend requirement for aerial surveillance dependent on nature of incident and hydrocarbons spilt. ❑ If dispersants are to be used in areas other than those which do not require prior approval, obtain approval from Marine Scotland at earliest opportunity. They will provide information to FRS as detailed overleaf with the report form being completed and sent no more than 72 hrs following the initial spill. Liaise with relevant organisations who have an interest in the clean-up or protecting the water quality or coastal sensitivities. Include organisations opposite. When liaising ensure you have most up to date information. Give each organisation call back details (name, position, location, telephone no.) ❑ Attend planning meeting; provide advice on environmental implications of response	To obtain approval for the use of dispersants Marine Scotland will require the information listed in the checklist overleaf. Ensure that Proforma in Appendix 5.8 is completed. An initial form should have been submitted by FTNS, check details and follow up with Marine Scotland. Ensure the following have been informed: • NatureScot • Scottish Environment Protection Agency • Local authorities
Ongoing Activities	❑ Aerial surveillance flights to monitor slick movement and bird movements.	

	❑ Contact SSPCA regarding any oiled birds ❑ Contact RSPB regarding any oiled wildlife ❑ Provide information to/as requested by Public Relations Unit for inclusion into press statements. ❑ Obtain updates on Oil Spill Modelling from MEC team. ❑ Maintain liaison with environmental bodies and Environment Group if established ❑ Attend regular planning meeting.	Provide results to Marine Operations and MEC Team.
Final Action / Stand Down	❑ Obtain reports from any monitoring programmes submit to Administration Unit. ❑ Provide Administration Unit with incident log.	

GUIDELINES TO INFORMATION REQUIRED BY Marine Scotland IN CONSIDERING REQUEST FOR DISPERSANT SPRAYING APPROVAL

As much of the following information as possible should be provided when requesting approval for use of dispersants or when informing Marine Scotland of need to initiate a dispersant spraying strategy

1. Name of authority or organisation requiring approval.
2. Name of contact and telephone and fax number to be used.
3. Locality of spill preferably in degrees.
4. Oil type or description of appearance if not known. If crude – what type?
5. Quantity of oil spilled – preferably in tonnes.
6. Source of spill.
7. Potential for further spill.
8. Description of slick – including dimensions and colour.
9. Volume and name of dispersant for which approval is requested.
10. Other methods of response being applied or considered and assistance being sought (e.g. MCA, SEPA).
11. Local fisheries considerations (such as seasonal fisheries, advice given to fishermen).
12. Local wildlife considerations (e.g. whether migrant birds are present).
13. Tide – type and speed, and time of HW/LW particularly.
14. Wind and weather (such as “Moderate breeze NW” “Overcast drizzle”).
15. Sea state.

For Contact Details for Marine Scotland see Forth Ports Emergency Contact Directory in Appendix 10.

4.7.3: Health & Safety Unit

Responsibilities

- Advise the Incident Manager and On-Scene Commander of health & safety issues that could arise associated with the incident.
- Ensure that safe operating practices are implemented at the incident site.

Stage	Actions	Additional Advice
Response Initiation	❑ Set up Health and Safety Unit and initiate incident log. This may be important for post incident meetings/inquiries ❑ Establish contact with emergency/medical services	Ensure you are aware of the advice provided in the health and Safety Guidelines in Section 6
Initial Actions	❑ Ensure that there is adequate manpower, equipment and services at site to provide for safe operations. ❑ Liaise with HSE / local authority safety inspectors onsite. ❑ Determine requirement for implementing Permit to Work system. ❑ Attend initial planning meeting and advise on safety aspects of the response strategy including use of Personal Protective Equipment ❑ Establish safety induction facilities for contract labour	Determine type of hydrocarbon spilt and obtain data sheets from involved 3rd party or vessel The permit should be designed to • Special conditions • Gas tests • special hazards • safety observer • special equipment
Ongoing Activities	❑ Attend planning meetings to provide advice and to raise ongoing or predicted safety issues ❑ Monitor wellbeing of response personnel ❑ Inspect operations to ensure conditions and practices meet minimum acceptable standards. If required halt any activity that may be considered dangerous or could lead to health problems. Immediately advise Command Team Leader ❑ Examine operating and safety instructions for all equipment and products delivered to the incident site. Ensure that full instructions and precautions are passed onto operators.	
Final Action / Stand Down	❑ Provide Admin/Finance Team with completed Incident Log ❑ If required ensure that HSE report(s) have been prepared and sent to the HSE	Complete internal incident reports, together with notes or observations for use at post-incident meeting; submit these to the Admin/Finance Team.

4.7.4: Waste Management Unit

Responsibilities

- Arrangements for the collection, transport and disposal of oil and oiled wastes.
- Characterisation of oiled wastes in order to aid identification of most appropriate waste disposal facilities to handle the waste materials.
- Preparation of all necessary documentation and pre-notifications necessary to satisfy the Duty of Care and, if necessary, Special Waste regulations.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Waste Disposal Unit Log. ❑ If response is likely to generate waste disposal requirements establish early contact with SEPA. ❑ Make contact with possible waste disposal facility operators to make arrangements for disposal of wastes arising.	Incident log provided in Appendix 5.
Initial Actions	❑ Alert local authority equipment available for the transportation of oiled wastes; contact waste hauliers to establish availability of additional transport for oiled wastes. ❑ Ensure hauliers' vehicles are carrying valid Registered Carriers Registration Certificates before they arrive on-scene	Close-sided lorries and skip-trucks can be used for non-liquid wastes, and specialist vacuum trucks (flash point dependent) and gully suckers are best for liquid oily wastes. If necessary, flat bed lorries can be used for either type of oily waste by transporting the materials in tanks or drums fitted with temporary covers.
Ongoing Activities	❑ Obtain data on likely quantities of liquid oily wastes which are being collected. ❑ Estimate quantities of non-liquid oiled wastes created primarily on shorelines. ❑ Initiate appropriate Duty of Care and Special Waste documentation to cover all waste transport used, and ensure that the destination of the oiled wastes is extremely clear to the lorry drivers. ❑ Ensure that transport of oily wastes is of a frequency sufficient to prevent the temporary storage being overwhelmed.	Close-side lorries and skips should always be lined with heavy-duty oil resistant plastic sheeting necessary to prevent en-route pollution by oil dripping. Note that the geographical requirement for the different types of waste transport is likely to change during incident.
Final Action / Stand Down	❑ Confirm with all waste disposal facilities used that they have received all documentation required to cover the movement of oiled wastes to their facilities.	

Also refer to waste management guidance.

4.8: Logistics Team

4.8.1: Logistics Team Leader

Responsibilities

- Responsible for arranging provision of facilities, services and materials in support of the incident.
- Responsible for arranging provision of additional communications.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Team Incident Log ❑ Make contact with Command Team Leader and ascertain the extent of initial anticipated requirements for: • Catering; • Accommodation; • Safety gear • Communications; • Marine response transportation; • Aerial surveillance.	Incident Log provided in Appendix 5. Ensure that all documentation is filed and retained for logging.
Initial Actions	❑ Attend planning meeting and determine immediate future requirements. ❑ Address the immediate needs at site. ❑ Liaise with Finance Unit re Purchase Order and Applications For Expenditure (AFE) system that they are intending to run during the incident. ❑ Ensure that an effective communication network is operative in MEC. ❑ Appoint and supervise personnel to serve as telephone and fax operators.	Ensure Equipment and Manpower Unit and Support Services & Transportation Unit are aware of the systems to be used.
Ongoing Activities	❑ Attend planning meeting ❑ Address needs of field ❑ Arrange provision of facilities, services and materials in support of the incident response. ❑ Determine ETA's on equipment and personnel to be obtained	
Final Action / Stand Down	Ensure return of all equipment ; determine need for any remedial action re equipment Provide Administration Unit with incident log.	

4.8.2: Equipment and Manpower Unit

Responsibilities

- Responsible for the provision of equipment and manpower requirements to support the incident response.

Stage	Actions	Additional Advice
Response Initiation	Start Unit Incident Log.	Incident log proforma provided in Appendix 5
Initial Actions	❑ Determine requirement for additional manpower ❑ In liaison with Marine Operations identify the extent of required radio network. ❑ Apply for equipment and record allocation of all radio equipment - initiate a communications allocation register. ❑ Ensure that radio users are aware of channels to be used and call signs.	Maintain a manpower allocation register The MCA have a Sector Office at Port Edgar with limited manpower and recourses, Activation via Aberdeen MRCC Lists of approved dispersants and suppliers are available on the MMO website. Details are provided in Appendix 4. **Ensure that dispersant sourced is suitable for oil type. Liaise with Environment Unit**
Ongoing Activities	❑ Attend planning meetings to ascertain future requirements. ❑ For all requests for materials and services that are received from the incident site ensure that an oil spill request form is completed including requisitioner's name; obtain authorisation from Logistics team Leader. ❑ Establish a central point for receiving equipment and supplies. Allocate staff member to receive, check and log all incoming material.	Ensure all requests include full description of items required, delivery point. Determine from Administration Unit order system to put in place.
Final Action / Stand Down	Provide Administration Unit with incident log.	Ensure all incident documentation is provided with log.

4.8.3: Support Services/ Transportation Unit

Responsibilities

- Provision of support services to back-up response operations.
- Organisation of transportation for pollution response equipment and manpower to designated locations.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Support Services/Transportation Unit Log	Refer to Appendix 5 for Incident Log
Initial Actions	❑ Determine likely size of equipment and manpower requirements. ❑ Designate appropriate rendezvous areas for equipment and manpower. ❑ Obtain and assign cars, trucks, boats to response teams; ensure all assigned vehicles are logged and that the log is maintained. ❑ Attend Team planning meeting.	
Ongoing Activities	❑ Liaise with Logistics over catering/accommodation requirements. ❑ Arrange for refuelling / maintenance requirements for water craft and road transport ❑ Organise as required transport to site of equipment and manpower. ❑ Arrange transportation for visitors (e.g. Head office personnel, government representatives) to view and inspect field operations. ❑ Designate preferred access routes. ❑ Ensure that Team Leader is informed immediately of any problems associated with transportation of resources to site.	
Final Action / Stand Down	❑ Organise return of equipment / vehicles to appropriate location. ❑ Inform Logistics of any damaged or lost equipment ❑ Provide Administration Unit with copy of incident log.	

4.8.4: Communications System Unit

Responsibilities • Provision of communications systems to back-up response operations.		
Stage	**Actions**	**Additional Advice**
Response Initiation	❑ Set up Communications Unit in MEC and initiate team incident log	Refer to Appendix 5 for incident log
Initial Actions	❑ Determine likely size of communications requirements. ❑ Ensure that Communications specialists are available. ❑ Ensure that marine weather forecasts are accessible ❑ Ensure that all vessels, helicopters, supervisors involved in the response operation are able to communicate with each other ❑ Ensure individual work crews use separate frequencies ❑ Ensure you record the issue of all radio equipment in a communications equipment allocation register ❑ Attend Team planning meeting.	Ensure that explosion proof radios that will not interfere with radio control signals are used in hazardous atmospheres With each radio supply list of personnel using the same channel
Ongoing Activities	❑ Determine requirement for UHF or VHF repeater stations for the response ❑ Request support unit to organise as required transport to site of equipment ❑ Monitor communications systems carefully. ❑ Arrange for battery charges/recharging as required.	Note that for a major spill a large number of communication channels will be required for: VHF marine and Aircraft channels Additional marine and UHF
Final Action / Stand Down	❑ Organise return of equipment to appropriate location. ❑ Inform Logistics of any damaged or lost equipment. ❑ Provide Administration Unit with copy of incident log.	

4.9: Administration & Finance Team

4.9.1: Team Leader

Responsibilities

- Keeping accurate financial records for subsequent preparation and support of claims for the recovery of money spent.
- Financially securing the requirements of Logistics Team.
- Establishing appropriate filing systems to ensure that accurate records of what was done and why are available in support of financial claims for recovery of money spent.
- Provision of secretarial services.
- Implementing Security Arrangements as required.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Team Incident Log. ❑ Set up Administration, Insurance & Claims and Legal Units	Refer to Appendix 5 for Incident Log
Initial Actions	❑ Hold team meeting in time for planning meeting. ❑ Attend planning meeting and inform other teams of financial and administration systems in place and legal advice available. ❑ Determine requirement for additional communications systems, e.g. more lines, more phones, etc.	
Ongoing Activities	❑ Attend planning meeting and notify teams of any necessary changes to operating systems. ❑ Financially secure the requirements of Logistics Team. ❑ Keep accurate financial records for subsequent preparation and support of claims for the recovery of money spent..	
Final Action / Stand Down	❑ Provide Administration Unit with incident log.	

4.9.2: Administration Unit

Responsibilities

- Responsible for setting up filing system to keep records of all aspects of the incident response.
- Responsible for tracking ALL movements of response personnel.
- Administration of Security Arrangements.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Unit Incident Log.	Incident log proforma provided in Appendix 5.
Initial Actions	❑ Determine extent of initial administration services required and likely requirements. ❑ Ensure telephone switchboard is suitably manned. Request operators to maintain a full record of all incoming calls ❑ Determine requirements for the record filing system and best method of fulfilling those requirements. The records will have a wide range of uses including: • Serving as a basis from which reports of the operation can be prepared; • Explaining and justifying the expenditure; • Supporting claims for the recovery of the money spent; • Dealing with criticism of the response ❑ Record keeping should err on the side of <u>too much rather than too little detail</u>. ❑ Determine immediate requirements for security, consider the following: • Initial requirement for Police assistance to establish access control to MEC, • Establish pass system.	Record the following: ❑ **Time/date;** ❑ **Caller's name, company;** ❑ **Recipient of the call;** ❑ **Any messages (ensure these are passed on quickly to appropriate team).** Ensure that Status Boards are either photographed or printed off before they are wiped clean for re-use Provide Team Leader with all necessary information on Administration systems.
Ongoing Activities	❑ Determine requirement to contract in security services & secretarial and other services from local agencies. ❑ Obtain and file the following on a daily basis • Team and Unit Logs; • Information received; • Orders given; • Actions taken; Brief Team Leader prior to planning meetings.	
Final Action / Stand Down	❑ Finalise Unit Incident Log. ❑ Complete all aspects of the incident filing system ready for post incident enquiry.	

4.9.3: Claims & Insurance Unit

Responsibilities

- Maintain and keep full records of all financial transactions associated with the incident.
- Prepare daily financial reports on expenditure.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Unit Log	Incident log proforma provided in Appendix 5
Initial Actions	❑ Determine extent of financial services required and anticipated levels of expenditure short term. ❑ Establish bank/cash arrangements. Set-up petty cash system if required. ❑ Set-up dedicated financial system for the incident. If required request Equipment and Manpower Unit to obtain computers and accountancy staff. ❑ Establish filing system, in conjunction with Administration Unit, for: • Suppliers/contractors records; • Financial correspondence; • Purchase orders; • Contracts.	
Ongoing Activities	❑ Provide daily report to Command Team Leader including the following information: • Estimated costs committed that day; • Estimated costs committed to date, broken down by: - Manpower - Material - Equipment hire/transportation - Food/accommodation - Major items of expense ❑ Provide forecast costs.	
Final Action / Stand Down	❑ Provide Administration Unit with incident log. ❑ Provide input for compensation claims.	

4.10: Legal Unit

Responsibilities

- Provide guidance on all legal matters related to an incident.
- Determine the responsibility and liability for the incident and resulting clean-up.
- Advise the Command Team Leader on all steps necessary to minimise any liabilities arising from law.
- Undertake main liaison with Insurance Companies & Brokers.

Stage	Actions	Additional Advice
Response Initiation	❑ Start Legal Unit Log	Refer Appendix 5 for Incident Log
Initial Actions	❑ Attend planning meeting. ❑ Evaluate the legal implications of proposed response strategy and advise the Command Team Leader of any legal matters arising. ❑ Contact Forth Ports Insurance Brokers.	Refer Appendix 1 for legal situation
Ongoing Activities	❑ Attend planning meetings. ❑ Monitor situation and proposed plans of action and advise Command Team Leader of possible changes in legal issues. ❑ Maintain liaison with Insurance Companies/Brokers.	
Final Action / Stand Down	❑ Assist in the preparation of any insurance claims. Provide input for compensation claims. ❑ Provide Administration Unit with incident log.	Refer Appendix 1 for legal situation

Section 5: Spill Assessment & Health and Safety Guidelines

5.1: Spill Assessment Guidelines and Incident Evaluation Guidelines

5.1.1: Introduction

Once an oil spill has occurred it is extremely important to obtain the most accurate information on spill size and type, location and environmental factors. Without this information the rest of the oil spill response cannot be undertaken.

5.1.2: Initial Evaluation Checkpoints

A spill assessment and incident evaluation checklist is given overleaf. The following should be borne in mind:

1. The spill assessment and initial incident evaluation should be initiated by the On-Scene Responder.
2. Information should be relayed to FTNS/MEC as quickly as possible.
3. The spill tracking and evaluation should initially be carried out using the duty vessels.
4. For large spills this tracking should be backed up by aircraft overflights once an appropriate aircraft has been mobilised.

Bear in mind the following when undertaking surveillance/responding to pollution reports:

1. It is difficult to distinguish the oil from a variety of other unrelated phenomena. These include cloud shadows, ripples on the sea surface and differences in colour of two adjacent water masses.
2. The appearance of tank washings and bilge discharges as a single elongate slick usually distinguishes them from accidental spills.
3. Crude oil will change in appearance soon after spill; in initial stages, the thicker parts will appear as dense, black areas, but as emulsification takes place, the colour will change to brown, orange or yellow.
4. When tracking a slick bear in mind that the thickness will vary, with the thickest portions at the leading edge

For spill assessment use proforma in Appendix 5.5 or bear in mind the following:

Table 5.1 Spill Assessment Checklist

STEP	CHECKPOINTS
Determine Source of Spill	• If unknown attempt to trace the source of pollution using colour as a guide (increased thickness towards source)
Assess Safety Hazard	• Determine safety hazard to personnel and potential hazards to response personnel. • Is there potential for fire or explosion?
Establish Tier of Spill	• Tier 1/2/3? • Is spill on-going or a one off event?
Estimate Approx. Spill Size and Thickness	If the quantity of oil is not known, determine the dimensions of the slick on the water surface and the volume of spilt oil. Conduct by direct observation from duty vessel. A guide to the relationship between appearance, thickness and volume is provided below.
Assess Prevailing Weather & Sea state Conditions	• Wind speed and direction (Note a Beaufort Wind Chart is provided in Section 4) • State of tide and current speed • Wave height
Determine Direction & Speed of Oil Movement	• Predict movement using Oil Spill Modelling Software or manual method of slick prediction (next page) • Verify with spill surveillance using tug / aircraft for large spills of crude oil • Estimate impact time to beaching.
Obtain Sample of the Oil	• A sample of the spilt oil may help to determine the spill source & may be important for post-incident inquiry. • Procedures for sampling spilt oil are provided below.
Identify Potential Affected Shorelines	• Identify threat posed to vulnerable resources e.g. saltmarsh, mudflats, wintering bird populations, tourist beaches in summer – **refer to environmental database in Section 9.** • Observe and chart the current position of the slick; likely future movement and spread to next tidal cycle.

5.1.3: Slick Predictions

Oil spill modelling is carried out to predict likely distance and direction of movement of the slick predict any threatened coastlines, the scale of likely pollution and may also be used to simulate the likely fate and behaviour of the spilt oil.

Modelling may be carried out using the following methods:

- Using Oil Spill Modelling Software, a computer based slick trajectory model which will be conducted by the MEC.
- Manual method of slick prediction to check the output of the oil spill modelling software.

Both methods are based on fact that the oil slick will move at approximately 100% of the tidal current speed and 3% of the wind speed.

5.1.3.1: Oil Spill Modelling Software

The software has an in-built data base of various oils and their properties and a built in module for generating weather, tidal and current data. Required input data by the modeller for modelling includes:

- Location of spill
- Oil type and size of release
- Sea and air temperature

The MCA will also be able to provide a digital model on request, to cross check accuracy

5.1.3.2: Manual Method of Slick Prediction

Slick movement may also be predicted by manual vector addition on the surveillance vessel, or in an emergency when access to a computer programme is not feasible. The manual method of prediction of slick movement is based on a simple vector calculation where the vectors of wind speed and tidal current are added together utilising 3% of the wind speed value and 100% of the tidal current speed. It is important to remember that this method can only provide an approximation of slick movement, and in no way should be regarded as a substitute for continuing monitoring actual slick movement throughout the oil spill response or for the more sophisticated slick predictions generated by computer models. However, the method is rapid and can provide a valuable rough guide to possible slick movement, which may assist in the formulation of an appropriate response strategy.

1. Establish the position of the slick.
2. Establish the tidal rate or strength (in knots) and direction (in degrees) for as many hours as is required. This information is available from the port's hydrographic data as well as from tidal stream atlases, charts and nautical almanacs.
3. Plot the position of the slick on the most appropriate chart.
4. From that position, draw a vector in the direction that the tide is moving. The tidal rate for the first hour in this example has been established as being 1.5 knots (1.5 nautical miles per hour) and the direction is 0200. From the initial slick position, measure

1.5 nautical miles along the tidal vector. This position is where the slick would have travelled to in that first hour if it had been driven by the tide alone.

5. Obtain as accurate an assessment of the wind speed and direction as possible (the vessel on scene may be able to supply this information). If necessary, convert the wind speed into knots. Multiply the wind speed by 0.03 (the slick is affected by 3% of the wind speed). In this example the wind speed was 11.5 knots which when multiplied by 0.03 is 0.35 knots and the direction is 0900 (a westerly wind). Therefore, in one hour the slick would have moved 0.35 nautical miles in the direction of the wind. The above information will allow a wind vector to be drawn.

6. The slick will be driven by both the wind (3%) and the tide (100%) so it is necessary to combine the two vectors. The wind vector (calculated in step 5) should be drawn from the end of the tidal vector (refer to the diagram overleaf).

7. A line drawn from the initial position of the slick to the end of the wind vector is the resultant vector and indicates the direction and the distance of slick travel in that hour.

8. To predict the likely movement of the oil for another hour, the process should be repeated using the resultant position as the start point for drawing subsequent vectors.

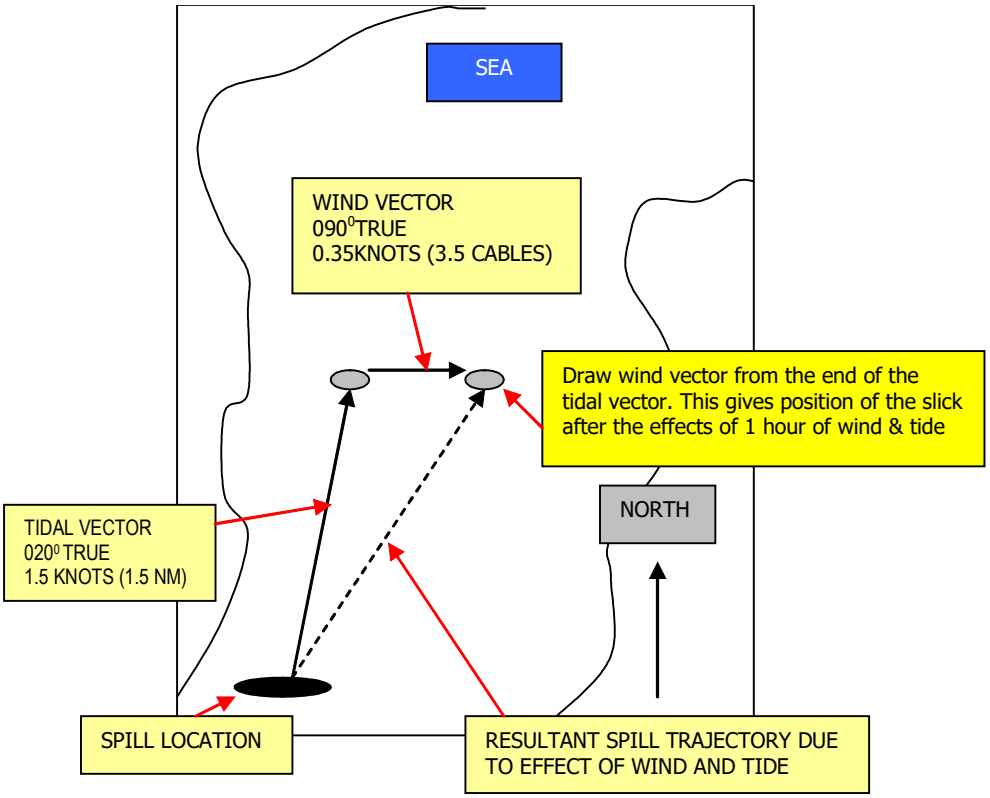


Figure 5.1: Manual Method of Oil Slick Prediction

5.1.4: Oil Quantity Estimation Guide

The quantity of spilt oil may be estimated using the following oil quantity table taken from the Bonn Agreement Pollution Observation Log. This should be used to estimate the quantity of oil spilt if direct information is not available. *Visual inspection can be carried out from the vessel, but best estimates are made during aerial surveillance flights. When using this colour method to estimate spill size, bear in mind that the slick is likely to be patchy and that the entire area of the slick may not be visible. Examples of slick colour are provided in Figure 5.3

It is important to determine the size of the spill and to classify it. The best estimate of spill size will come from plant information, for example, the volume of oil in vessel tanks, pumping rate and duration, diesel in transfer hose. If spill size cannot be determined from plant information, an estimate the following procedure has been taken from the Bonn Agreement Oil Appearance Code (BAOAC).

Table 5.2 details the current Bonn Agreement colours that should be used to quantify the approximate size of any spill and Table 5.3 provides a conversion chart. Calculation of the volume of oil spilled from the appearance of oil film on water is as follows:

* Estimate total size of the area as a square or rectangle (in km) i.e. maximum extremities of the slick.

* Assess the area affected by the slick in km^2 calculated as a % of the total area in (refer Figure 5.2 below).

* Estimate the area covered by each colour of oil, calculated as a % of the total area affected.

* Multiply the area covered by each colour by the appropriate figure in the oil quantity Table 5.2.

* Adding all of the colour figures will give the total quantity of oil in m^3 within the slick.

Table 5.2 Oil Quantity estimation by Colour (current Bonn Agreement Code of Practice for Estimating Oil Quantities 2002)

Code	Description - Appearance	Layer Thickness Interval (µm)	Litres per km^2
1	Sheen (silvery/grey)	0.04 to 0.30	40 – 300
2	Rainbow	0.30 to 5.0	300 – 5000
3	Metallic	5.0 to 50	5000 – 50,000
4	Discontinuous true oil colour	50 to 200	50,000 – 200,000
5	Continuous true oil colour	200 to More than 200	>200,000

Table 5.3: Containment Factors

1 tonne*	7.45 bbls
1 bbl	42 gallons
1 mile	1,760 yards
1 sq mile	3,097,600 sq yards
1 mile	1.61 km
1 sq mile	2.59 km^2

* 1 tonne calculated at 844 kg/m^3

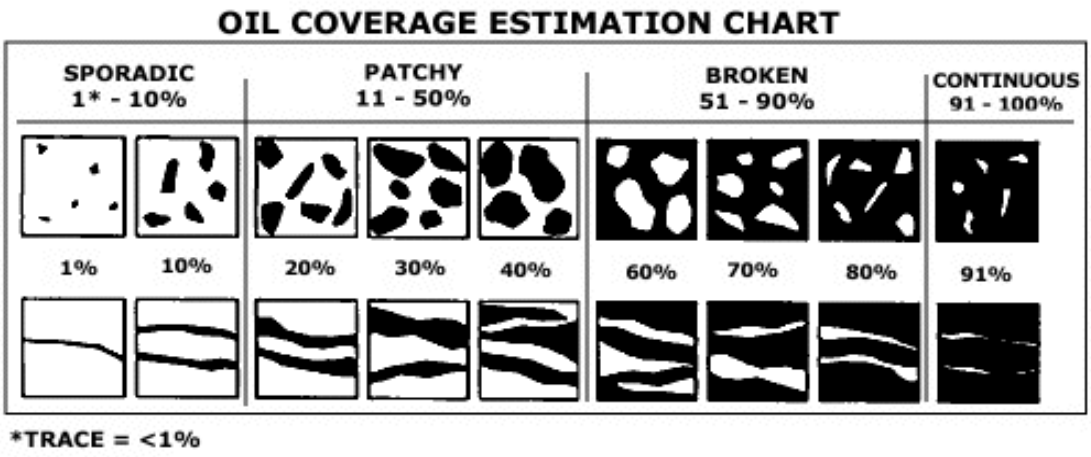


Figure 5.2: Oil Coverage Chart

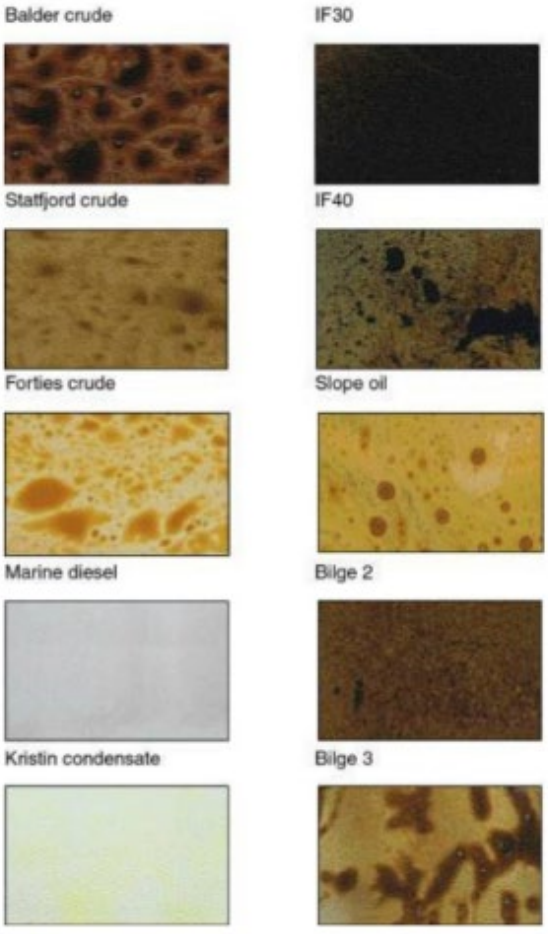


Figure 5.3: Examples of Slick Oil Colour

5.1.5: Spilt Oil Sampling

Where an oil pollution incident is thought to be a result of an illegal operational discharge, a sample of the spilt oil should be taken. If samples may be used in connection with legal proceedings then the following procedures should be implemented, as summarised from the MCA STOp Notice 4/2001. For the MCA link to the Stop Notices refer to Appendix 8.

MCA recommend that 3 samples be collected, the first for analysis to MCA, the second to be provided to the owner or master of the suspect pollution source, and the third for production in court.

Samples should be submitted to the MCA's contractor laboratory. Once a sample has been taken, agreement must be obtained from the MCA Counter Pollution Branch before it is analysed. Once agreement has been obtained, the Counter Pollution Branch will contact their analysis contractor to arrange for the sample to be collected by courier and analysed.

Samples should be labelled correctly and packed in a suitable container to avoid breakage.

Table 5.4 Sampling of Spilt Oil

NO.	ACTION	NOTES
1	The sample should be taken in a clean glass container as provided in the spill sampling kit.	Metal or plastic containers should be avoided since they may interfere with subsequent fingerprinting
2	Care should be taken to sample the oil only	The field vessel is provided with dedicated oil sampling kits which include all the equipment necessary for the sampling of spilt oil on the sea surface
3	Minimum of two samples should be taken. Preferably take three. The following sample sizes provide guidance to what is required for laboratory analyses.	For freshly spilled, relatively non-emulsified oils take at least 30ml to divide between the 3 10ml sample sizes required for lab. analysis; For emulsions take at least 500ml, to be divided between the three samples required for lab. analysis If these quantities cannot be obtained a sample should still be taken.
4	Carefully store samples; these should be sealed to avoid tampering. All samples, once bottled, should be placed in plastic bags and sealed.	Ensure jars are stored in safe place and in a cool dark area away from heat (preferably (<5ºC)
5	Label or accompanying documentation should contain the	Sample Identification No. and initials of person in charge of sampling

	following information.	Description of samples (eg crude oil, fresh, weathered, water-in-oil emulsion) Date, time and place of sampling; Name of Company; Method of sampling; Purpose for which sample was taken; Source if known or suspected; Metocean conditions at time of sampling Particulars of any photos or supporting evidence

5.1.6: Assessing Oil Dispersability

5.1.6.1: Identifying Dispersed Oil

Note the following:

1. Some things in and on the water, such as suspended solids or algal blooms, can resemble dispersed oil.

2. The appearance of oil slicks and subsurface plumes is affected by factors such as oil characteristics, time of day (different sun angles), weather, sea state, and the rate at which oil disperses.

3. Once dispersant has been applied to a slick, you may observe colour changes in emulsions (mousse), produced as the demulsifying action of the dispersant reduces the water content and viscosity of the emulsion. Demulsification also can produce changes in the shape and size of a slick: as demulsification pushes water out, the slick may appear to shrink in area.

5.1.6.2: Observing when Dispersion has Occurred

Note the following:

1. A visible subsurface plume of dispersed oil indicates that an application of dispersant is working. When no plume is visible in the water column, it is difficult to determine whether the dispersant is working, but does not definitively mean that the dispersant is not having an effect.

2. Subsurface plumes of dispersed oil typically have a cloudy appearance, and can range in colour from brown to white. Some are not visible. When dispersant is working, oil remaining on the water surface also may change colour.

3. In some cases, you may not be able to see a subsurface plume even when one is present. When the water is turbid, you may not be able to see a plume. Sometimes,

remaining surface oil and sheen can mask oil dispersing under the slick, making it hard for you to see the plume.

4. A subsurface plume may not form instantaneously once dispersant has been applied to a slick. In some cases, such as when oil is emulsified, it can take several hours for a plume to form. In other cases, a visible plume may not form (you then may wish to use sampling to learn whether dispersion has occurred).

5. A change in the appearance of a treated slick, compared with an untreated slick, might indicate that the dispersant is working. However, a difference in appearance alone is not enough of an indication to be sure that the dispersant is having an effect

6. A clear stretch of water left in the wake of a dispersant application vessel can appear to represent successful dispersion of oil. However, areas of clear water can be created as the vessel wave breaks a path through the oil, either physically parting the oil or mechanically dispersing it. Mechanically dispersed oil will recoalesce and float to the surface.

7. When initially applied, dispersants sometimes have a herding effect on oil, making a slick appear to be shrinking when, in fact, the dispersant is "pushing" the oil together. This effect results from the surfactant action of dispersants, which exerts a horizontal spreading force on thin oil films. This effect can cause parts of an oil slick to seem to disappear from the sea surface for a short time.

5.1.6.3: Field Testing for Dispersability of Spilt Oil

If the dispersability of the spilt oil is in doubt, or the ability of the dispersant to treat the oil type spilt, run a field dispersability test using dispersants and equipment available on the vessel. Do this as quickly as possible after taking the sample.

Table 5.5 Field Testing for Dispersability of Spilt Oil

WATER BORNE VESSEL MOUNTED DISPERSANT SPRAYING TESTING	
1	Test the amenability of the spilt oil to dispersants following the sampling of the slick. Do this as quickly as possible after taking the sample. Test carried out as follows: fill a clean screw top jar with seawater; carefully place about 25ml of spilt oil on the surface; add about 1 ml of dispersant (ca. 2 drops) onto the surface. Shake the jar; if the oil does not rise again to the surface but breaks up in the seawater, the slick should be amenable to dispersant spraying.
2	Undertake calculations to select correct pumping rate and boat speed in relation to nozzle size of equipment.
3	Initially spray boat should enter the oil on surface at recommended speed to spray at a constant rate and agitate the area.
4	Watch oil for evidence of dispersion.
5	As dispersion is achieved it will produce a "smoke plume" in the water. The dispersion will vary in colour between dark and light brown.
6	If dispersion is not taking place large oil droplets will be evident. If this is the case STOP spraying.

5.1.7: Aerial Surveillance

Aerial surveillance is an extremely important part of the marine response to large spills. It should be used for assessing the location and extent of the oil slick, and verifying the predictions of slick movement made as well as progress of natural dispersion and emulsification. It should also be used to direct response operations, be they dispersant spraying, mechanical containment and recovery or, indeed, both.

Aerial surveillance requires specialist aircraft fitted with the following equipment:

- Sideways Looking Airborne Radar (SLAR) for large area, long range detection (20 miles for sea surface and 40 miles for detection on shipping patrol),
- Ultra Violet (UV) sensor for accurate area measurement
- Thermal Infra-Red (IR) sensor for relative oil thickness measurement.
- Night Identification System, which enables the name and port of registration of any vessel to be taken in darkness.
- Digital video and still cameras to provide photographic evidence Frequency of Flights

MCA aerial surveillance capability is fitted with these requirements. Mobilisation of this capability will take place at the discretion of MCA in consultation with Forth Ports.

Aerial surveillance should be carried out for Tier 2 and 3 spills and should be initiated as quickly as possible.

Following the initial flight, subsequent flights should be made regularly, commonly at the beginning and end of the day so that the results can be used to plan the response operations.

5.1.7.1: Flight Plan

A "ladder search" is the most economical method of surveying a large area of water. Since floating oil has a tendency to become aligned in long and narrow windrows parallel to the direction of the wind, it is advisable to arrange a ladder search across the direction of the prevailing wind to increase the chances of oil detection.

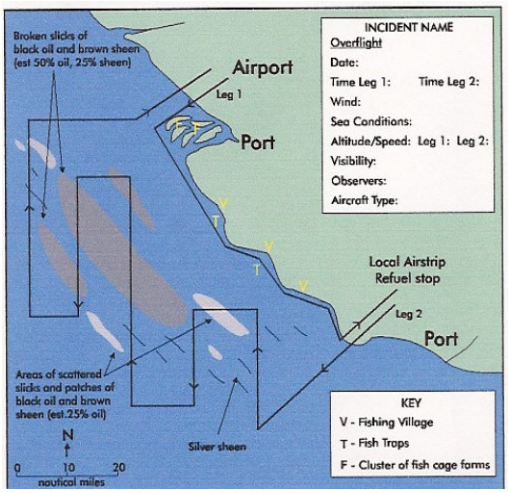


Figure 5.4: Ladder Search Flight Plan

5.2: Health & Safety Guidance

Safety must always be the prime consideration during an oil spill response. Remember, every spill situation has potential safety and health hazards.

5.2.1: Safety Guidelines for Initial On-Site Assessment

- Before commencing operations ensure safety and health risk evaluations are carried out
- **The safety of the general public as well as port employees, visitors and contractors must be taken into account.**
- Until it is established otherwise, assume that the spill is giving off lighter fractions that are flammable and explosive.
- Always approach the spill from upwind as there may be a vapour cloud.
- Close approach to the spill point should not be made unless the area is considered SAFE.
- Eliminate all possible sources of ignition.
- Any spill involving confined airspace in which vapours may accumulate should be treated in the initial stages as a potentially explosive situation.
- Until it is established otherwise, assume that the spill is giving off hydrogen sulphide, a highly toxic, colourless gas with an odour of rotten eggs; as even small concentrations cause olfactory fatigue, the sense of smell should not be relied upon to detect this gas.
- If hydrogen sulphide is detected at hazardous levels the area should be evacuated immediately and the on-site response suspended until personnel can be equipped with suitable PPE, or until levels drop to safe and tolerable levels.

5.2.2: Safety Measures for On-Site Response Personnel

- Individuals should not work alone
- If possible a safety boat should be on station for the duration of any boom deployment.
- Personnel should not enter tidal mud flats areas on foot
- No personnel should go below high water unless a "Safety Officer" is in a secure position to monitor their safety throughout deployment.
- An adequate supply of clean fresh water should be situated at or near the response location(s) for immediate First Aid use.
- Levels of flammable vapours and hydrogen sulphide should be regularly monitored in the early stages of the spill response.
- Access to the site should be controlled.

5.2.3: Personal Protective Equipment

All on-site response personnel should be equipped with appropriate PPE.

For personnel who are likely to handle or come into contact with oil or dispersants the following PPE should be supplied:

- Overalls (preferably disposable)
- Safety helmet
- Safety boots
- Safety glasses
- Gloves (preferably PVC)

Personnel involved in spraying operations should be equipped with:

- Full cover plastic overalls
- Safety helmet
- Face visor (or safety goggles and mouth and nose mask)
- PVC gloves
- Chemical resistant safety boots
- Safety boots
- Lifejacket (if working from a boat or adjacent to water)

5.2.4: Open Water Safety Response Tips

Open Water Response Safety Tips

- Test for poisonous or explosive gases before approaching spill location
- Lines and chains used for lashing and towing have the potential to cause serious injury and must be checked periodically to avoid accident
- Keep the decks as clean as possible – hazards faced in the open water environment multiply as a result of poor weather, oiled decks and equipment, and congested areas
- Ensure that all responders are familiar with the equipment to be used
- Deck operations carry the risk of falling into the water and drowning so a lifejacket must be worn
- Ensure a tool box talk is conducted before commencing operations
- Secure equipment with tag lines when lifting using deck cranes
- Risk can be minimised by having good communications between the bridge and the deck
- Measures should be taken to ensure vessels and small craft not involved in the response are directed to keep clear.

5.2.5: Dispersant Response Option Safety Tips

Dispersant Response Operation Safety Tips

- Assess the routes of possible exposure to dispersant chemical
- Provide PPE (see above) to guard against each and every route, ensure all PPE is compatible and fits wearer
- Keep decks clears and dispersant free by regular washing
- Head spray vessels into wind where possible
- Make sure PPE is resistant to dispersant in use
- Avoid uncontrolled release of dispersant
- Avoid unnecessary and prolonged contact with BOTH spilt oils and chemical dispersants
- Always refer to the Material Safety Data Sheets prior to commencing operations (available in FTNS MEC)
- Ensure that small craft not involved in the response are directed to keep clear of dispersant operations.

5.2.6: Health Effects of Exposure to Spilt Hydrocarbons

Crude oil contains substances that can cause acute as well as chronic health effects. Primary health risks with fresh crude are related to the inhalation of:

Substance	Health Risk
Hydrogen Sulphide	Toxic
Benzene	Carcinogen
Total hydrocarbons	Irritant, toxic, carcinogenic dependant on crude type
Oxygen displacement	Asphyxia

In addition prolonged or repeated skin contact may result in dermatitis as well as increased body uptake of some crude oil compounds.

5.2.7: First Aid for Contact with or Ingestion of Oils and Dispersants

5.2.7.1: Eyes

For oil or dispersants the eyes should be rinsed thoroughly with copious quantities of fresh clean water for at least for at least 1 –2 minutes. A medical professional should be consulted as soon as possible for advice on further treatment that may be required.

5.2.7.2: Ingestion

Ingestion of oil or dispersant should be initially treated by drinking at least half a pint of milk. Vomiting should not be induced. Professional medical advice should be obtained as soon as possible.

Although dispersants are generally of low toxicity, a copy of the Material Safety Data sheet should if possible be made available to the medics treating the casualty, as this will provide details of any hazardous components and possible harmful effects.

5.2.7.3: Skin Contact

Oil on the skin should be cleaned off with an approved cleanser for this purpose (such as Swarfega), followed by thorough washing with soap and hot water. Solvents or degreasers such as paraffin or white spirit (turpentine substitute) should not be used to remove oil as these may cause industrial dermatitis; on no account should coarse abrasives be used on the skin.

5.2.8: General Hygiene

Hands and any exposed skin should be washed thoroughly before eating after any contact with oils or dispersants Even if otherwise permitted, smoking should be discouraged when handling dispersants or oil to help avoid any mouth contact. Barrier creams should be used.

Response personnel should not carry oily rags, handkerchiefs or other items that have been heavily oiled in clothing pockets so as to avoid prolonged contact with oil permeating the clothing

Response personnel must not wear clothing which has become heavily soaked with oil or dispersant for extended periods. Such clothing must be exchanged for clean as soon as possible and disposed of as oily waste.

Section 6: Firth of Forth Response Options and Guidelines

6.1: Purpose of these Guidelines

The purpose of this section is to provide teams who are undertaking a response to spills of waterborne hydrocarbons in the Ports, enclosed docks and Firth of Forth Harbour Area with guidelines to implementing the appropriate response option(s) to a spill incident. When using this section as a guide to formulating a response to a spillage it must be borne in mind that:

- A precise response strategy can only be decided at the time of the spill; where response techniques such as containment and recovery, exclusion and diversionary booming are recommended as possible first alternatives it is important to remember that their feasibility is dependent on weather conditions, sea states, type of oil spilt and other circumstances that cannot be pre-determined.
- Co-ordinators and response teams must be prepared to adapt their actions as the spill develops and as conditions dictate.
- Flexibility is an absolute requirement of the response teams.

It is important to note that all these control and clean-up procedures and written assuming that the area has been declared safe to work in and that all response personnel are wearing protective clothing and have been acquainted with the health and safety guidelines in Section 5.

6.2: Oil Types, Characteristics and Fate & Behaviour when Spilt on the Surface of the Water

Utilising a large database of oil properties, a model of oil types and their behaviour when spilt has been developed by ITOPF, 1987 with oils being allocated to one of four groups or types. The model is illustrated in Figure 6-1 and examples of the different oil types and groupings given in Table 6-1. The table also provides a summary of potential response options for the different groupings with procedures for these response options given in the following sections.

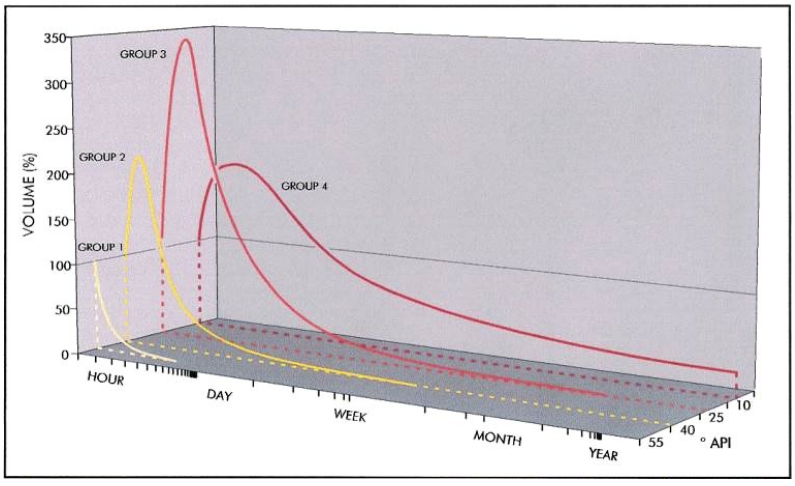


Figure 6.1: ITOPF model of oil types and behaviour

6.3: Oil Types and Counter Pollution Strategies

Once the type of oil that has been spilt in the harbour has been confirmed, ensure that the type of response that is initiated is suitable for the oil type. Refer to Tables 6.1 and 6.2.

Table 6.1 Oil Types Behaviour When Spilt on the Water Surface and Counter Pollution Response Options

GROUP	BEHAVIOURAL CHARACTERISTICS	POSSIBLE RESPONSE TECHNIQUES	NOT ADVISABLE	HYDROCARBON TYPES FIRTH OF FORTH HARBOUR
Group 1	Very low viscosity, flammable liquids. The liquids in this group are highly flammable, give off potentially toxic vapours when evaporating and could form a vapour plume. As shown in Figure 6.1, these substances will evaporate rapidly, within hours of the spill and are non-persistent. They do not increase in bulk as a result of emulsification and will be removed from the water surface rapidly by the processes of evaporation.	Natural dispersion and monitor Naked lights or other possible sources of ignition must be avoided. Radio and radar equipment may constitute a hazard. The oil and atmosphere should be sampled at regular intervals to check flashpoint and flammable gas concentration until the light compounds have evaporated and the flashpoint of the oil is well above 60°C (IMO, 1988). The safety of any passing vessels should be taken into consideration.	Any intervention response. These oils are potentially hazardous and should not be subject to an intervention response until it is determined that the area is safe and the vapour cloud dispersed.	Unleaded motor spirit Leaded Motor spirit; Range of hydrocarbon distillates shipped out of Grangemouth jetties
Group 2	Low viscosity, light fuel oils and refined products. These hydrocarbons will evaporate, are extremely rapid spreading and form a slick with little interaction with the water. As shown in Figure 6.1, under certain circumstances they may increase in volume. These hydrocarbons are non-persistent and the major part of the spill will be removed from the water surface rapidly through the processes of evaporation and natural dispersion.	Natural dispersion and monitor - i.e. leaving the oil alone to disperse naturally - may be the best option especially in cases where the slick will not threaten sensitive areas or where the spill is small and rapidly naturally dispersing. Vessels may be moved through the slick to assist in break-up of the oil.	Although corralling of these oils may be possible by use of booms in the enclosed areas in the ports and docks, the very rapid spreading which is characteristic of these oils coupled with the difficulty of deploying booms may inhibit corralling in the open water of the Firth	derv, gas oil, jet A-1, kerosene (ATK, RSK, Jet A-1)

GROUP	BEHAVIOURAL CHARACTERISTICS	POSSIBLE RESPONSE TECHNIQUES	NOT ADVISABLE	HYDROCARBON TYPES FIRTH OF FORTH HARBOUR
Group 3	Medium viscosity crude oils. Substances that float on water. Will evaporate, but rate will be dependent on the volatility of the crude oil; will also form water in oil emulsions which are then more difficult to treat. Most crude oils are persistent, especially when they have started to emulsify. They may increase in volume by up to three times as a result of emulsification. The bulk of the slick will be removed from the water surface by natural break-up processes within a week of the spill. Residual oil will remain. Will increase in viscosity over time with the action of wind and waves.	Containment and recovery of the spilt oil as close as possible to the source of the spill. Dispersant spraying; may in some cases offer a net environmental benefit in order to prevent oil beaching in key priority sensitive areas, particularly in the deep and open waters of the outer Firth. For optimum results utilise a dispersant that is known to disperse the particular oil type.	The oil should not be left to disperse naturally unless adverse weather leaves no option	Crude oil; light-medium fuel oils
Group 4	High viscosity fuel oils. These are used to fuel product and crude oil carriers. Heavy crude oils These are substances which float but which may become solid or semi solid when interacting with water surface. If mixed with sediment could have the potential to sink. There will be little evaporation from these oils and these oils are highly persistent when spilt. Will greatly increase in viscosity over time by the action of wind and waves. As shown in Figure 6.1 may increase in volume by 2 times and are highly persistent – if not treated may persist for months or even years.	Vacuum pumping may be used on both surface and subsurface fuel oil in port areas Dispersant spraying using an appropriate dispersant *may* be an option for heavy crude oils in open water areas. Booming of heavy fuel oil around vessels and mechanical containment and recovery using specialised equipment	Sinking agents	Heavy crude oil; heavy fuel oil

6.4: Oil Groups, Spill Sizes and Counter Pollution

For each oil type group spill response methods considered most appropriate are recommended in Table 6.2. Note that responses are given by oil grouping and Tier of spill for both open water situations and nearshore/port situations.

Table 6.2 Counter Pollution Strategy Matrix for Water borne Spills

	Open water response options				Nearshore /port and docks response options				
Oil Type Group	Natural dispersion & monitor	Containment and recovery	Diversionary booming	Dispersant use (following consultation)	Shoreline booming & oil recovery	Containment around vessel	Dispersant use following consultation	Natural dispersion & monitor	
Group 1	●	×	×	×	×	×	×	●	Tier 1
	●	O Residual	×	×	O Residual	×	×	●	Tier 2
	●	O Residual	×	×	O Residual	×	×	●	Tier 3
Group 2	●	O	×	×	×	×	×	●	Tier 1
	O	O	O	×	O	O	×	O	Tier 2
	×	O	O	×	O	O	×	×	Tier 3
Group 3	O	O	O	×	●	●	×	×	Tier 1
	×	●	O	O	●	●	×	×	Tier 2
	×	●	O	O	●	●	O	×	Tier 3
Group 4	×	●	O	×O[1]	●	●	×	×	Tier 1
	×	●	O	×O[1]	●	●	×	×	Tier 2
	×	●	O	×O[1]	●	●	×	×	Tier 3
KEY	●	APPLICABLE		O	CONSIDER		×	AVOID	

6.5: Response Strategy and Firth of Forth Sea Zones

For response to water borne spills within the Firth of Forth, the Harbour Area has been divided into six zones. These zones have been specified taking into consideration the following factors:

1. The key environmental sensitivities of the Firth of Forth.
2. The fisheries interests of the Firth of Forth.
3. The priority protection areas defined in *Priority Protection Areas Map*.
4. Water depths in the Firth of Forth
5. Degree of exposure of the nearshore areas and their adjacent coasts.

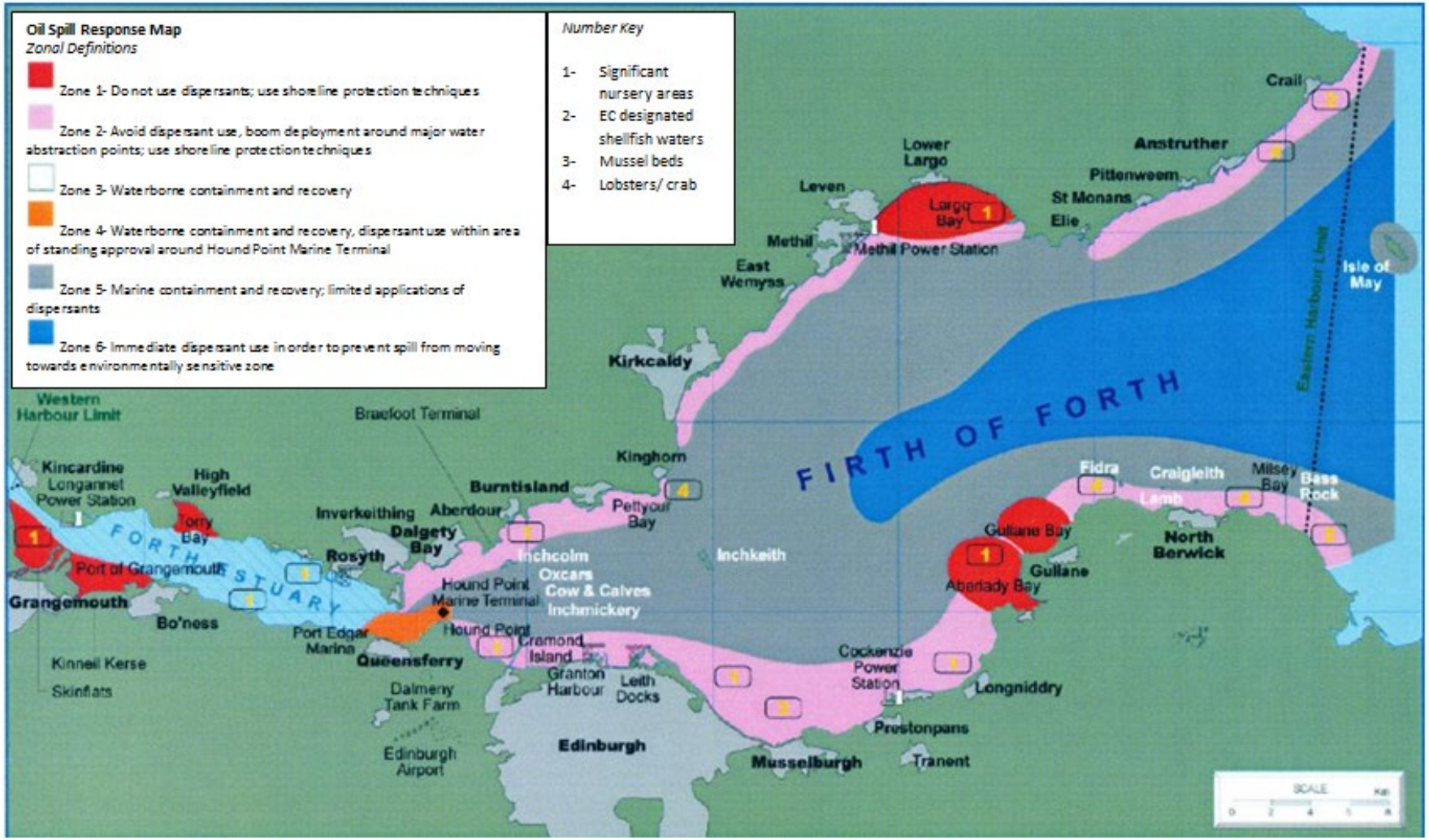
Table 6.3 Definition of Response Strategy Zones for the Forth of Forth harbour Area

Zone 1:	**The mudflat areas of the Firth of Forth which include significant nursery areas for flatfish (as defined by Marine Scotland).**
Zone 2:	**A1 priority protection areas lying in the more exposed outer Firth of Forth.**
Zone 3:	**A1 priority protection areas lying within the relatively more sheltered inner Firth of Forth Estuary.**
Zone 4:	**The area within the vicinity of Hound Point Marine Terminal.**
Zone 5:	**The outer Firth area between the nearshore zone and deep water channel.**
Zone 6:	**The open deep-water channel out with 1 nautical mile from the 20m bathymetric contour.**

Table 6.4 Preferred Strategies for Response to Persistent Oils Spilt in Firth of Forth Harbour Area

PREFERRED STRATEGIES OF RESPONSE FIRTH OF FORTH HARBOUR AREA~ (*Use with Firth of Forth Oil Spill Response Map)*	
Zone on Oil Spill Response Map	**Preferred Strategy of Response**
Zone 1	❑ Prevent oil from reaching these sensitive areas if possible. ❑ Do not use dispersants. ❑ Shoreline protection; water borne containment and recovery; avoid trampling sensitive mudflat areas.
Zone 2	❑ Avoid dispersant use. If dispersant use is required to protect A1 Sites (Refer to Priority Protection Areas Map) only use on approval of Marine Scotland. ❑ Booms should be deployed around Deep Sea World water abstraction points (A2 on Priority Protection Areas Map) if there is a possibility of hydrocarbons entering the vicinity. ❑ Shoreline protection containment and recovery techniques may be used.
Zone 3	❑ Water-borne containment and recovery techniques suitable to estuarine waters. ❑ Diversionary booming techniques using beaches of opportunity [locate at areas with good access]. ❑ Diversionary booming to deflect oil away from key sites. ❑ Shoreline protection containment and recovery techniques. ❑ If the above is impractical due to weather conditions, current speeds etc. limited application of dispersants may be required, following consultation with Marine Scotland.
Zone 4	❑ Rapid application of dispersants for small spills as quickly as possible to prevent spill from spreading in area around Hound Point Marine Terminal. A standing approval has been issued for this specified area for a limited use of dispersants. Dispersant use above the approved limit requires formal approval by Marine Scotland. ❑ Water-borne containment and recovery of large spills. ❑ Diversionary booming to deflect oil away from key sites. ❑ Shoreline protection and containment and recovery techniques.
Zone 5	❑ Marine containment and recovery of spilt hydrocarbons. ❑ Limited application of dispersants to assist dispersion of slick after consultation with Marine Scotland. ❑ Application of dispersant in deeper, open waters and anchorages if ambient weather conditions indicate possible impact of A1 priority protection sites; use dispersant suitable for oil type*.
Zone 6	❑ Marine containment and recovery of spilt oil. ❑ If impractical application of dispersants to assist dispersion of slick after consultation with Marine Scotland.

Figure 6.2: Oil Spill Response Map



6.6: Response Procedures

Response procedures and checklists are provided in the following sections for the following:

1. Natural dispersion and monitoring checklist and response procedures;
2. Chemical dispersion checklist and response procedures;
3. Mechanical containment and recovery checklist and procedures;
4. Containing spill in the vicinity of a vessel;
5. Response options for heavy fuel oil spills;
6. Waste Disposal Plan.

6.6.1: Natural Dispersion & Response Checklist

Step	Resources & Actions	Guidance Notes
Initiate surveillance of spill	❑ Available vessel ❑ Support Services Unit to mobilise aerial surveillance craft from most appropriate location ❑ For Tier 2/3 request MCA to mobilise aerial surveillance aircraft Ensure MRCC Aberdeen are aware of intention to track the slick.	1. Carry out surveillance from available vessel; follow-up using aircraft surveillance for larger spills (helicopter fights commercially available – refer Section 7 for details) 2. Floating oil has a tendency to align in long and narrow windrows parallel to the direction of the wind refer Figure 6.3 overleaf). It is advisable to arrange a ladder search across the direction of the prevailing wind to increase chances of oil detection. (see Section 5 Spill Assessment)
For larger spills place on standby back-up resources	❑ Forth Ports Limited dispersant facility. ❑ Tier 2 response provider, INEOS FPS Response Resources.	For any large spill of Group 2 oils or smaller spills of crude oils anti-pollution resources should be placed on standby / mobilised. Refer Section 7 for Equipment Resources
Obtain spilt oil sample	❑ Available vessel should obtain sample.	Sample may be required for post incident inquiry. Ensure personnel follow procedures given in Section 5.
Obtain weather forecasts	❑ Obtain data from weather forecasting contractor.	Greater wind speeds and wave conditions will increase speed of natural dispersion. These data will also be important for slick predictions and assessing suitable weather windows for equipment deployment should strategy need to be changed.
Slick predictions	❑ Environmental Unit initiate slick predictions.	Monitor movement of spill; ensure computer runs are regularly updated.
Carry out monitoring	❑ Resources as mobilised. Ensure that the monitoring covers the points opposite. Table 6.5 provides specifications for aerial surveillance aircraft. Air Reconnaissance contracted to MCA meets these specifications	**1.** Chart slick size, growth patterns; affected area; **feedback data to FTNS/MEC** 2. Estimate quantities remaining if possible; refer 3. Identify heaviest concentration of hydrocarbons (these are likely to be at the downwind leading edge of the spill); 4. Determine proximity of slick to most sensitive areas (refer to Environmental maps & charts in Sections 10 & 11); 5. Watch for any flocks of birds; 6. Watch for breakup of slick and determine direction of movement of any oil patches; 7. Report on progress of natural dispersion.

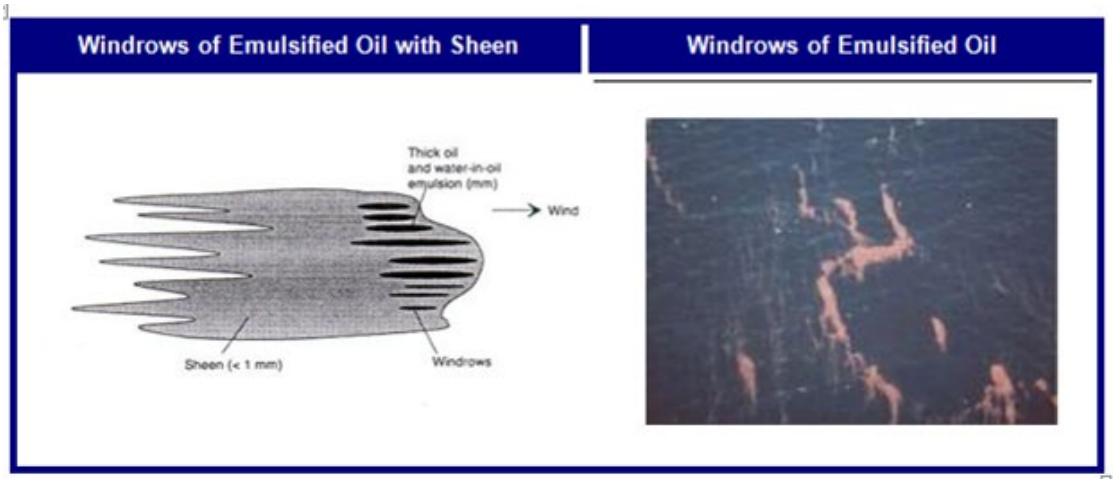


Figure 6.3: Distribution of oil in a slick

Ideally for large spills aerial surveillance craft should meet the following specifications:

Table 6.5 Aerial Surveillance Aircraft Specifications

Equipment	Purpose
Infrared Line Scanner imaging equipment	Aids in the assessment of the volume of the spilt oil
Suitable navigation equipment including Global Positioning Equipment (GPS)	Ensures the accurate display of search areas and spray patterns and control activities of other resources during counter pollution operations
A comprehensive communications suite including multi-channel VHF FM radio, Marine Band (156-174 MHz)	Ensures accurate flow of information to the incident control base
Ultra-violet (UV) Liner Scanner imaging equipment	Assesses oil thickness
Low light camera equipment with image intensifier and infrared illuminator	Night identification
Suitably trained and experienced air crew and other trained staff	To ensure an adequate response capability

6.6.2: Chemical Dispersion Response Option Checklist

Remember that Marine Scotland must be consulted and their approval obtained prior to dispersant use in any area that does not have a prior derogation to spray.

Operation	Resources & Actions	Guidance Notes
Initiate surveillance of spill	❑ Available vessel ❑ For Tier 2 spills Support Services Unit to mobilise aerial surveillance craft from most appropriate location (refer Section 7 for details of available resources) ❑ MCA will mobilise aerial surveillance aircraft for Tier 3 spills and on request for Tier 2 spills.	1. Carry out initial surveillance from available vessel; follow-up using aircraft surveillance. 2. For aerial surveillance arrange a ladder search across the direction of the prevailing wind to increase the chances of oil detection (refer Section 5) Ensure MRCC Aberdeen are aware of intention to track the slick.
Mobilise dispersant spraying and resources	❑ INEOS Oil Spill Response equipment, Adler and Allan, Forth Estuary and Hound Point tugs/ work boats. Note that dispersant should be used that is amenable to oil type.	Obtain data on oil type spilt. Request Environment Unit to source dispersant likely to disperse oil type spilt. Note that Dasic Slickgone NS is a wide spectrum dispersant that may disperse a range of oil types. Dasic LTSW also wide spectrum. For spills of heavy fuel oil refer Section 6.6. Mobilise resources as rapidly as possible in order to maximise effectiveness of response and to prevent beaching. Mobilisation routes provided in Section 6.
Obtain spilt oil sample	❑ Available vessel should obtain sample prior to spraying.	Sample may be required for post incident inquiry. Ensure personnel follow procedures provided in Section 5.
Obtain weather forecasts	❑ Obtain data from current weather forecasting contractor.	Important for slick predictions and assessing suitable weather windows for response options and equipment deployment
Run slick predictions model	❑ MEC Operations / Environmental Unit to initiate running of slick predictions. Selected slick predications have been run and recorded for a range of oil spill scenarios in the Firth refer to Section 2	Monitor movement of spill; ensure computer runs are regularly updated.
Deployment of resources	❑ Utilise surveillance aircraft to achieve best deployment of resources	The thickest, downwind sections of the slick should be sprayed first. Use colour guide to identify these or obtain data from surveillance aircraft (refer Section 5).
Carry out monitoring	❑ Utilise resources mobilised for aerial surveillance.	Utilise aerial surveillance and monitor progress of dispersion. A minimum of 2 flights a day is recommended. Refer to Monitoring & Reporting Response Checklist for monitoring. If dispersant spraying is not proving effective : STOP

6.6.2.1: Vessel Mounted Chemical Dispersion

Application Guidelines to Follow After Start Up

- If at all possible use a spotter plane to control larger spraying operations, ones where the slick has become fragmented
- Commence treatment from edge of the slick posing the greatest threat to the shoreline; spray thicker patches of oil rather than intervening thin films or sheens, which will more easily disperse through natural processes.
- Try and avoid cutting across slick (see diagram below)
- Treat slick with parallel and continuous runs to cover the whole area; treat slick into the wind
- Begin treatment at the outer edges of the thicker parts of the slick
- If the slick is near shore, the preferred pattern is in swaths back and forth parallel to the shoreline
- If dispersion is taking place there may be a smoke plume (light brown cloud) evident in upper water layers
- DO NOT spray sheens. These will rapidly disperse naturally. Do not attempt to spray very viscous or semi-solid oils.

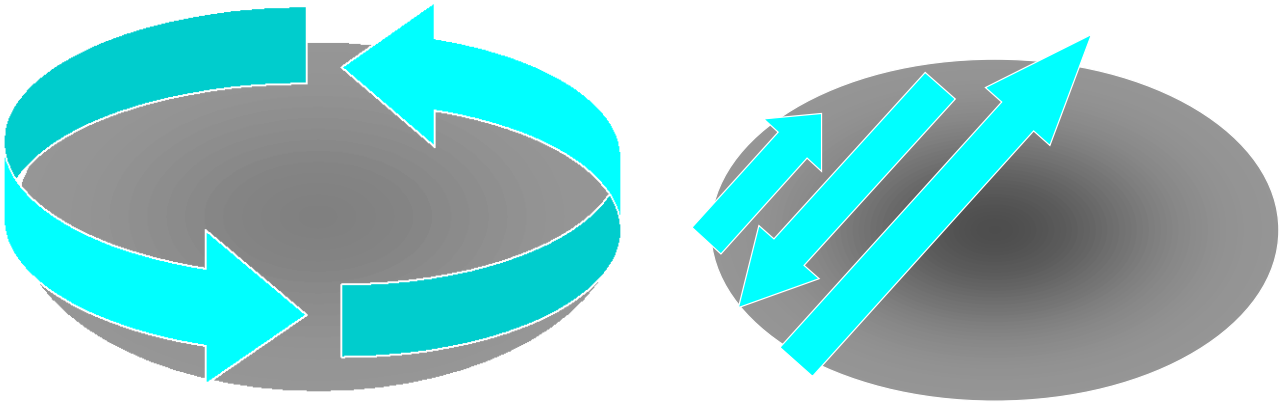


Figure 6.4 Vessel mounted dispersant application

When using dispersants, deployed from either a vessel or aircraft, note the following:

Once dispersant been applied to a slick, you may observe colour changes in emulsions (mousse), produced as the demulsifying action of the dispersant reduces the water content and viscosity of the emulsion. Demulsification also can produce changes in the shape and size of a slick: as demulsification pushes water out, the slick may appear to shrink in area.

A visible subsurface plume of dispersed oil indicates that an application of dispersant is working. When no plume is visible in the water column, it is difficult to determine whether the dispersant is working, but does not definitively mean that the dispersant is not having an effect.

Subsurface plumes of dispersed oil typically have a cloudy appearance, and can range in colour from brown to white. Some are not visible. When dispersant is working, oil remaining on the water surface also may change colour.

In some cases, you may not be able to see a subsurface plume even when one is present. When the water is turbid, you may not be able to see a plume. Sometimes, remaining surface oil and sheen can mask oil dispersing under the slick, making it hard for you to see the plume.

A subsurface plume may not form instantaneously once dispersant has been applied to a slick. In some cases, such as when oil is emulsified, it can take several hours for a plume to form. In other cases, a visible plume may not form (you then may wish to use sampling to learn whether dispersion has occurred).

A change in the appearance of a treated slick, compared with an untreated slick, might indicate that the dispersant is working. However, a difference in appearance alone is not enough of an indication to be sure that the dispersant is having an effect

A clear stretch of water left in the wake of a dispersant application vessel can appear to represent successful dispersion of oil. However, areas of clear water can be created as the vessel wave breaks a path through the oil, either physically parting the oil or mechanically dispersing it. Mechanically dispersed oil will recoalesce and float to the surface.

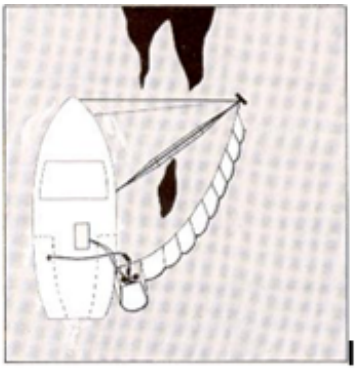
When initially applied, dispersants sometimes have a herding effect on oil, making a slick appear to be shrinking when, in fact, the dispersant is "pushing" the oil together. This effect results from the surfactant action of dispersants, which exerts a horizontal spreading force on thin oil films. This effect can cause parts of an oil slick to seem to disappear from the sea surface for a short time.

6.6.3: Mechanical Containment & Recovery and Coastal Protection Response Checklist

Step	Resources and Actions	Guidance Notes
Initiate surveillance of spill	❑ Available vessel ❑ Mobilise aerial surveillance craft from most appropriate location ❑ MCA may mobilise aerial surveillance aircraft **Prior to commencing ensure MCA has been made aware of intention to track slick**	1. Carry out initial surveillance from vessel; follow-up using aircraft surveillance 2. Guidelines for vessel surveillance provided in Section 5 3. For aerial surveillance arrange a ladder search across the direction of the prevailing wind to increase the chances of oil detection (refer Section 5)
Mobilise pollution control resources	❑ Adler and Allan, INEOS FPS Resources (Burntisland Response Base and Hound Point Tugs).	**Refer to Section 7 for mobilisation and equipment resources details**
Carry out consultations	**If required , before deciding upon a coastal strategy for protecting shorelines it is essential to consult with the appropriate local authority whose coast is threatened and appropriate environmental bodies including NatureScot, Marine Scotland and SEPA. Note priority protection areas are described in Section 9**	
Determine location of sensitive areas	❑ Refer to Priority Protection Areas map and environmental sensitivity database ❑ Agree on order of priorities for protection	1. Note that the data and map provided in Section 9 has been based on data supplied from environmental agencies. 2. Additional information in Appendix 11 and Appendix 12.
Obtain weather forecasts	❑ Support Services to obtain data	**Important for assessing suitable weather windows for equipment deployment. Ensure that a record is kept of weather and sea state conditions**
Run Oil Spill Modelling Software predictions	❑ Environmental Unit to run oil Spill Modelling Software	**Monitor movement of spill; ensure computer runs are regularly updated; for reference selected slick predications have been run and recorded for a range of oil spill scenarios in the Firth of Forth harbour area; refer to Section 2 for results.**
Deployment of resources	❑ Oil spill responder to deploy resources ❑ A common difficulty when deploying booms and skimmers to recover oil is controlling the movements and activities of vessels and directing them to the thickest areas of oil. This can be overcome by using aircraft equipped with air to sea communications.	**Using results from surveillance to assist in deployment of resources; note that the anti-pollution tug has a side sweep system and can be used on its own or can also deploy additional boom utilising a workboat or other vessel to assist. Examples of typical booming configurations are provided below. These are examples of how booms can be placed as many booming configurations can be deployed. These configurations will be dependent on metocean**

		conditions, the size and location of the spill at the time of the spill.
Carry out monitoring	❑ Utilise resources as mobilised for aerial surveillance	1. Utilise aerial surveillance and monitor progress of response. 2. Identify heaviest oil concentrations 3. 2 flights a day should be made.

Single ship recovery system with a boom held in position by a rigid arm and guy ropes. A pocket in the boom contains a skimmer connected to a power pack on deck. Removed oil is pumped into storage tanks on board.



Single ship system extended with additional vessel towing boom to increase the encounter rate.

U configuration towed by two vessels at 1-2 knots. Oil escaping behind boom is intercepted by a single ship system.

Figure 6.5: Water bourne containment and recovery configurations utilising a single vessel system

A range of typical configurations is shown in Figure 6.6 below. Bear in mind that the appropriate configuration will depend on a range of factors that include:

- The area (size) of the approaching slick
- The amount of redirection necessary
- Wind direction

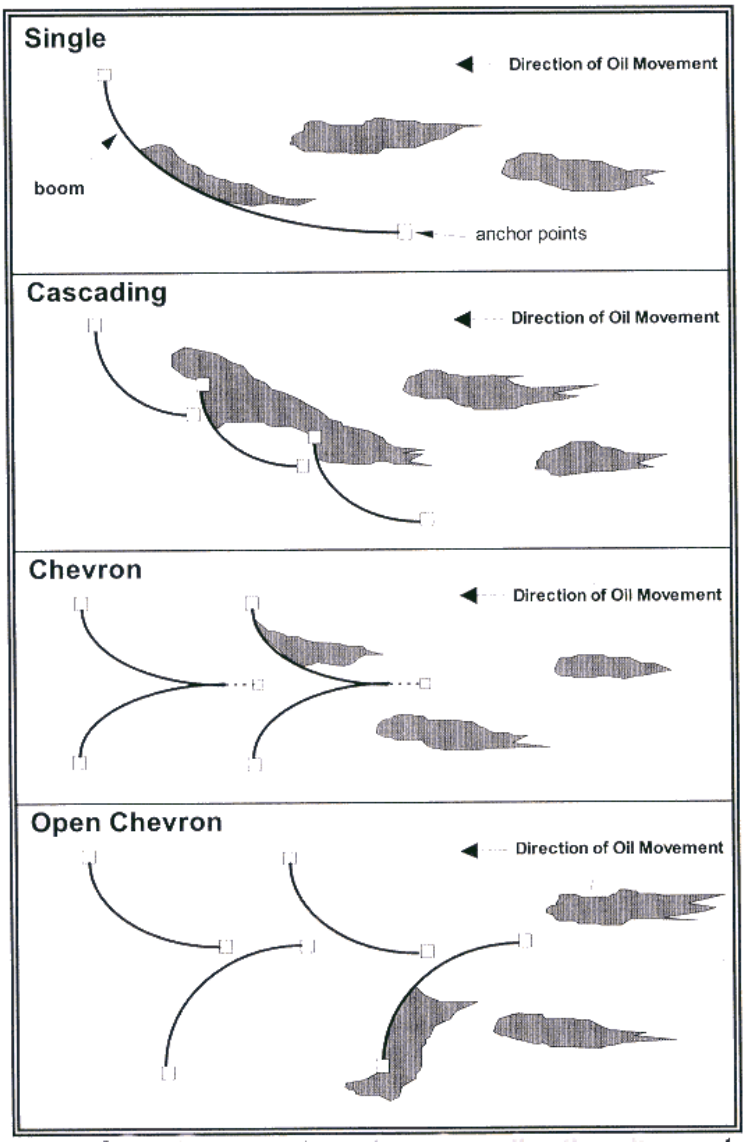


Figure 6.6: Potential boom configurations for diversionary booming

For selected nearshore booming points, INEOS FPS Onshore Oil Spill Contingency Plan have identified and exercised a number of sites that are designed to prevent the spread of oil up major river courses.

6.6.4: Containing a Spill in the Vicinity of a Vessel

6.6.4.1: First Actions

- **Assess:**
  - Extent of pollution
  - Navigational dangers
  - Other restrictions to an open operation
  - Tidal stream direction/strength
  - Weather conditions
  - Condition of stricken vessel
  - Whether vessel can be safely boarded
  - Best location for marine operations field control point
  - Need for smoking restrictions
  - Personnel boarding and loading facilities at harbours
- **Photograph site if safe to do so; use intrinsically safe camera or site CCTV**

6.6.4.2: Secondary Actions

- **In consultation with contractor on site determine the requirement (types and amount) for:**
  - Booms
  - Recovery equipment
  - Dispersants
  - Spraying equipment
  - Storage vessels
  - Support craft, tugs, rig tenders
  - Helicopters
  - Anchors, chains, ropes
  - Submersible pumps
  - Hoses
  - Fenders
  - Manpower to assist boat crews
- **Refer to Section 7 for equipment availability.**
- **Arrange with Marine Operations to acquire additional approved resources**

6.6.4.3: Executing Counter Pollution Plan

- **Arrange radio network link-up (with Communications Unit) and establish Call-Signs**
- **Contact stricken vessel and ask:**
  - If any unseen dangers around vessel
  - For vessel condition report

- If oil leakage stopped

- **Advise stricken vessel of containment plan and of possible intention to board**
- **Take station in marine operations field control point**
- **Test communications**
- **Monitor weather reports/forecasts**
- **Start deploying booms – keep close control of this operation:**
  - Do not let tugs pull-out boom too quickly
  - Watch closely for tidal variations
  - Watch tugs keep propellers clear of towlines
- **Site boom as required, anchor by ground tackle or by boats holding**
- **Site recovery vessel alongside booms, and anchor**
- **Commence transfer**
- **Monitor recovery rate (for recovery vessel replacement)**
- **Arrange for samples to be collected from recovery vessel**
- **Monitor equipment performance**
- **Board stricken vessel if possible and determine:**
  - Has leakage stopped
  - Can leakage be stopped
  - Quantity of oil loss before leakage is stopped
  - Quantity of oil loss so far
  - Vessel pumps availability
  - Can cargo be transferred
  - Condition of vessel (shear stress/bending moments)
- **Maintain log which should be used as a record of the event; include the following, all of which should have a time entered alongside:**
  - Key events
  - Incidents (names)
  - Equipment receipts
  - Boat operations (start/stop time)
  - Positioning booms/boats/tugs
  - Start/stop of recovery
  - Meetings (internal/external)
  - Volumes recovered
  - Equipment defects/shortages
  - Weather/tide/wind changes

6.6.5: Response Options for Heavy Fuel Oil Spills

6.6.5.1: Fate and Behaviour of Heavy Oil

Various factors determine the severity and environmental consequences of an oil spill. Of the range of factors, type of oil; amount spilt; environmental sensitivity of the spill location and shoreline that can affect severity of the spill, one of the most significant is the type of oil.

Heavy fuel oils have a high specific gravity and high viscosity which means they do not degrade naturally easily and, as shown in Figure 6.1 and Table 6.1 are highly persistent.

6.6.5.2: Response Options

Sorbent Booms

Absorbent booms may be used to corral and contain small spills of heavy fuel, for example small patches in the open water or around a vessel. They may also be used deflect or divert small spills away from sensitive shoreline areas.

Sorbent booms can be deployed rapidly utilising workboats and secured by ropes and clips. They may also be used to contain residual oil upstream of traditional containment booms.

Availability

Extensive stocks of sorbent booms, pillows and pads are held by INEOS FPS Dalmeny & Forthwright storage. One of the four tugs stationed at Hound Point Marine Terminal will be available at all times for a response. Two of the vessels have recovered oil capacity, one is $100m^3$, and the other is $200m^3$.

Traditional Booms and Skimmers

Larger spills of heavy fuel oil in the open water, as with crude oil, will require use of specialist vessels for ready deployment of booms and skimmers and for storage of recovered oil. The recent evaluation of the response to the Prestige heavy fuel oil spill by ITOPF (ITOPF, 2005) provides a review of the most appropriate equipment for dealing with heavy fuel oil spills. The following conclusions were reached with regard to recovery equipment:

1. Disc skimmers are least effective of the skimmers available;
2. Weir skimmers experienced good recovery rates before the oil increased in viscosity and fragmented;
3. In the early stages of the spill the weir skimmers were able to operate without the use of booms; however once the oil fragmented deployment of suitable sea-going booms was required to corral the oil;
4. Sweeping arm skimmers achieved high recovery rates and volumes of spilt oil.
5. Rapid mobilisation of vessels and specialised booms and skimmers will allow recovery of heavy fuel oil, especially in the early stages of response

before the oil has increased in viscosity through the action of wind and waves.

6. For very large spills the encounter rate is unlikely to prevent oil from beaching.

Availability

- Side sweep systems are available on the tugs stationed at Hound Point Marine Terminal.
- Open water boom stocks at INEOS FPS Burntisland Response Base.
- Hound Point Marine Terminal tug & work boat for boom deployment and 'Hopetoun' oil recovery vessel with 200m^2 storage capacity.

Chemical Dispersants

Under certain circumstances dispersant *may* disperse heavy fuel oils. In 1997 sea trials were carried out by the National Environmental Technology Centre on behalf of the MCA to determine whether chemical dispersion of HFO was a feasible response option. These sea trials were followed up by laboratory trials. The results demonstrated that dispersants may be a feasible option for spills of HFO at water temperatures of 15°C.

COREXIT 9500 is not currently on the DEFRA approved list, BUT, existing stockpiles may be used away from rocky shorelines in appropriate conditions.

Availability

Stockpiles are held by OSRL in Southampton and could be mobilised in the event of Tier 3 spill for trial runs. This consists of 500m^3 of 'Dasic Slickgone NS' in addition to 500m^3 of 'Finasol OSR 52'.

Manufacturers and suppliers of Dasic LTSW and Superdispersant are provided in the DEFRA approved listing and stockpiles are maintained by the MCA (Barnsley, Bristol and Dundee).

This response option would only be considered as a part of an overall mechanical containment and recovery option.

6.6.5.3: Response Times

The ITOPF evaluation of the Prestige spill demonstrated that vessels that were mobilised promptly were able to recover significant volumes of oil. Two key factors affect response times for heavy fuel oil spills:

1. Behaviour of the fuel oil; the ITOPF evaluation of the Prestige spill demonstrated that, for the first week of the spill the oil remained in a homogenous state with slicks of hundreds of metres and several centimetres thick. For containment and recovery operations using the specialised equipment referenced above, these conditions would have allowed recovery of spilt oil.

   Metocean conditions worsened in the second week with the result that there was a dramatic increase in viscosity and decrease in the rate of oil recovery.

2. In an open sea situation, such as the original spill location of the Prestige there is sufficient time to deploy oil spill response equipment. In situations such as the Firth of Forth travel distances are more restricted. Slick trajectories in Section 2 demonstrate that for spills of heavy fuel oil from the Fairway Buoy oil would beach under neap ebb tidal conditions and a 9 knot wind at Largo Bay in about 47 hours. Under springs flood conditions, with a 19 knot wind, oil could beach at Inchcolm Island in approximately 13 hours. In the open water 4 nautical miles off North Berwick under neap ebb conditions and a wind speed of 15 knots, oil could beach at North Berwick in about 5 hours and in Largo Bay in about 6 hours under spring flood conditions.

This data clearly demonstrates that under a range of tidal conditions and wind speeds, oil spilt from the above point sources will beach rapidly.

The availability of Ro-Boom side sweep systems on the tug stationed at Hound Point Marine Terminal will allow a ready and rapid response to smaller spills and an initial response to larger spills. As previously mentioned, there is also a work boat and recovery vessel available.

Heavy Fuel Oil and Tiers of Spill

Considering the potential difficulties of mounting an intervention response to heavy fuel oils in terms of speed and response, type of equipment required and difficulties of recovery, especially for spills in the open water, spills of heavy fuel oil may escalate more rapidly in terms of volumes of oil spilt from a Tier 1 to a Tier 2 incident than would be considered for spills of crude oil.

In addition, because of the equipment requirements spills of heavy fuel oil and heavier types and blends of crude oil may escalate more rapidly and at much smaller volumes of spilt oil to a Tier 3 than the equivalent volumes of light crude oil.

6.7: Waste Disposal Procedures

A natural dispersion or chemical dispersion response strategy or chemical dispersion may remove oil from the sea surface and prevent oil beaching. In the event of a containment and recovery strategy either water borne offshore or nearshore will result in generation of oily waste.

Recovery operations potentially give rise to a large quantity of waste oil and water for treatment. The type of spilled oil will have an effect on the resultant waste. Viscous and waxy oils will entrain debris and create large waste volumes.

Wastes generated may include:

- Recovered oil
- Oily water
- Oiled equipment
- Oiled PPE
- Oiled vegetation
- Oiled sorbents
- Oiled flotsam

In the event that waste generation occurs the following will be required:

- Arrangements for the storage of recovered oil offshore;
- Arrangements for the collection, transport and disposal of oil and oiled wastes.
- Characterisation of oiled wastes in order to aid identification of most appropriate waste disposal facilities to handle the waste materials.
- Preparation of all necessary documentation and pre-notifications necessary to satisfy the Duty of Care and, if necessary, Special Waste regulations.

6.7.1: Consultations

This will be an integral part of the waste management plan in order to determine:

- Where waste may be landed in what form
- Decisions on on-site storage and method
- Availability of suitable waste carriers
- Consideration of potential final resting place
- Proximity, capacity and license of range of treatment and disposal facilities

6.7.2: Checklist for Waste Management

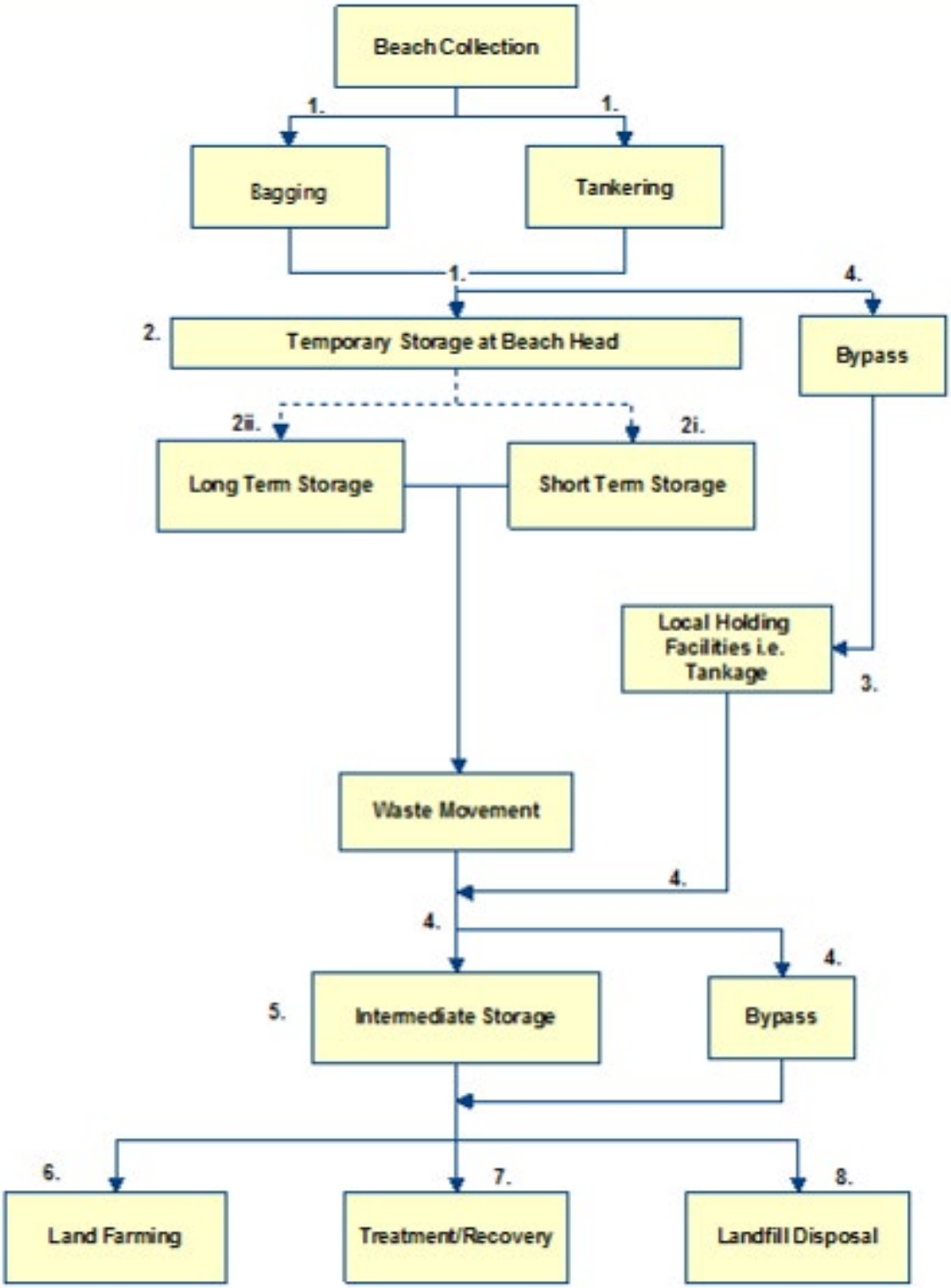
- Make initial contact with possible waste disposal facility operators to make arrangements for the ultimate disposal of waste materials. Note that Close-sided lorries and skip-trucks can be used for non-liquid wastes, and specialist vacuum trucks (flash point dependent) and gully suckers are best for liquid oily wastes. If necessary, flat bed lorries can be used for either type of oily waste by transporting the materials in tanks or drums fitted with temporary covers.
- Ensure that all hauliers' vehicles are carrying valid Registered Carriers Registration Certificates before they arrive on-scene.
- Obtain data on likely quantities of liquid oily wastes that are being collected by any recovery operations.
- Estimate quantities of non-liquid oiled wastes created primarily on shorelines. Initiate appropriate Duty of Care and Special Waste documentation to cover all waste transport used, and ensure that the destination of the oiled wastes is extremely clear to the lorry drivers. Shoreline waste is the responsibility of the Local Authority – this is an issue the Environment Group will be looking at on a case by case basis.
- Ensure that transport of oily wastes is of a frequency sufficient to prevent the temporary storage being overwhelmed.
- Confirm with all waste disposal facilities used that they have received all documentation required to cover the movement of oiled wastes to their facilities.
- Oil spill wastes are considered to be hazardous wastes and are subject to the Waste Management Licensing Regulations 2011. However, oil collected during response activities can be stored temporarily at the site in accordance with Waste Management Licensing Exemption 41 (which allows storage of waste at the place of production).
- Plans for handling and temporary storage of wastes during the oil spill response must be discussed with the Scottish Environment Protection Agency (SEPA) at the earliest opportunity.
- Any recovered oil should be reported to HM Customs as advised in the oil spill reporting table provided in Section 5.
- The disposal site for the waste MUST hold a licence to receive the type of oily waste that you are sending to it.
- It is the responsibility of all parties involved to ensure the site is licensed to receive waste.
- The responsibility for complying with regulations is divided between the Harbour Authority / Port for waste generated on the water surface in whose jurisdiction the spill has occurred and the local authority if there is

shoreline clean-up and those involved in its movement and reprocessing, storage and disposal.

- In the event of containment and recovery at sea and shipping of oil onshore for disposal, the responsibility for complying with the waste legislation lies with the port who is recognised as the waste producer.
- Where the oil has beached and the local authority is conducting a beach clean-up operation and are sending the waste for disposal, the local authority become the waste producer and are the body responsibility for the waste paperwork, registered carrier checking.

Marine oil waste disposal regulatory controls by SEPA are summarised in the diagram and the Key on the following pages:

Key	REGULATORY CONTROLS	* Not specifically SEPA WML – Waste Management Licence
1.	Duty of Care* S.34 EPA 1990 (NB Applies from 1. to 8. irrespective of other controls;	
2i.	Temporary Storage "Emergency" provisions apply,) ¶ No WML required;)	
2ii.	Longer Term Storage WML required;	
3.	Existing Local Holding Facilities (Tankage) WML required;	
4.	Waste Movement By Road Registered Waste Carriers, Waste consigned under Special Waste Regs. 1996;	
5.	Intermediate Storage (e.g. old airfields) Planning approval,) WML required;)	"Phantom" applications could be processed as forward planning provision
6.	Land Farming Site specific risk assessment, WML required,	
7.	Treatment/Recovery WML or authorisation under Part I EPA required;	
8.	Landfill Disposal Suitably licensed sites only Must be engineering containment, Loading limits on oil input will apply.	


Beach Collection
1.
1.
Bagging
Tankering
1.
4.
2.
Temporary Storage at Beach Head
Bypass
2ii.
2i.
Long Term Storage
Short Term Storage
Local Holding Facilities i.e. Tankage
3.
Waste Movement
4.
4.
4.
5.
Intermediate Storage
Bypass
6.
7.
8.
Land Farming
Treatment/Recovery
Landfill Disposal

6.7.3: Waste Minimisation

Minimisation is a method of reducing the amount of waste entering the waste stream. This can reduce the amount of waste for final disposal and also limit environmental and economic impacts. Efficient methods should be developed for oil spill clean up to ensure that the minimum material is used and/or contaminated during the process.

There are a number of methods that can be used for this:

- Recovery equipment should be cleaned and reused rather than discarded.
- Reusable personal protective equipment (PPE) should be utilized where appropriate, for example products such as rubber boots that can be cleaned and reused.
- Sorbents should be used sparingly and effectively.
- Production of a marketable product from waste, e.g. taking waste oil to a refinery (Grangemouth Refinery) for conversion into other usable products.

Refuse is the final and least desirable option. If none of the above methods can be carried out for whatever reason the waste must be disposed of effectively following guidance from SEPA. For disposal of oiled waste a Special Waste Consignment Note will be required. There is a minimum of 3 days pre-notification to SEPA for this although in the event of an emergency the regulator may waive the requirement for pre-notification.

6.7.4: Temporary Storage and Disposal of Recovered Oil & Oiled Absorbents Procedure

A mechanical and containment response in the dock area will lead to the generation of oily waste. Temporary oil storage on the quayside and waste disposal of this material is very much a part of dealing with an oil spill incident.

Plans for handling and temporary storage of wastes during the oil spill response must be discussed with the Scottish Environment Protection Agency (SEPA) at the earliest opportunity.

In the event of water borne containment and recovery and storage of oil on the quayside for disposal, the responsibility for complying with the waste legislation lies with the harbour authority who is regarded as the waste producer.

6.7.4.1: Permits and Exemptions for Temporary Storage of Recovered Oil and Oily Waste

Scottish Environment Protection Agency guidance is that recovered oil and oiled waste is classed as Special waste and is therefore

- Subject to all waste regulations when landed including Special Waste Regulations (as amended) 1996

- Waste regulations require licensing of sites where recovered oil and oiled waste is temporarily kept.

Note that:

- Oil spill emergencies do not generally preclude requirement to obtain permits and approvals and to comply with waste licensing conditions.

Oil collected during response activities however, can be stored temporarily at the site in accordance with Waste Management Licensing Exemption 41. Exempt options for recovered oily waste landed in harbour areas include storage on the site where it is produced for 12 months of:

- Liquid waste up to 23,000 litres (5000 gals) and in secure container (for example lined and covered skip)
- Non-liquid waste up to 80 cubic metres in secure container

6.8: Tiers of Spill and Ports Response Capability: Methil, Kirkcaldy, Burntisland, Rosyth, Leith and Grangemouth

6.8.1: Tiers of Spill

Table 6.6 Categorisation of Oil Spill Incidents

Tier	Scale of Incident	Mobilisation Level
Tier 1	Small spills which can be dealt with using local resources. These spills will usually be less than 0.5 tonnes	Tier 1 Deployment of Pilot Vessel/tugs, If equipment is to be deployed Adler and Allan to be contacted
Tier 2	Larger spills that require mobilisation of additional resources. These spills will be larger than 0.5 tonnes. If contained within the dock it would be unlikely that a general `Clearwater Forth` would be declared.	Tier 2 oil spill response resources and Tier 2 oil spill response contractors (Adler and Allan)
Spills that leave the enclosed dock	Will be beyond the resources of the Dock	Clearwater Forth will mobilise appropriate mobilisation level.

6.8.2: Ports Response Capability

Tier 1 equipment can be located in Appendix 2.

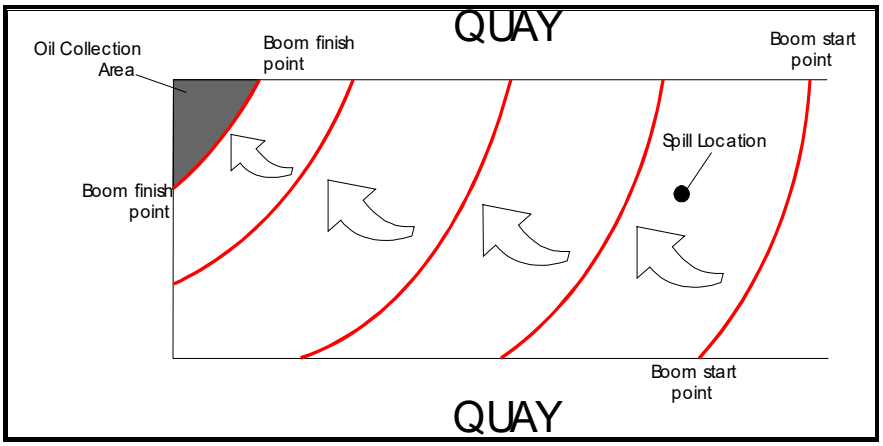
6.9: Mechanical Containment & Recovery of Split Oil

In the event of a spill occurring every effort must be made to contain the spill within the dock or port	
LIKELY AFFECTED AREAS	**There is no import or export of hydrocarbons within these ports. Vessel damage or release of fuel oils or from land-based sources may occur therefore there is the potential for a spill to occur anywhere within the docks areas**
PROTECTIVE GEAR	**Appropriate PPE dependent on incident e.g. Lifejacket, hardhat, overalls, gloves, safety boots, and safety goggles.**
FIRST ACTIONS	**Call-out available small craft to assist in boom deployment. Rigid inflatable boats will be particularly effective for maneuvering in more confined areas.** **Take 2-way communications and relevant equipment to the incident site. A means of maintaining communications with the small craft is essential.** **Ensure response personnel are wearing required PPE (see above).**
BOOM DEPLOYMENT	**1. Deploy two personnel to opposite side of response site.** **2. Deploy rope (15mm) across to other side using workboat.** **3. Connect appropriate number of lengths of sorbent boom together by attachment clips; allow an overlap for each section. Lay out along dockside ready for deployment.** **4. Once sufficient boom has been connected together attach to the rope and request far bank to commence pulling the boom across.** N.B. **Additional lengths of boom can be attached as the boom is being hauled across if required.** **5. Secure both ends to bollards. Allow sufficient length to achieve a seal against the dock wall on both sides of the deployment site.** **Note that, for heavier levels of contamination two or more strings may be required to contain the oil.**
SECOND ACTIONS **(Tier 1 Spills)**	**The next stage of the response is to attempt to corral and recover any spilt hydrocarbons.** **Using sorbent booms attempt to corral pollutants into the most appropriate corner of the dock as dictated by the prevailing wind direction. With absorbent booms this may be achieved by 'walking' the ends of the sorbent boom slowly along the edges of the dock.** **If there is no wind direct pollutants into the most appropriate corner for accessibility for men and equipment.** **Once the oil is corralled, use either absorbent pads or oil skimmer (if available) to recover the pollutants. Alternatively a vacuum taker may be used to recover thick layers of oil.** **Absorbent pads laid onto the oil must be allowed sufficient time for the oil to be absorbed. Once saturated lift pads carefully and place into the heavy duty**

	plastic bags. Continue placing absorbent pads onto the oil and recovering until all oil has been removed.
SECOND ACTIONS – Tier 2 (Traditional Boom)	Once the traditional boom has been deployed in the event of a Tier 2 spill to prevent a spill spreading throughout the docks, a skimmer can be deployed within the thickest areas of spill to attempt recovery from the water surface. The skimmer and requisite ancillary equipment should be moved as necessary to other areas of the spill until recovery is no longer being achieved at a satisfactory rate. When the skimmer is no longer effective, sorbent boom can be used in the manner described above to sweep the water surface, corralling the remaining oil into a convenient corner of the dock. If there is no wind direct pollutants into the most appropriate corner for accessibility for men and equipment. If sufficient oil is corralled in this manner, the skimmer can be re-deployed to recommence oil recovery. If the skimmer is not effective, sorbent pads should be laid as described above onto the surface of the water to absorb the remaining oil.
ADDITIONAL INFORMATION	In the event of large Tier Two spills additional supplies of materials and manpower will be brought to site by the Tier Two response contractor.
WASTE DISPOSAL	Contaminated materials and recovered oil associated with the clean-up of the spill will be disposed of by a certified waste disposal company. Recovered oil may also be consigned to waste oil recycling companies. All contaminated materials must be placed in the appropriate skips once on-site. They MUST NOT be placed in the Docks normal waste bins.

The following diagrams are illustrative of potential spill events in ports, but are not representative of every spill situation:

Figure 6.6 Corralling of spilt oil using absorbent boom



6.10: Clean-up of Dock Walls and Support Structures

The following procedure assumes that all free-floating oil within the dock area has been cleaned up. Use of dispersants (detergents) within the dock areas must only be undertaken after FULL consultation with the SEPA and Marine Scotland. Marine Scotland must give their approval to any intended use of dispersants.	
PREFERRED METHOD	**Hosing / Flushing. Use medium pressure cold water to wash the dock walls and other structures to remove surface residue oils.**
ALTERNATIVE	**High Pressure / Hot water System to remove oil from complex structures and / or particularly heavy contamination.**
EQUIPMENT REQUIRED	**Skirted Sorbent Booms or Traditional Booms; absorbent pads and or mechanical recovery system; pressure washing unit [located on the adjacent dock side]; work boat or pontoon(s).**
PROTECTIVE GEAR	**Appropriate PPE e.g. Lifejacket, hardhat, overalls, gloves, safety boots, safety full-face visor.**
FIRST ACTIONS	**Deploy boom around the area of the dock walls to be cleaned and pontoons / work boat. This is done to ensure that any oil released from the operation is contained and recovered and is not allowed to contaminate other areas of the docks.**
SECOND ACTIONS	**Wash down contaminated surfaces ensuring that any oil released is being contained within the boomed work area.** **Use absorbent pads to recover the pollutant from the collection area. This may be achieved by laying them onto the oil and allowing sufficient time for the oil to be absorbed. In the event that the oil is no longer being absorbed by the pads mechanical recovery systems will need to be used to recover the oil.** **Once saturated lift carefully and place into the heavy duty plastic bags. Continue placing absorbent pads onto the oil and recovering until all oil has been removed.**
ADDITIONAL INFORMATION	**Further Supplies of Absorbent Boom may be obtained from other ports or INEOS FPS Burntisland Response Base. Mechanical containment and recovery equipment is available from INEOS FPS Burntisland Response Base for Tier 2 incidents.**
WASTE DISPOSAL	**All contaminated materials associated with the clean-up of the spill will be**

	disposed of by a certified waste disposal company. All contaminated materials must be placed in the appropriate skips once on-site. They MUST NOT **be placed in the dock's normal waste bins.**

6.11: Response Guidance - Hazardous Substances Released to Water from the INEOS Grangemouth Jetties

The appropriate control and clean-up measures for the release of hazardous substances released into the docks will be dependent upon the fate and behaviour of the substance when in contact with water. Based on physical and chemical properties there are four categories of hazardous substance including ones which for a gas/vapour cloud, dissolve and mix with the water column, float on the surface and ones which sink.

Table 6.7 Properties and Behaviour of Substances handled at INEOS Jetties

Substance	Density	Boiling Point °C	Flash Point °C	Interaction with Water	Behaviour of Spill
Atmospheric Residue	0.9	-	>60	Immiscible	Will solidify
Benzene	0.88	80	-11	Immiscible	Floats; very rapid spreading; volatile
Butadiene	0.62	-4.5	-70	Insoluble	Vapour cloud
Raw C 4's	0.62	+/-12	-70	Insoluble	Vapour cloud
Condensate	0.79	25-150	-40	Immiscible	Floats; very rapid spreading; volatile
Derv	0.84	180-360	65	Immiscible	Floats; heavy will tend to sink
Ethane	0.506	-89	-135	Insoluble	Vapour cloud
Ethanol	0.79	78	13	Soluble	Mixes with water column
FAME	0.878-0.895	302.5 - 570	120 - 180	Immiscible	Floats, rapid spreading
Fuel Oil	.94-1.00	>200	66	Immiscible	Floats; heavy will tend to sink
Gas Oil/Diesel	0.84	180-360	56	Immiscible	Floats; rapid spreading; evaporates
Hexene	0.67	64	-25	Immiscible	Floats; very rapid spreading; volatile
Jet A-1 (ATK)	.77-.83	150-300	38	Immiscible	Floats; rapid spreading; evaporates
Kerosene	.80-.82	150-225	38	Immiscible	Floats; rapid spreading; evaporates
LDF	.66-.67	30-175	-40	Immiscible	Floats; very rapid spreading; volatile
LPGs	.57-2.02	-45	-18	Insoluble	Vapour cloud
Motor Spirit / Petrol	0.71	25-220	-40	Immiscible	Floats; very rapid spreading; volatile
C4 Raffinates	1.95	+/-12	-70	Insoluble	Vapour cloud
Propylene	0.51	-47	-108	Insoluble	Vapour cloud
Reformate	.78-.88	25-210		Immiscible	Floats; volatile
Styrene	0.9	146	31	Immiscible	Floats; will evaporate

6.11.1: Substances which Form a Gas / Vapour Cloud

Hazardous substances which are volatile are more likely to form a vapour cloud when released. Substances that are transported under pressure of in a refrigerated state are included in this group. These substances will spontaneously change to the gas state at ambient pressure and temperature if accidentally released. Liquids with a high vapour pressure may release vapour clouds when exposed to the air. The period of hazard associated with the vapour plume will depends on the gas/air ratio, amount of spillage and dispersion rate. In the vicinity of the vapour cloud there will be the danger of oxygen deficiency and asphyxiation and the potential for fire and explosion. These spills should be treated as fire hazards and reference should be made to the INEOS Grangemouth Site Emergency Plan.

The wearing of overalls, safety boots, helmets, gloves and eye protection is mandatory. Additional PPE such as the 1 piece green chemical suit, lifejacket etc. must be made available and worn subject to a risk assessment being carried out or the application of local site rules.

Main Characteristics	These chemicals have very low boiling points at ambient temperature and pressure. These liquids may cause severe skin burns.
Examples	**Butadiene, Raw C 4's, LPGs, C4 Raffinates, Propylene, Ethane**
First Actions	**There will be an explosion risk. Evacuate all non-essential personnel from the immediate vicinity and downwind of the spill. Eliminate all possible sources of ignition** or any other equipment which can generate a spark. If spillage is in a confined area, ensure adequate ventilation; the build-up of an excessive concentration of vapour must be prevented.
Protective Gear	Self-contained breathing apparatus, overalls, leather gloves, safety boots; (trousers/overalls should be worn outside the boots, not tucked inside, so that spillage on the trousers cannot easily enter the boots and produce a cold burn).
Second Actions	Large spills of these substances require specialist advice and equipment. Call the INEOS Fire Service. Allow any spillage to evaporate under controlled conditions.

6.11.2: Substances which Dissolve in Water

If the substance is completely water soluble, once it is released into and mixes with a body of water, effective control over the substance is lost. In this case the hazard will be to marine life, the degree of hazard depending on the eco-toxicity, biodegradability and bioaccumulation properties of the substance spilt.

MAIN CHARACTERISTICS	These compounds are generally highly flammable liquids. Thay are also soluble or miscible in water. Dilution and dispersion of the chemical will take place if the chemical enters the main dock area. This dilution and dispersion will eliminate the flammability hazard. For small releases concentrations are likely to reach harmless levels in relatively short periods.
EXAMPLES	Ethanol
FIRST ACTIONS	For large release of soluble chemicals it may be necessary to restrict marine traffic in the area of the release. Large releases of chemicals into the main docks area must also be reported to the Scottish Environment Protection Agency.
PERSONNAL PROTECTIVE EQUIPMENT	Self-contained breathing apparatus, overalls, rubber gloves, safety boots, lifejackets.
SECOND ACTIONS	For substances with more limited solubility in water, the dissolved portion will dilute and disperse whilst the un-dissolved portion could be recovered, if safe to do so, using skimmers or absorbents. Handing of absorbents saturated with hazardous substances must be carried out with full protective gear as chemicals absorbed will not be neutralised.

6.11.3: Substances which Float

Liquids that have a lower density than water will normally float and form a slick when released. Substances that float can be subdivided into four groups. These are as follows:

- Substances which float and form a slick over which a vapour cloud develops. These liquids will initially float on the water surface when spilt but will evaporate very rapidly. As the liquids evaporate a vapour cloud will form. The warmer and windier the ambient conditions, the more rapidly evaporation will occur. As the mixture in the vapour cloud will be heavier than air it may form a low-level vapour plume.
- Substances which float on water and form a slick with little evaporation or interaction with the water.
- Substances which float on water, form a slick and interact with the water to form an emulsion.
- Substances which float but which solidify when spilt at ambient temperatures below their pour point or which need to be heated to remain liquid.

6.11.3.1: Substances which Float & Form Vapour Cloud

MAIN CHARACTERISTICS	The liquids in this group are highly flammable, potentially explosive and may be harmful. They will form a vapour cloud when evaporating.
EXAMPLES	**Benzene, Condensate, Hexene, LDF, Motor Spirit, Reformate, Styrene.**
FIRST ACTIONS	There will be a fire and explosion hazard in confined spaces; all possible sources of ignition near the spill and vapour plume must be eliminated and kept out of the plume area until the vapour cloud has dispersed. Evacuate all non-essential personnel from the immediate vicinity and downwind of the spill. Senior personnel to carry out site assessment and gas level monitoring; designate a safe area. No personnel to approach downwind of plume without breathing apparatus. It is advisable to call the Fire Services / Fire Brigade for large spills of these flammable substances.
PERSONNAL PROTECTIVE EQUIPMENT	Overalls, gloves, safety boots, safety spectacles/goggles, Self-contained breathing apparatus, lifejackets.
SECOND ACTIONS	If safe to do so, attempt to contain the spill within the main dock area by booming off area to Grange Dock. No attempt should be made to spray the spill with dispersant or to recover hydrocarbons; the spill should be left to dissipate naturally.
EQUIPMENT REQUIRED	Booms, Vacuum tanker, skimmer, absorbents, waste disposal drums.
CLEAN UP RESPONSE: ALL SPILLS	Low Flashpoint products will evaporate off very quickly; leave spill to evaporate under controlled conditions until gas monitoring indicates that it is safe to re-enter area. Once it is safe to re-enter the area, attempt to corral residue into one area by booming, using absorbent boom or traditional booms. This will increase oil thickness for skimming. Direct hydrocarbons to appropriate area of main docks depending on wind direction. If there is little wind, direct hydrocarbons to area easiest access for equipment and manpower. Recover residual heavy ends using vacuum tanker and appropriate vacuum skimmer head. If vacuum tanker is unavailable use AIR DRIVEN pumps, skim and pump to temporary storage in 205 litre drums, fastanks or similar. Absorbents may be used to recover thinly spread or patches of chemicals/ hydrocarbons.

6.11.3.2: Substances which Float (no solidification)

MAIN CHARACTERISTICS	Included in this group are products with flashpoints of greater than 30 C. The liquids in this group are highly flammable, potentially explosive and may be harmful.
EXAMPLES	**Derv, Gas Oil, Jet A-1, Kerosene, Light Fuel Oil.**
FIRST ACTIONS	Eliminate all possible sources of ignition or any equipment which can generate a spark; do not allow any such equipment to be brought on site. Evacuate all personnel from the immediate vicinity and downwind of the spill area. Senior personnel to carry out site assessment and gas level monitoring; designate a safe area. It is advisable to call the Fire Services / Fire Brigade for large spills of these flammable substances due to the potential fire risk.
PERSONNAL PROTECTIVE EQUIPMENT	Overalls, gloves, safety boots, safety spectacles/goggles, lifejackets, 1 piece green chemical suit.
SECOND ACTIONS	Attempt to contain the pollutants within the main dock area by booming off area to Grange Dock.
EQUIPMENT REQUIRED	Booms, air driven pumps, skimmers, absorbents, temporary storage.
CLEAN UP RESPONSE: ALL SPILLS	Once area is safe use either sorbent or traditional booms to attempt to corral pollutants into most appropriate area of the main docks as indicated by prevailing wind conditions. This will help to increase the thickness of pollutant for recovery by skimmer. If there is little wind, direct pollutants to areas of jetties that has easiest access for equipment and manpower. Use Komara skimmers, skim surface and pump pollutants into temporary storage, preferably vacuum tanker or 205 litre drums; continue until thickest concentrations of pollutants have been removed. Absorbents may be used to recover thinly spread or small quantities of pollutants. Soiled absorbents should be placed in lined skips or drums prior to disposal at approved sites. Handling of absorbents saturated with hazardous substances must be carried out with full protective gear, as chemicals absorbed will not be neutralised.

6.11.3.3: Substances which Float & May Solidify

MAIN CHARACTERISTICS	These compounds are generally highly flammable liquids; likely to be solid or semi-solid at ambient temperatures; toxic hydrogen sulphide vapours given off when heated, e.g. during storage or transport; hot product may cause burns.
EXAMPLES	Heavy Fuel Oil, Atmospheric Residue.
FIRST ACTIONS	Eliminate all possible sources of ignition or any equipment that can generate a spark and ensure that no such equipment is brought on site. Evacuate all personnel from the immediate vicinity of the spill area. Senior personnel to carry out site assessment and monitor gas levels.
PERSONNAL PROTECTIVE EQUIPMENT	Overalls, gloves, safety boots, safety spectacles/goggles, lifejackets.
SECOND ACTIONS	Attempt to contain the pollutants within the main dock area by booming off area to Grange Dock.
EQUIPMENT REQUIRED	Booms, vacuum tanker & skimmers, JCB with rake attachment; garden forks and spades, temporary storage for recovered oil.
CLEAN UP RESPONSE: ALL SPILLS	Using booms to try to corral hydrocarbons into most appropriate area of the main docks, depending on accessibility for clean up equipment and prevailing wind conditions. Ensuring that it is safe to operate, recover heavy fuel oil by vacuum tanker, if liquid; take hoses from vehicle and insert into oil at the thickest place that can be reached quickly and safely. Remove as much of the surface oil as possible with the tanker. If solid, or for atmospheric residue, recover oil using mechanical means such as JCB with rake attachment, or manually using garden forks or spades. Recover hydrocarbons into lined skips or 205 litre drums for solid hydrocarbons and vacuum tanker or 205 litre drums for liquid hydrocarbons.

Section 7: Equipment Resources

7.1: Three Tiered Response System

Forth Ports Limited recognise that different spill scenarios require different levels of manpower and equipment response. In recognition of this, Forth Ports Limited have put in place a three tiered equipment and manpower response system which is detailed below. The response equipment is operated by fully trained response support teams. Please refer to Appendix 2 for further information regarding available equipment.

7.2: Tier 1 Equipment Resources and Mobilisation

7.2.1: Ports of Methil, Kirkcaldy, Burntisland, Grangemouth, Leith and Rosyth

Resources can be found in Appendix 2.

7.2.2: Firth of Forth

Tier 1 Resources include sorbent booms and pads and, for appropriate areas of the Firth of Forth, chemical dispersants. The chemical dispersant facilities will also act as a response for Tier 2 incidents.

7.3: Tier 2 Equipment Response

Tier 2 incidents would require Forth Ports' resources to be augmented with additional equipment and manpower.

Adler and Allan provide Tier 2 cover, also a mutual aid plan between Forth Ports Limited, INEOS FPS, INEOS Grangemouth and Shell/Exxon adds to the Tier 2 response for the sea area within the jurisdiction of Forth Ports. This includes the ports of Grangemouth, Leith, Methil, Kirkcaldy, Rosyth and Burntisland.

Forth Ports Limited, Adler and Allan, INEOS FPS, INEOS Grangemouth and Shell/Exxon, Braefoot Bay will provide a Tier 2 response, utilising the equipment as detailed in Appendix 2 – to which reference should be made.

INEOS FPS may also supply a Hound Point Response Vessel for Tier 2 incidents requiring its specific resources. The vessel can also assist in boom deployment for open water incidents.

7.3.1: Ports of Methil, Kirkcaldy, Grangemouth, Leith and Burntisland

These resources will be available from Adler and Allan on a call out basis, within 4 hours (during working hours) and 6 hours (outside working hours). A complete inventory is given in Appendix 2.

Table 7.1 TIER TWO RESPONSE CAPABILITY

Response Capability	Mobilisation Procedure
Full equipped 2 tonne light rapid response vehicle (RRV) and an experience supervisor and responder at site. Fully equipped 8.5 tonne heavy rapid response vehicle (RRV), an experienced supervisor and two responders available at site. Mobilisation of additional resources from National Base Network, including large stockpiles of equipment, ADT tanker and vacuum uplift tank fleets. Refer Appendix 2 for full listing	Mobilisation via Marine Management Team and effected by Forth and Tay Navigation Service or, if manned, by the MEC. FTNS Emergency Tel : 01324 498 495 (24 hrs)

Firth of Forth Tier 2 equipment resources and mobilisation procedures are provided below:

Table 7.2 TIER TWO RESPONSE CAPABILITY

Response Capability	Mobilisation Procedure
Forth Ports Limited Two tugs equipped with dispersant spraying capabilities MT Fidra 21,000 litres VDC+ MT Hopetoun – Oil Spill Modelling Software	Mobilisation via Marine Management Team and effected by Forth and Tay Navigation Service or, if manned, by the MEC: FTNS Emergency Tel : 01324 498 495 (24 hrs)
Adler and Allan Trained manpower and equipment stockpiles at Montrose and Glasgow.	**Tel: 0800 592 827 (24 hours)**
Hound Point Response Vessels • Side Sweep System • Seamop 4090 Skimmer • Dispersant spraying system and Type 2/3 dispersant • Absorbent materials • One vessel is classed for oil recovery with a capacity of 200m^3 • Two other vessels have oil recovery capability but are not classed. These have a capacity of 101m^3 • One workboat is available from the Hound Point Fleet which may be used for towing booms or upon request can have a dispersant system installed • Oil Spill Modelling Software	Mobilisation via INEOS FPS Marine Manager or Duty Incident Commander. Mobilisation of any asset is under the strict authorisation of the INEOS FPS Marine Management Team and effected by Forth and Tay Navigation Service or, if manned, by the MEC: KSL: 01324 476719 Hound Point: 0131 331 6562 or 07786174093 FTNS Emergency Tel : 01324 498 495 (24 hrs) MEC: 01324 498595 One of the four tugs stationed at Hound Point Marine Terminal can be made available subject to operational requirements.
INEOS FPS Burntisland Response Base Trained manpower and extensive equipment stocks (for containment and recovery, dispersant spraying, and shoreline protection.	Mobilisation via INEOS FPS Kinneil Shift Team Lead. Mobilisation of any asset is under the strict authorisation of the INEOS FPS Marine Management Team and effected by Forth and Tay Navigation Service or, if manned, by the MEC:

Table 7.2 TIER TWO RESPONSE CAPABILITY	
Response Capability	Mobilisation Procedure
Equipment includes: • Containment booms for open water and inland waters, calm and protected waters • Shore sealing booms for estuaries, rivers tidal flats and salt marshes • River and harbour booms (all booms include moorings, connectors and inflation pumps) • skimmers for use with a range of oil types from gas oil, crude oil to heavier fuel oils temporary storage equipment for shoreline use workboat sorbent booms and pillows ancillary equipment (pumps, generators, lighting sets, vehicles) Refer Appendix 2 for full listing	KSL: 01324 476719 FTNS Emergency Tel : 01324 498 495 (24 hrs) MEC: 01324 498595
INEOS Forties Pipeline System Dispersant Stocks These stocks are listed in Appendix 2 and are held on the Hound Point Marine Terminal tugs. Note that stocks include Dasic Slickgone NS is a wide spectrum dispersant effective on a range of oil types	Mobilisation via Ineos FPS Kinneil Shift Team Lead. Mobilisation of any asset is under the strict authorisation of the Ineos Marine Management Team (& FPS IMT) and effected by Forth and Tay Navigation Service or, if manned, by the MEC: KSL: 01324 476719 FTNS Emergency Tel : 01324 498 495 (24 hrs) MEC: 01324 498595
Shell / Exxon, Braefoot Bay Various pollution clean-up equipment. Refer Appendix 2 for full listing. Manpower resources to deploy equipment is not immediately available.	Mobilisation via Shift Supervisor at Braefoot Bay Marine Terminal Contact via Shift Supervisor Tel: 01383 892123 (24 hours) or if unavailable via Marine Terminal Security

Table 7.2 TIER TWO RESPONSE CAPABILITY	
Response Capability	Mobilisation Procedure
	Tel: 01383 892190
The City of Edinburgh Council Miscellaneous vehicles, equipment and personnel.	Mobilisation via the Council Oil Pollution Control Officer. Contact through the Councils emergency contact telephone/fax No's as listed in Forth Ports Emergency Contact Directory.
Fife Council Stocks of chemical dispersant, spraying equipment, jetting machines, gully emptiers, absorbents, miscellaneous equipment.	Mobilisation via the Council Emergency Planning Officer on contact details as listed in Forth Ports Emergency Contact Directory.
Falkirk Council Permanent store with small quantity of equipment for manual response e.g. protective clothing scrapers etc.	Mobilisation via Council Emergency Control on contact details as listed in Forth Ports Emergency Contact Directory.
East Lothian Council Manpower and plant	Mobilisation via Emergency Planning Officer on contact details as listed in Forth Ports Emergency Contact Directory.
Adler & Alan, Grangemouth Information as per Appendix 2, INEOS Grangemouth Tier 2 contractor.	Contact: 24 hour callout Mobilise via INEOS Grangemouth Site Shift Manager (SSM) Tel: 07879 432357 Internal: 6536 UHF: Channel 5
Briggs Environmental Services Trained manpower and equipment stockpiles at Burntisland, including various booms, skimmers, temporary storage, workboats, sorbents and ancillary equipment.	Mobilisation via BESL Tel: 0800 374 348 (24 hours)

7.4: Tier 3 Equipment Resources

The Tier 3 response which could be mobilised in the event of a major oil spill comprises the national stockpiles of counter pollution resources maintained by the Maritime and Coastguard Agency (MCA). The Maritime and Coastguard Agency, Counter Pollution Branch would lead the government response to pollution at sea and assist local government with the onshore response to shoreline pollution. The pollution capability held by MCA includes aerial surveillance and dispersant response; at sea oil recovery; and stockpiles of beach cleaning equipment. Equipment resources held by the MCA Counter Pollution Branch at strategic locations around the UK are as follows:

Table 7.3 Tier 3 Response Capability

Equipment	Location
Counter pollution at sea equipment	Salvage and chemical response equipment Dundee, Barnsley and Bristol
Shoreline clean-up equipment	Dundee, Barnsley and Bristol
Dispersant	Stockpiles (major and minor) at several locations around the UK (circa 1,400 tonnes consisting of seven different types)

The CPR branch also maintain an aerial surveillance and dispersant spraying capability. This capability includes:

- Aerial surveillance and dispersant spraying for oil spill incidents
- Regular airborne surveillance flights are undertaken to monitor pollution from shipping across the UK Counter Pollution Control Zone;
- Aircraft are regularly deployed following reports of incidents to assess the size and extent of any spill, and to identify any contravention of national or international law.
- A satellite surveillance programme over parts of the UK's Pollution Control Zone. Surveillance programmes are carried out in partnership between the U.K. and other European states.

MCA contracted aircraft operate both a pollution monitoring, surveillance and dispersant spraying.

The surveillance aircraft are fitted with the latest maritime surveillance system. The system is capable of the detection and evaluation of pollution on the sea both day and night, in all weathers.

The main components are a Sideways Looking Airborne Radar (SLAR) for large area, long-range detection (20 miles for sea surface and 40 miles for detection on shipping patrol), an Ultra Violet (UV) sensor for accurate area measurement and Thermal Infra

Red (IR) sensor for relative oil thickness measurement. There is also a Night Identification System, which enables the name and port of registration of any vessel to be taken in darkness. Digital video and still cameras provide the photographic evidence required for successful prosecutions of illegal polluters. The whole system is fully integrated with data being fed from the navigation and flight systems. The normal aircraft communications system is supplemented by marine band and HF radios. Data, pictures and information can be sent directly to ground stations using the Data Transfer System.

Mobilisation details for MCA equipment are provided below:

Table 7.4 TIER THREE RESPONSE CAPABILITY	
Response Capability	**Mobilisation Procedure**
Maritime and Coastguard Agency Pollution capability includes aerial surveillance, dispersant spraying response, at sea oil recovery, and beach cleaning stockpiles**.**	Pollution reports (POLREPS) to be sent without delay to MRCC Aberdeen. The on-call CPSO will then decide if MCA resources are required. MRCC Aberdeen – Tel: 01224 592 334

7.5: Waste Disposal Companies

Table 7.5 Waste Disposal Contractors	
Augean	Mobilisation via Augean Treatment Ltd Clark St Paisley Tel: 01418 875689 (Office Hours) Fax: 01418 877846

Section 8: Emergency Contact Directory

All Emergency Contact details can now be found in the stand-alone document

- Forth Ports Limited Emergency Contacts Directory.

The most up to date copy is held by FTNS.

Section 9: Environmental Database and Priority Protection Areas: Forth Ports Harbour Area

9.1: Environmental Database

Table 9.1 provides an environmental sensitivity analysis of the Forth Ports Harbour area and its coastal fringes. The Firth of Forth is an extremely sensitive environment with a range of international, European and national conservation designations, sensitive shoreline types which provide habitats for scarce plant communities and overwintering waders and wildfowl, and rocky islands that hold nationally important numbers of seabirds. Along with resident and visiting populations of marine mammals and cetaceans and internationally protected migratory fish species. The Firth of Forth is also one of the most important shipping areas in Scotland, whilst amenity beaches, marinas and yachting activities form an integral part of the socio-economic environment.

The database contained in Table 9.1 provides the following:

Habitat Type – listed in order of decreasing vulnerability to oil spill damage on a scale of 1 in 10 in terms of potential vulnerability to oil spill damage, 1 indicating lesser vulnerability and likelihood of self-cleansing and 10 indicated very high vulnerability and inability to self-cleanse.

Ecological Value – presence and importance of bird populations and their seasonal variation; presence and importance of features of particular marine / botanical / geological conservation interest; usage as fishery nursery area with nursery period.

Conservation Status – presence of conservation designations of international, national and local nature conservation importance, including RAMSAR, and SPA (Special Protection Areas) sites, SAC's (Special Area of Conservation), SSSI's (Sites of Special Scientific Interest), RSPB (Royal Society for the Protection of Birds) sites and local nature reserves.

Socio-Economic Importance – commercial shipping presence and importance of commercially important shellfisheries and fin fisheries, presence of beaches of amenity value and other recreational activities.

Location of key environmentally sensitive areas are shown on Map 8 Priority Protection Areas.

Note that individual SSSI's have not been mapped as they cover the whole of the Harbour Area from Alloa Flats to Fife Ness and North Berwick and under UK and EU designations are treated as a single ecological unit. Maps of the SPA and Ramsar sites are provided at the end of Section 1 courtesy of NatureScot.

Additional environmental information can be found in Appendix 11 and Appendix 12 for the Ports of Grangemouth and Leith respectively.

Table 9.1 Environmental Sensitivity of the Firth of Forth

Habitat Types (*Vulnerability Index 10-1 in order of decreasing vulnerability to oil spill damage; a rating of 10 indicates extremely high vulnerability to oil pollution whilst a rating of 1 indicates that the shoreline will not experience extreme damage and is likely to be self-cleansing)*					
10 – Saltmarshes / Reedbeds	✓	7 - Gravel Beach	✓	4/3 - Coarse/Fine Sand Beaches	✓
9 - Sheltered Tidal Flats	✓	6 - Mixed Sand & Gravel Beach	✓	2 - Eroding Wave Cut (Shore) Platform	✓
8 - Sheltered Rocky Coast		5 - Exposed Compacted Tidal Flats	✓	1 - Exposed Rocky Headland	

Rocky Shores	**9.5%**
Sand Shores and shingle shores	**11%**
Tidal Flats(mud and compacted sand tidal flats)	**74%**
Salt Marshes	**4.5%**

Habitat Types

SALTMARSHES	Saltmarshes develop on intertidal land within the range of the normal spring tides, where colonisation by halophytic plants, i.e. plants which are adapted to high salinities are able to withstand immersion in sea water, takes place. Important areas of saltmarsh are supported at Kinneil Kerse, Skinflats, Tyninghame and Aberlady. Dumbarnie Links contains the largest area of saltmarsh on the north shore of Firth of Forth. The largest area of pioneer saltmarsh in the Forth occurs on Alloa Inch. Saltmarsh communities in the Forth are characteristically zoned from low to high water mark and are dominated by sea aster *Aster tripolium*, common saltmarsh grass *Puccinellia maritima*, saltmarsh rush *Juncus gerardii*, and sea club-rush *Scirpus maritimus.* Several of the saltmarsh plant communities are scarce in the east coast of Scotland. Beach head saltmarsh occurs at scattered localities at Blackness Bay, Burntisland Bay, Torry Bay, and Ruddons Point. Here, greater sea-*Spurrey spergularia* media, sea plantain *Plantago maritima*, glasswort *Salicornia europaea* and sea arrowgrass *Triglochin maritima* are common
SHELTERED TIDAL FLATS	The Firth of Forth includes extensive sheltered tidal flats which are biologically very productive. The mudflats are invertebrate rich and form important feeding grounds for the abundant waders and wildfowl in the Forth. Mussel beds occur on the lower shores in some areas and marine algae such as Fucus, Ascophyllum and Enteromorpha species, and eelgrass Zostera species are supported on these mudflats. On the north bank Torry Bay mudflats are characterised by the polychaete worm *Manayunkia aestuarina*; and support extensive carpets of the nationally scarce eelgrasses *Zostera angustifolia*, Z marina, Z noltii. The mudflats are interspersed with rocky and stony areas which support communities of marine algae Fucus, Ascophylium and Enteromorpha species. Scattered mussel beds occupy the lower intertidal shore at Torry Bay On the south bank extensive tidal mudflats occur at Skinflats, Kinneil Karse, Blackness Bay and the Forth Bridge to Granton shores. It is also thought that some of these flats are nursery grounds for various commercial fish stocks.
COMPACTED TIDAL FLATS	There are extensive sandy areas throughout the Firth of Forth including Largo Bay, Pettycur Bay, Drum Sands, Gosford bay, Aberlady Bay and Gullane Bay.

COARSE/FINE SAND BEACHES	The Firth of Forth has extensive sandy beaches at locations which include, on the north bank, Ellie, Earlsferry, Leven, Largo, Kirkcaldy,Kinghorn, Pettycur, Aberdour, and on the south bank Cramond, Portobello, Gullane, Yellow Craig, Berwick Bay and Milsey Bay.
ROCKY SHORE (including shingle beaches) /ROCKY SHORE PLATFORMS	Rocky shores (including shingle beaches) and rocky shore platforms occur extensively on the north and south banks of the Outer Firth. Locations of the north shore include Barnsmuir Coast, Crail, Anstruther, Pittenweem, St Monans, Kinghorn, Weymess, on the south shore … and the Forth Islands: Isle of May, Inchmickery, Inchkeith, Fidra, Yellowcraig, Lamb, Craigleith, and Bass Rock.
Ecological Value	
WATERFOWL	The Firth of Forth supports abundant wildfowl and waders and is particularly important for its wintering bird species. The Firth of Forth is the second most important estuarine area for wintering birds in Scotland, and eleventh in the UK, and is significant both in terms of waterfowl density and abundance. Concentrations of waterfowl are found at virtually all inter-tidal areas in the estuary. However, certain areas are of particular importance. Internationally and nationally important numbers of wintering and moulting wildfowl and waders occur in the inner Forth, at Kinneil Kerse, Skinflats, Torry Bay and Alloa Inches. The invertebrate rich mudflats are used for feeding at low tide and higher ground including saltmarsh used as high tide roosts and feeding sites. Shelduck form a population of international importance, and nationally important numbers of wintering knot, redshank and great crested grebe occur here. Important populations of teal and goldeneye occur in the inner Forth. Several species of national importance utilise the shoreline, intertidal area and offshore waters of the Forth, including common and velvet scoter, divers, eider, bar-tailed godwit, cormorant, long-tailed duck, ringed plover, grey plover, oystercatcher, turnstone, dunlin, red-breasted merganser, grebe, and curlew. Regionally important wildfowl and waders include pochard, wigeon, golden plover, pintail, mallard and lapwing. Nationally important numbers of wintering divers, grebes and sea ducks frequent the offshore areas of the outer Forth. Wintering pinkfooted geese are supported at Aberlady Bay and Knot and Bar-tailed Godwit occur at Aberlady Bay and on the Burntisland - Kirkcaldy coast, where the largest concentration of waders on the north shore of the outer Forth can be found. The shallow, sheltered waters of Largo Bay attract nationally important numbers of eider, goldeneye, scaup (quarter of British wintering population) and red-breasted merganser. The rocky East Lothian coastline, between Gullane and Broadsands and North Berwick, supports nationally important numbers of turnstone and purple sandpiper. (Data sources : NatureScot citations of Firth of Forth, Forth Islands and Imperial Dock SPA sites; NatureScot citations from the Firth of Forth and Forth Islands SSSI's; Nature Scot citation for the Firth of Forth RAMSAR site)
SEABIRDS	The Firth of Forth and the Forth Islands supports international and nationally important populations of Sandwich tern, Roseate tern and Common tern. The roseate tern colony is the most northerly of only six regular British colonies. Imperial Dock at Leith Docks also supports breeding populations of Common tern, with this location supporting the largest Common Tern colony in the Forth and one of the largest colonies in the UK. The Forth Islands regularly support internationally important populations of the migratory species including 21,600 gannet, 2,400 shag, 1,500 lesser black-backed gull s, 14,000 puffin, 200 cormorant, 8,400 kittiwake, 16,000 guillemot and 1,400 razorbill. The Isle of May is the only large breeding seabird colony in Fife, supporting nationally important populations of Shags, Kittiwakes, Puffins, Guillemots and Eiders. The rocky islands of the Forth including Inchmickery, Bass Rock, Long Craig, Fidra

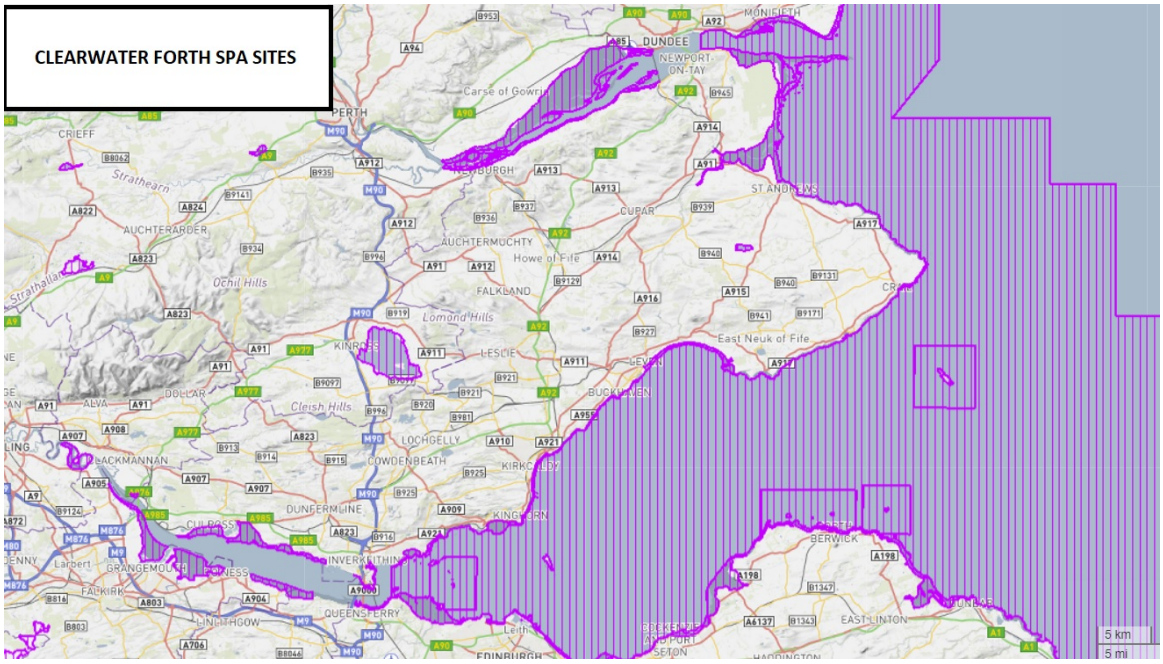
	and Lamb together from the largest breeding colony of seabirds in the Lothians. (Data sources : NatureScot citations of Firth of Forth, Forth Islands and Imperial Dock SPA sites; Scottish Natural Heritiage citations from the Firth of Forth and Forth Islands SSSI's and Isle of May)
MARINE MAMMALS	The Isle of May supports a breeding colony of grey seals *Halichoerus grypus*. The site is the largest east coast breeding colony of grey seals in Scotland and the 4th largest breeding colony in the UK. Small numbers of common seals also occur in the Firth. Designated seal haul-out sites exist at Kinghorn Rocks, Inchkeith, Inchmickery and Cow & Calves and Craigleith. Bottle-nosed dolphin, minke whale and harbour porpoise can be found in the Firth. All cetaceans are European Protected Species under the Habitats Regulations.
BOTANICAL CONSERVATION IMPORTANCE	The Firth of Forth SSSI comprises an extensive intertidal and coastal habitats. Extensive mudflats make up much of the intertidal area with areas of sand, shingle, rock and boulders. Marine algae such as Fucus, Ascophyllum and Enteromorpha species, and eelgrass Zostera species are supported on these mudflats. Nationally scarce species include eelgrasses – narrow-leaved eelgrass *Zostera angustifolia*, eelgrass Z. marina, dwarf eelgrass Z. noltii, which are supported on the extensive mudflats. Locally rare sea wormwood *Artemisia maritima* can also be found in these areas. Associated coastal habitats include saltmarsh, grassland and sand dunes The Forth estuary is of special interest for the following habitats and species: *Saltmarsh and sand dunes* Important areas of saltmarsh are supported at Kinneil Kerse, Skinflats, Tyninghame and Aberlady. Dumbarnie Links contains the largest area of saltmarsh on the north shore of Firth of Forth. Several of the saltmarsh plant communities are scarce in the east coast of Scotland. The main areas of sand dune vegetation occur in the outer Firth. Between Gullane and Broadsands is the largest and most complex sand dune system in the Lothians, with its noteworthy lichen rich dune slacks. Aberlady Bay contains the most extensive complex of sand dune, saltmarsh and mudflat in SE Scotland. *Fen and lagoon* The intertidal bays of Skinflats and Kinneil Kerse support a range of other estuarine habitats and plant communities including brackish fen and coastal sluiced saline lagoons.
MARINE CONSERVATION IMPORTANCE	The Isle of May in the outer Forth is a Marine Special Area of Conservation for its reefs and grey seal populations. The Isle of May is an important site for its marine habitats and communities with habitats including sea inlets, salt steppes and islets. (It should be noted that just outwith the Forth the North Berwickshire and Northumberland SAC commences just to the south of Dunbar. It is designated for Grey Seal, Internatial mud and sand flats, reefs, caves and shallow inlets and bays).
GEOLOGICAL CONSERVATION IMPORTANCE	The coastline at Dunbar is of note for the outstanding complexity of rocky coastal landforms which it exhibits. Of particular interest is a series of rock platforms representing different relative sea levels in the area. The coastal margins of the Forth demonstrate an exceptional variety of rocks and fossils that have been crucial in understanding the palaeogeography and palaeoecology of Scotland during the Carboniferous geological period. The sedimentary rock sequence has worldwide significance for fossil remains. At Burntisland in Fife, the Abden Bone Bed has yielded a rich and diverse fish fauna, other 'fossil fish' localities include Ardross Castle also in Fife, Cheese Bay near

	Gullane and Wardie Shore. Wardie is of international importance, yielding at least eighteen species of fish, including sharks. Geological Conservation Review sites are found along the Dunbar coast, Leith-Prestonpans area, Wardie, North Berwick and East Weyms-Anstruther
MIGRATORY FISH	There is a designated Special Area of Conservation (SAC) in the River Teith for migratory species including Atlantic Salmon, Brook Lamprey, River Lamprey and Sea Lamprey.
FISHERIES NURSERY AND/OR SPAWNING AREA	Significant nursery areas for flatfish exist in a number of nearshore waters including Largo Bay, Pettycur Bay to Buckhaven on the north coast and Drum Sands, Gosford and Aberlady Bays on the south coast.
Conservation Status	
RAMSAR SITE ***Refer Map 5 at end of Section 9.1***	The **Firth of Forth** RAMSAR site stretches from the Alloa Inches in the west to Fife Ness and Dunbar in the east. It is considered to act as a single ecological unit. The Firth of Forth is a designated RAMSAR qualifying for this designation by regularly supporting 95000 over-wintering waterfowl (refer Waterfowl).
SPECIAL PROTECTION AREAS ***Refer Map 4 at end of Section 9.1***	Three sites in the Forth estuary have been have been designated as a Special Protection Areas (SPA) under the *EC Directive on the Conservation of Wild Birds* 1979. These sites are: **Firth of Forth** extending from Alloa Inches in the west to Fife Ness and Dunbar in the east. It is considered to act as a single ecological unit. Qualifying features are the support of overwintering populations of a range of wintering bird populations, including Slavioan grebe, pink-footed goose, shelduck, Goldeneye, knot, redshank, bar-tailed godwit, turnstone and sandwich tern. **Forth Islands** including the islands of Inchmickery, Isle of May, Fidra, Lamb, Craigleth, Bass Rock and Long Craig (and their adjacent marine areas)**.** Qualifying features include breeding populations of Sandwich tern, roseate tern and common tern, as well as internationally important populations of gannet, shag, lesser black-backed gull, puffin, cormorant, kittiwake, guillemot and razorbill **Imperial Dock Lock, Leith.** Qualifying features are the breeding populations of Common tern, one of the largest populations in the UK**.** The **Outer Firth of Forth and St Andrews Bay** Complex is an extensive SPA off the south-east coact of Scotland. It stretches from Abroath in the North to St Abb's Head in the South and encompasses the Firth of Forth, the outer Firth of Tay and St Andrews Bay. The waters in this SPA attract one of the largest and most diverse marine bird concentrations in Scotland and the site is classified for the protection of 21 seabird and waterbird species
SITE OF SPECIAL SCIENTIFIC INTEREST	The Forth estuary has seven Sites of Special Scientific Interest (SSSIs) within it as follows: 1. Firth of Forth The site stretches from the Alloa Inches in the west to Fife Ness and Dunbar in the east. It is considered to act as a single ecological unit. The site has been designated for its wide range of habitats supporting invertebrates, rare species eel grass, marine algae and provides overwintering feeding and roosting grounds for 95000 waders and wildfowl 2. Forth Islands • Have a range of marine habitats that support breeding populations of Sandwich tern, roseate tern and common tern, as well as internationally important populations of gannet, shag, lesser black-backed gull, puffin, cormorant, kittiwake, guillemot and razorbil. 3. Inchmickery

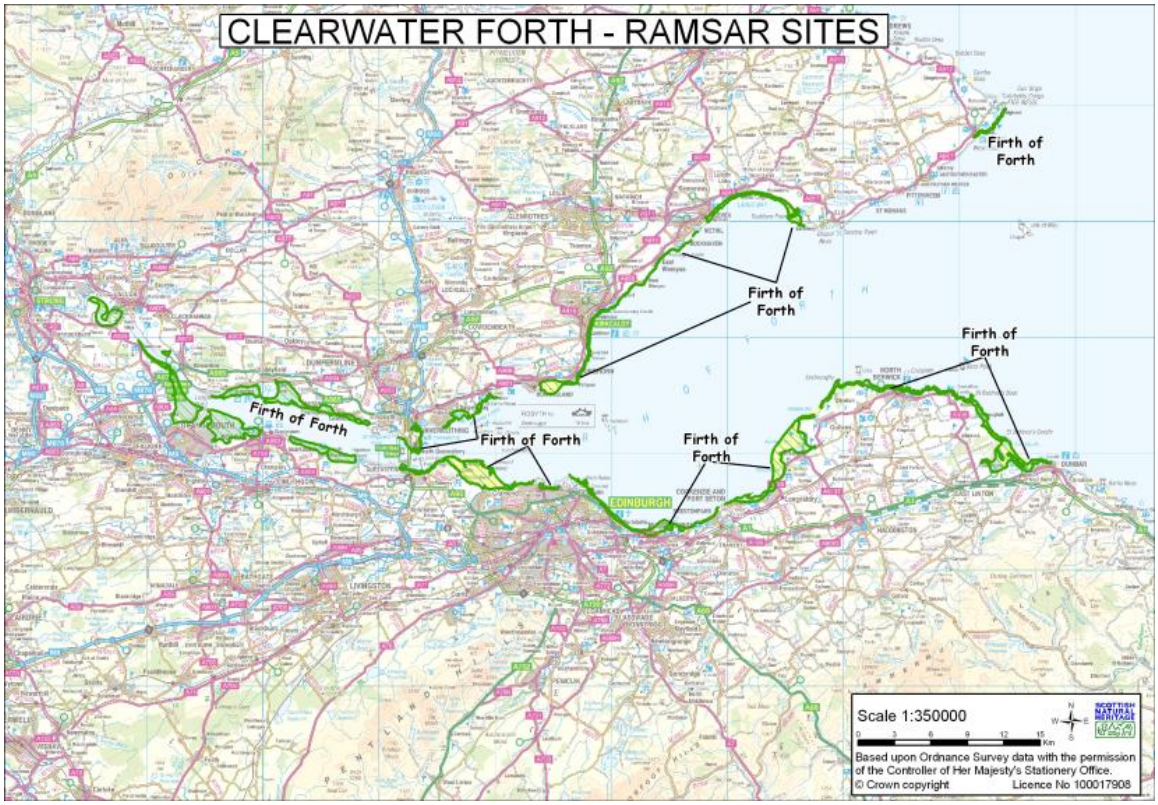
	• Site supports breeding populations of four species of tern, common arctic, sandwich and roseate. 4. Isle of May • Site supports a large breeding colony for populations of shag, kittiwake, puffin, guillemot, and eiders. It is also one of only 3 breeding grey seals off the east coast of Britain. 5. Barnsmuir Coast • Site designated for saltmarshes that support plant communities that are scare on the east coast of Scotland. 6. Fife Ness Coast • Main reason for notification of the coast is the geological importance of coastal exposures (refer above) as well as saltmarshes of a type which is scare in Britain. 7. Bass Rock • Site supports one of the largest breeding seabird colonies in the Forth.
COUNTRY PARK	Country Parks are statutorily declared and managed by local authorities under the Countryside Act 1968. There is a Country Park at Long Craig and at Tyinghame (John Muir Country Park).
LOCAL NATURE RESERVES	Local Nature Reserves occur at Torry Bay, Skinflats, Kinneil Kerse, Aberlady Bay, and Bass Rock
RSPB SITES	The Royal Society for the Protection of Birds (RSPB) non-statutory reserve sites on the rocky islands of Fidra, Inchmickery and Lamb and a site at Skinflats.
WILDLIFE RESERVES & SITES	The Wildlife Trusts were established to promote non-statutory nature conservation at a local level in Britain. There are Scottish Wildlife Trust Reserves on the Firth of Forth including, including Long Craig Island, Kilminning Coast, and Barnyards Marsh (see www.swt.org.uk/visit/reserves).
Socio-Economic Importance	
COMMERCIAL WATERWAYS, PORTS AND WHARVES	The Forth is one of the most important shipping areas in Scotland one of the country's largest commercial waterways contributing very significantly to the economy of the surrounding regions. Much of the commercial shipping activity is associated with export of crude oil and refined products occurring from Grangemouth Docks, Hound Point Marine Terminal and Braefoot Bay. These facilities have approximately 1500 voyages per year collectively, although absolute numbers vary from year to year. There are approximately 4000 vessels transiting to the various ports and anchorages in the Forth per annum, with vessel types including crude oil and product carriers, bulk carriers, ro-ro, offshore, general cargo, and naval vessels.
SHELLFISHERIES	There is a significant, although declining, *Nephrops* fishery in the outer firth and creeling for lobster and crab along the coastal fringe. The East of Scotland Inshore Fisheries Group has aspiration to increase the coastal fisheries in the Forth.
FINFISHERIES	Salmon fishing rights exist around the shores of the Firth that allows for netting of salmon out to 1300m from mean low water mark. However sites are presently unoccupied. Coastal fishing is important from Crail, Anstruther, and Pittenweem.
AMENITY BEACHES	There are numerous amenity beaches throughout the Forth and are used for recreational activities all year .These shorelines include Fife Ness, Crail, Anstruther, Elie, Pittenweem, St. Monans, Earlsferry, Largo,, Leven, Methil, Kirkcaldy, Kinghorn,

	Pettycur, Burntisland, Aberdour, Cramond, Portobello, Port Setton, Longniddry, Gullane, Yellowcraig, North Berwick Bay and Milsey Bay
WATER CONTACT ACTIVITIES	Water contact activities tend to be associated with the shores from Fife Ness to North Queensferry on the north side and from Port Edgar to North Berwick on the south coast. Water contact sports are extremely popular in the Forth with sailing and yachting taking from the numerous marines and boat clubs. Other water contact activities include: Boat trips are made from a number of locations to the Forth Islands and Isle of May, boat trips to the Isle of May are made from Crail and Anstruther. Occasionally trips can be taken as far as Stirling. Dive sites occur at Isle of May, Fife Ness, Canoeing occurs off Anstruther and Cellardyke Surfing, sailboarding and water skiing takes place out of Ellie, Blackness Bay, Cramond, Port Edgar, Portobello, Musselburgh, Longniddry Beach, Prestonpans, Gosford Bay, Gullane Bents, and North Berwick
OTHER RECREATIONAL ACTIVITIES	Bird watching occurs from a range of locations including Largo Bay, Torry Bay, Skinflats area, Aberlady Bay,
MARINA OR MOORINGS	Moorings are widely spread throughout the Forth and a number are associated with yachting clubs; marinas and moorings are found at Crail, Anstruther, Earlsferry, Methil, Lower Largo, Kinghorn, Burntisland, Kirkcaldy, Burntisland, Aberdour, Dalgety Bay, North Queensferry, Bo'ness, Port Edgar, South Queensferry, Cramond, Granton, Cockenzie, Fishbarrow, North Berwick

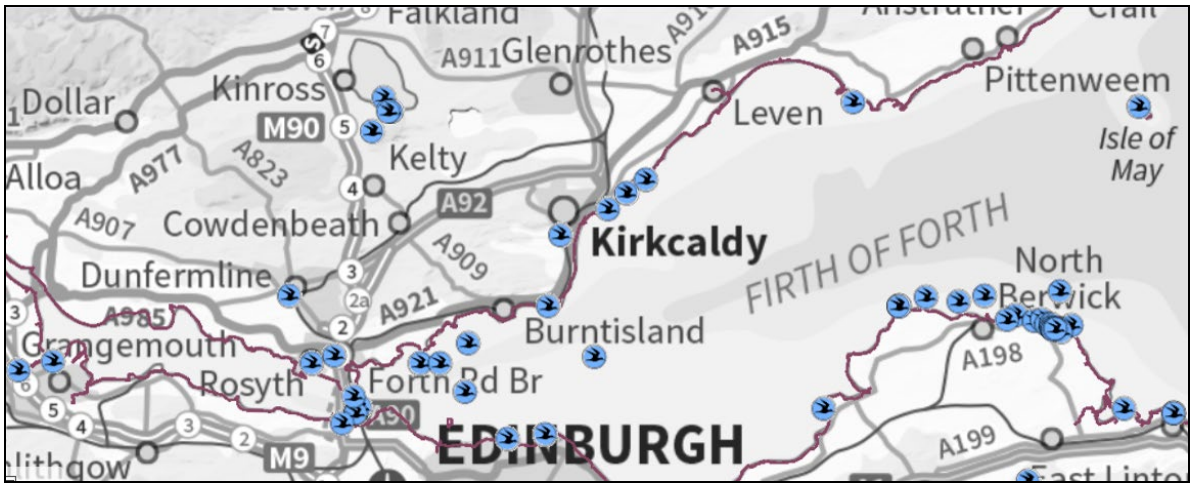
Map 4: Clearwater Forth SPA Sites



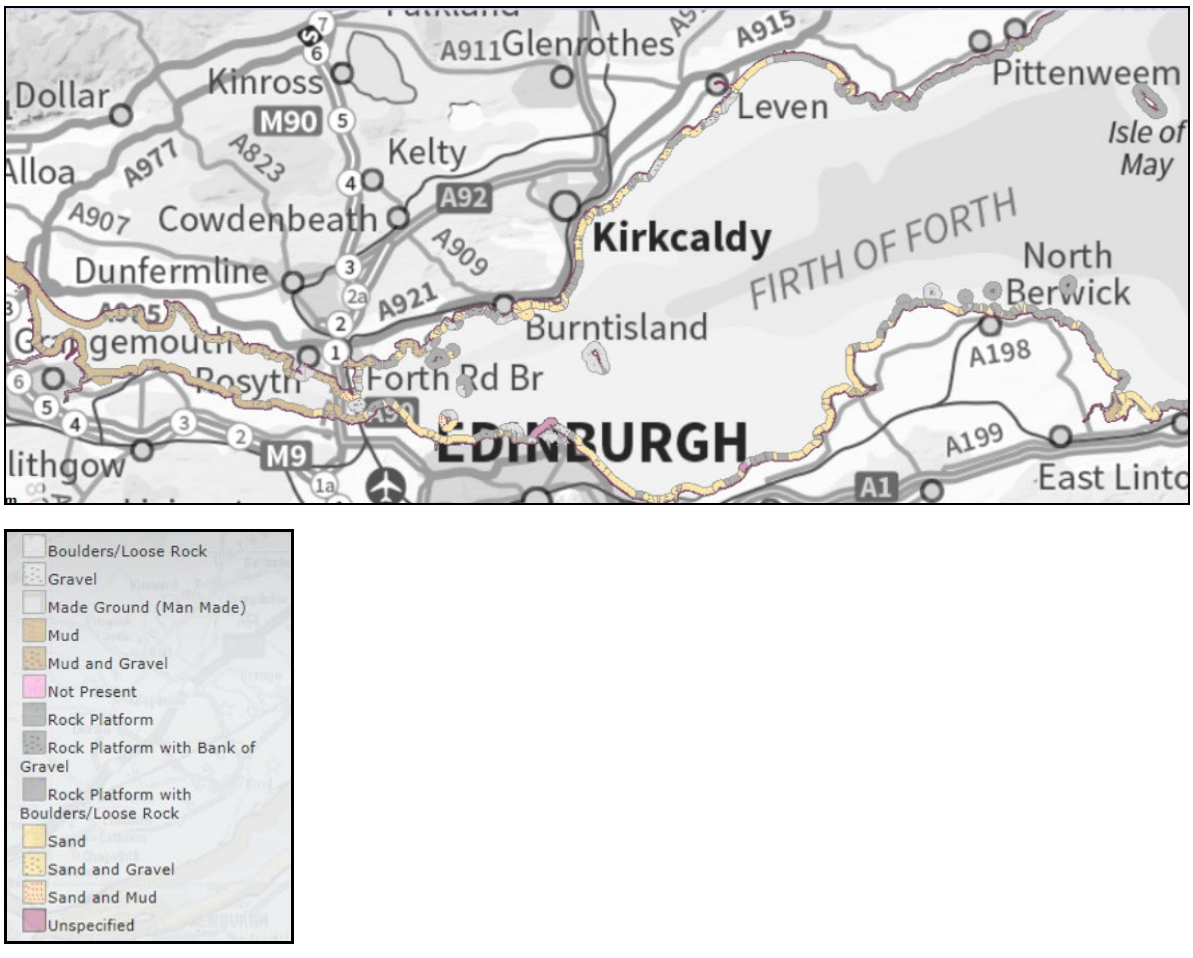
Map 5: Clearwater Forth RAMSAR Sites



Map 6: Seabird Nesting Grounds



Map 7: Intertidal Foreshore Substrate



Map 8: Priority Protection Areas

Table 9. 2 Forth Ports Harbour Area: Priority Protection Areas

TABLE 9.2 FIRTH OF FORTH HARBOUR AREA : PRIORITY PROTECTION AREAS (Use with Firth of Forth Priority Protection Areas Map and Oil Spill Response Map)		
A – HIGH PRIORITY AREAS		
Area Category	**Key Sensitive Features & Importance**	**Main Period of Sensitivity**
A1 Areas	**Areas of sheltered tidal flats with extensive saltmarsh habitat of national botanical importance / sites of national importance for bird populations**	
Skinflats	❑ Internationally important numbers of wintering waterfowl, regionally important for passage migrants	July – March
	❑ Botanical conservation importance for estuarine habitats including saltmarsh, brackish fen, coastal lagoon system	All year
	❑ Significant flatfish nursery area	All year
Kinneil Kerse	❑ Internationally important numbers of wintering waterfowl, large flock of post-breeding moulting shelduck	July – March
	❑ Botanical conservation importance for plant communities including pioneer saltmarsh, brackish marsh	All year
	❑ Significant flatfish nursery area	All year
Torry Bay	❑ Nationally important numbers of wintering waterfowl	June – March
	❑ Botanical conservation importance for saltmarsh	All year
	❑ Marine conservation importance for nationally scare eelgrasses, marine algae and invertebrate species	All year
	❑ Significant flatfish nursery area	All year
Inchmickery	❑ Nationally important seabird colonies	April – September
Largo Bay	❑ Nationally important numbers of wintering waders	October – March
	❑ Internationally important flocks of seaduck	All year
	❑ Significant flatfish nursery area	All year
	❑ Creeling for lobsters/crabs; periwinkles taken from shore	All year
	❑ Several amenity beaches around Largo, Leven etc	April - September
Aberlady Bay	❑ Nationally important numbers of wintering waterfowl	October – March
	❑ Important seabird breeding colonies	April – September
	❑ Botanical conservation importance for saltmarsh, mudflats, sand dunes	
Gullane Bay	❑ Nationally important numbers of wintering waders, important eider moult site	October – March
	❑ Important site for flocks of seaduck, divers and grebes	All year
	❑ Sandy beach of high amenity value & EC Designated	April – September

	Bathing Water; water-based recreational usage	
Bass Rock	❑ Internationally important seabird colonies	February – August
Isle of May	❑ Nationally important numbers of wintering waterfowl, and breeding eider ducks during summer months ❑ Nationally important seabird colonies ❑ Important grey seal breeding and haul-out site ❑ Marine conservation importance for exposed marine habitats, communities and species ❑ Creeling for lobsters/crabs; periwinkles taken from shore	October – March All year Autumn All year All year
A2 Areas	**Water Intakes / Commercial Shellfish Sites**	
Deepsea World, N. Queensferry	❑ Water abstraction point for marine life centre	All year
A3 Areas	**Nationally Important Seal Sites**	
Inchkeith Island	❑ Important grey seal haul-out site ❑ Large numbers of breeding seabirds	Autumn All year
Forth Islands (Eyebroughty, Fidra, Lamb and Craigleith)	❑ Important grey seal haul-out sites ❑ Nationally important seabird colonies	Autumn All year
B- MODERATE PRIORITY AREAS		
B1 Areas	**Areas of sheltered tidal flats with small areas of saltmarsh habitat of local importance for bird populations**	
Blackness Bay	❑ Regionally important numbers of wintering waterfowl ❑ Marine conservation importance for locally rare plants including eelgrasses and marine algae	October – March All year
Drum Sands	❑ Regionally important numbers of wintering waterfowl ❑ Wintering flocks of gulls ❑ Significant flatfish nursery area ❑ High recreational usage of beaches and water ❑ Mussel beds occasionally exploited	October – March November – January All year April – September All year
Leith to Prestonpans Shoreline	❑ Regionally important numbers of wintering waterfowl ❑ Mussel beds off Joppa coast occasionally exploited	October – March All year
Gosford Bay	❑ Regionally important numbers of wintering waterfowl ❑ Offshore waters hold important numbers of seaduck, divers and grebes ❑ Sandy beach of amenity value	October – March All year April – September

B2 Areas	Areas of intensive use by pleasure boats / leisure craft / marinas	
Port Edgar	❑ Port Edgar marina, sailing school, windsurfing, canoeing	All year
Granton Harbour	❑ Several yacht clubs, moorings	All year
Leith Docks	❑ Major commercial port, moorings	All year
Milsey Bay	❑ Moorings at North Berwick, windsurfing, dinghy sailing	All year
B3 Areas	**Amenity beaches of high tourist use**	
Burntisland	❑ Sandy beach of amenity value	April - September
Aberdour Silversands	❑ Sandy beach of high amenity value & EC Designated Bathing Water	April – September
Pettycur	❑ Sandy beach of high amenity value & EC Designated Bathing Water	April - September
Earlsferry	❑ Sandy beach of amenity value	April – September
Yellowcraig	❑ Sandy beach of high amenity value & EC Designated Bathing Water	April - September
Milsey Bay	❑ Sandy beach of high amenity value & EC Designated Bathing Water	April - September

A.1. THE LEGAL PERSPECTIVE

A1.1 International Oil Spill Response Convention: Oil Pollution, Preparedness, Response and Co-operation (OPRC) Convention 1990

The Oil Pollution Preparedness, Response, and Co-operation Convention (OPRC) was developed by the Marine Environment Protection Committee (MEPC) of the International Maritime Organisation and adopted by a diplomatic conference in November 1990. The Convention came into force internationally on 13 May 1995 and in the UK on 16 December 1997.

The Convention provides a framework for international co-operation for combating major oil pollution incidents and places various obligations on signatories. The mandatory requirements of the Convention are as follows:

Article 3 – Oil Pollution Emergency plans

Requirement	Compliance
UK registered ships and sea ports to hold Oil Pollution Emergency Plans	For ship board plans the requirement has been implemented through regulation 26 of The International Convention on the Prevention of Pollution from Ships (MARPOL 73/78) which applies to UK registered ships A statutory duty has been placed on ports and harbours to prepare and submit oil spill contingency plans to MCA.

Article 4 - Oil Pollution Reporting Procedures

Requirement	Compliance
Ships and sea ports are required to report all actual or observed oil spills	The requirements are met through MARPOL and secondary legislation.

Article 5 – Action on Receiving an Oil Pollution Report

Requirement	Compliance
Assessments be made of all pollution reports, and for States affected or likely to be affected to be informed.	MCA assesses all pollution reports made in the UK. Other States are informed, as necessary, through agreements such as the Bonn Agreement and the Mancheplan to which the UK is a party.

Article 6 – National and Regional Systems for Preparedness and Response

Requirement	Compliance
Designation of a competent national authority with responsibility for oil pollution preparedness and response, receipt and transmission of pollution reports, and, on behalf of the State, for requesting or deciding to render requested assistance.	Competent national authority for the UK is the MCA Counter Pollution and Response Branch.
Establish national contingency plan	UK has National Contingency Plan for response to marine pollution
Establish minimum level of pre-positioned combating equipment	MCA maintains stockpiles of beach cleaning and at sea equipment to respond to incidents around the UK coast.
Programme of exercises and training	MCA conducts own exercises and participates in those programmed by the Bonn Agreement. MCA also regularly involved in local authority, port authority and oil industry exercises.
Detailed plans and communications for responding to incidents	In addition to the National Contingency Plan the MCA has developed agreed plans through its bi-lateral and regional agreements. HM Coastguard and MCA are on call 24 hours a day.
Provision to the IMO of details of the competent authority, the national contingency plan and the resources which may be available to other States	Details of equipment available to the MCA are included in the EU Information System available to the IMO. A copy of the National Contingency Plan has been sent to the IMO. The availability of equipment to other states will depend on circumstances.

Article 7 – International Co-operation in Pollution Response

Requirement	Compliance
Subject to capabilities and availability, the provision of advise, technical support, and equipment when requested by another country	Requests for assistance from countries other than those with whom the UK has formal regional or bi-lateral agreements covering co-operation and support will be received by the Department for International Development who, in consultation with the MCA will decide, subject to Ministers, the UK response.

Article 8 – Research and Development

Requirement	Compliance
Promote and exchange results of research and development, the establishment of links between research institutions, the promotion of international symposia, and the development of standards for compatible equipment and techniques	The MCA publishes the results of its research and development and is working towards forging international links with research institutions. The UK will discuss compatible equipment and techniques through the forum of the Bonn Agreement.

A1.2 Prosecution of Offences

Any harbour authority who without reasonable cause:

1. Fails to submit or re-submit an oil pollution emergency plan in accordance with the requirements of the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations;
2. Does not maintain an oil pollution emergency plan, as approved (with alterations directed by the MCA or the Secretary of State, as the case may be, if so directed) under the regulations;
3. Fails to implement its oil pollution emergency plan in contravention of the regulations;

Shall be guilty of an offence punishable on summary conviction by a fine not exceeding the statutory maximum or on conviction on indictment by a fine.

A.1.2.1 MARPOL

Ports and harbours have the power to prosecute offences committed within their areas of jurisdiction. Under section 44 of the Merchant Shipping Act 1995 a harbour master who believes that oil has been discharged in contravention of section 131 into the harbour can detain the offending vessel for up to seven days so that proceedings can be instituted.

A1.3 Liability and Compensation for Pollution Damage

The ease with which those involved in clean up operations can obtain compensation depends upon the type and source of pollutant involved. Currently there are four distinct cases:

1. Where pollution is caused by persistent oil carried in a tanker, either as cargo or as a fuel, compensation is available under an international compensation regime. *Note that the definition of a persistent oil is highly technical; crude oil and heavy fuel oil used by ships are both persistent oils, aviation fuel and petrol are non-persistent oils;*
2. Where pollution is caused by persistent oil carried in any other type of ship (normally as fuel), there are special rules in UK legislation designed to make it easier for claimants to obtain compensation;
3. Where pollution is caused by a pollutant from a ship other than persistent oil, claims are subject to the normal rules of civil common law;
4. Where pollution is caused by an unidentified source, no compensation can be obtained unless the claimant can prove that the source of the pollution was a tanker.

A1.4 Cost Recovery

A.1.4.1 Pollution caused by persistent oil carried in a tanker.

The international compensation regime for oil pollution damage from tankers is established by two international conventions: the International Convention on Civil Liability for Oil Pollution Damage (Civil Liability Convention) and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Fund Convention). The former convention deals with the liability of tanker owners, the latter establishes the International Oil Pollution Compensation (IOPC) Fund. The Merchant Shipping Act 1995 implements the regime in the UK.

Under these conventions, the tanker owner and the IOPC Fund are strictly liable for the costs of reasonable clean up operations. Strict liability means that the claimant does not need to prove fault in order to obtain compensation. The tanker owner and the Fund may be exonerated from liability only if they can prove that the damage was due to one of a limited number of exceptional circumstances (e.g. an act of war).

Tanker owners generally have the right to limit liability to an amount determined by reference to the gross tonnage of the tanker. This amount varies from about £3.7 million for a small tanker (less than 5000 gross tons) to about £72.5 million for a very large tanker (over 140,000 gross tons). Tanker owners are required to maintain insurance to cover their potential liabilities and to carry a State – issued certificate on board to confirm that this insurance is in place. Most tanker owners obtain this insurance through a Protection and Indemnity (P&I) Club. Under the terms of the Civil Liability Convention, claimants have the right to claim directly against the insurer.

The IOPC Fund is an intergovernmental organisation, established by the Fund Convention, which generally pays compensation to supplement that available from the tanker owner. Payments of compensation and the administrative expenses of the IOPC Fund are financed by contributions levied on any person in a Fund-member state who receives an annual quantity of more than 150,000 tonnes of crude oil and heavy fuel oil following carriage at sea. The total amount of compensation available from the tanker owner and the IPOC Fund together is about £164 million (for all sizes of tanker).

Claims for clean up costs under the terms of the Civil Liability Convention should be submitted in the first instance to the tanker owner and/or to the relevant P&I Club. The identity of the P&I Club and contact details can normally be obtained from the tanker owner's local agent or master. To obtain compensation under the terms of the Fund Convention, claimants should submit their claims directly to the International Oil Pollution Compensation Fund. Details of the information that must be provided in a claim is provided in the National Contingency Plan for Marine Pollution from Shipping and Offshore Installations, produced by the MCA.

A.1.4.2 Pollution Caused by Persistent Oil Carried in Ships Other Than Tankers

At present, there are no comparable international arrangements on liability and compensation for damage caused by persistent fuel oil carried in ships other the tankers. The UK has introduced national legislation (Section 154 of the Merchant Shipping Act 1995) to make owners of ships, other than those to which the Civil Liability Convention applies, strictly liable for pollution damage caused by persistent oil. This provision makes it simpler for claimants to recover the costs of damage caused by the fuel carried by non-tankers, because claimants do not have to prove that the ship owner was at fault.

A.1.4.3 Pollution Caused by Pollutants Other Than Persistent Oil

There is currently no statutory law dealing with liability and compensation for pollution damage caused by substances other than persistent oil. Liability and compensation for pollution damage caused by substances other than persistent oil are currently governed by the ordinary rules of civil common law.

A.1.4.4 Pollution from Unidentified Source

Generally, compensation can only be obtained if the claimant knows its precise source. There is one exception to this, however; the IOPC Fund will pay compensation for reasonable clean up costs if the claimant can prove that the measures were taken in respect of pollution by persistent oil from a tanker.

A.2. CLEARWATER FORTH EQUIPMENT RESOURCE INVENTORIES

The following resources may be available for use under the Clearwater Forth Scheme. Use of these resources will depend on availability at the time of the incident.

A.2.1 Forth Ports Limited

TIER 1 EQUIPMENT	CAPABILITY
• 120 metres of 3M T270 oil sorbent boom • 12 rolls of 3M oil sorbent pads (480mm x 44 metres) • 200 heavy duty black plastic bags • 220 metres of 10mm polypropylene rope	Tier 1 response kits located at the following ports: • Leith (detailed below) • Grangemouth • Rosyth (also covering Methil, Kirkcaldy and Burntisland)

TIER 1 EQUIPMENT-LEITH	CAPABILITY
• 2 x packs of rags • 150m sorbent boom • 15 x rolls sorbent pads • 2 coils of 8mm polypropylene rope • Coil of 24mm polypropylene rope • Gloves, bin bags and knife	• One person available 24 hours • 3 personnel available within office hours

In addition, there is 100m of 1500mm fence boom in stillage at Leith (loan stock from A&A).

TIER 2 EQUIPMENT	CAPABILITY
• MT Fidra	21,000 litres of VDC+ dispersant *Vessel has spray booms but no capacity to store recovered oil

A.2.2 INEOS Forties Pipeline System

A.2.2.1 INEOS FPS Hound Point Response Vessels

EQUIPMENT	CAPABILITY
• Ro-Boom Side Sweep System • Seamop 4090 Skimmer • 224m Ro-boom 1300 containment boom • Dispersant spraying system 47,000 litres Type 2/3 dispersant • Absorbent materials • 'Hopetoun' 200m^3 recovery capacity - classed • 'Dalmeny' 100m^3 recovery capacity – not classed • Workboat available to assist with dispersant spraying • Terminal spill kits	• One of the four tugs stationed at Hound Point Marine Terminal will be available dependant on operational requirements at time of request. • Two of these vessels have recovered oil storage tanks with capacity for 100m³. • In addition one workboat from the Hound Point fleet will be available to assist in the deployment of booms.

TYPE OF DISPERSANT	QUANTITY	LOCATION
Y SLICKGONE NS	33,000 litres	TUG HOPETOUN
Y SLICKGONE NS	2 X 14,000 litres	TUGS, QUEENSFERRY & DALMENY

A.2.2.2 INEOS Forties Pipeline System

Extensive resources are available through the Forties Pipeline System. A full list is available on request and can be requested through the KSL to the FPS IMT.

A.2.3 Shell / Exxon, Braefoot Bay

Mobile Beach Response Unit **(Located Adjacent to Shell Control Room)**	**Contents:**
	Air pump, hose and adapters
	2 * lifejackets
	Oil spill response kit
	30ft MSO Matasorb boom
	6 * Matasorb rolls (sheet type)
	30 prs wellington boots
	15 Orange PVC suits (medium)
	15 Orange PVC suits (large)
	18 packs red rubber gauntlet gloves
	6 traffic cones
	1 * Ferno folding stretcher
	1 * first aid kit
	20 * plastic shovels
	1 * steel shovel
	1 * pick axe and shaft
	1 * mash hammer
	6 * angle iron posts
	6 * wooden stakes
	2 * packs polythene sheets
	2 * bags Sorboil
	2 * warning tripods
	1 * coil rope
	6 * tow lines
	1 * fire extinguisher
	1 * spare wheel and tyre
	Boom attachment magnetic float
	1 * bag of shackles
	Tools, various
Sorbent roll (Located in Compressor House)	5 * packs M95
Oil Spill Response Kit **(Certified container)**	Contents
	2 closing rings
	1 pr neoprene oil resistant gloves
	1 * protective `Tyveck Suit`
	1 pair protective goggles
	1 neoprene drain stopper
	40ft Matasorb blanket 30”
	25 * Matasorb Pads
	75ft Matasorb blanket 30”
	2 Polythene 3mm bags
Flexiboom 110mm	
Shell Jetty	200m on Hydraulic Power Reel
Flat bed trailer	200m on hand reel
Adjacent to Control Room	200m on hand reel

Forth Logistics based at Port Edgar can be mobilised to attend Braefoot bay. Five boats and equipment are stored at South Queensferry Jetty:

Boats – Wave Dancer, Saint David, Saint Colme, Wave Spirit, Wave Train.

Equipment – 50m oil absorbent boom.
Approx. 100 absorbent pads.
Mooring magnets.
Mooring cams
Several lengths of running line.
Several VHF sets.
Copy of Clearwater Forth Plan.

Tier 2 – Briggs Marine Environmental Services

Briggs Marine Environmental Services have extensive stockpiles of vessels and oil spill equipment at their Burntisland base. Refer to Braefoot Bay Marine Terminal Pollution Response Contingency Plan for full details.

A.2.4 INEOS Grangemouth Equipment

A.2.4.1 INEOS Tier 1/2 Equipment

Resources	Location	Mobilisation
• 120 metres of TROIL GP450 Boom • 120 metres of VIKOMA FLEXI 500 Boom	Old Lock Berth On Reel Boatmen's Area on Reel	Contact: INEOS Hydrocarbons Shift Manager (HSM) Tel: 01324 476151 or 0790 1622393
• Various Absorbents	East & West Jetties	As above

A.2.4.2 Harbour Craft & Tugs Available to Assist in Pollution Response

Vessel	Location	Mobilisation	Remarks
Roseberry Cross Svitzer Lyndhurst	Svitzer Tug Base Carron Dock, Grangemouth Docks,	VHF 14 24hrs	Harbour Tugs capable of rapidly deploying to an area of the dock such as the East or West Cut and using their Voith units to prevent an oil spill from spreading to other areas of the dock until a boom can be rigged.
Grangemouth Boatmen - work boats	East Cut, Grangemouth Docks	VHF 14 24hrs 482510	Fleet of highly manoeuvrable workboats manned by professional boatmen who are regularly trained in the deployment of oil booms and other equipment.
`Forth King`	Carron Dock	Forth Ports Conservancy	Fast survey launch capable of supporting On-Scene Commander role within the docks.
`Moil`	Eastern Channel	Forth Ports Grangemouth Engineering	Maintenance barge.
'Forth Sentinel'	Leith	Forth Ports Marine Team	Plough Dredger
'Forth Puma, Forth Leopard, Forth Tiger'	Granton	VHF 72 Pilot vessel Coxswains	Pilot Cutters

A.2.5 Adler and Allan

Adler and Allan are contracted by Forth Ports Limited to provide Tier 2 response in the Forth Ports Harbour Area. Assets are held by Adler and Allan at either Montrose or Glasgow Depot and are available on a 24/7 rapid mobilisation basis to meet all contractual obligations. Additional resources can be called on from regional response facilities and two regional UK waste management facilities.

8.5 tonnes pre-Loaded containment & Recovery

5 units are available with the following contents:

8.5 tonnes rigid with tail lift	1
Inflatable Sea Boom 75i	200m
Rigid Fence Boom 50p	80m
Silverbeach 55 Shore sealing boom	80m
Minimax Weir Skimmer	1
Spate 75c diesel driven pump	1
Safety boat, oars, pump and outboard	1
Generator Honda EC4000B	1
Lighting set	1
Fastank On Land Storage	2000 Gallon
Blower Echo PB6000	1
Honda WP20X Water Pump	1
Anchors chains, buoys	5 sets
Rope	400m
Medical Kit	1
Extinguisher Powder 2Kg	2
Heavy duty waste bags	100
Rakes and shovels	3 of each
Towing Bridles	3
Sand bags	50
Stakes	6
Rammer	1
Sorbents – 3m booms	4
Sorbents - Roll	1
Sorbents - sheets	3 packs
PPE safety glasses, gauntlets, overalls	20 each
Notice boards, barrier tape	2 each
Mop	1
Decontamination tank	1
Polythene sheeting	Large roll
Fuel tanks	2
Tool kit and spares kit	1

2.0 Tonnes pre-Loaded Containment

2 Units available with the following contents:

Quantity	Item Description
1	Sprinter or equivalent
1	Safety Boat, Oars, Outboard
10	Inflatable sea boom 10m
5	inshore fence boom 10m (50p)
1	air fan blower
2	grab bags PPE
1	1st aid kit
1	2kg dry powder
5	anchors / chains / buoys
2	shovels
2	rakes
1	mop
1	rope
1	rope
1	oily waste bags
1	DPM
2	towing bridles
1	tool kit
2	3m abs boom
1	1 pack pads
1	abs roll
1	rubber gauntlets x 10
1	disposable overall x 10
1	safety goggles x 10
1	sand bags empty x 25
1	Barrier tape x 1
2	Fuel Tank 4.5ltr petrol / 2 stroke
5	Wooden stakes x 5
1	post rammer
1	Engine oil 1ltr
2	lifejackets
2	torches
2	2 x petrol cans
1	2 stroke oil
2	Shore sealing boom 10m
1	Water Pump

Response Trailers- 1.0 Tonnes pre-Loaded Containment

4 Units available with the following contents:

Quantity	Item Description
1	Box trailer towable by Land Rover or equivalent
60 metres	Inflatable Sea Boom
50 metres	Fence boom
40 metres	Shore Sealing Boom
1	Petrol Air blower and adaptor
1	Water pump
5	Anchors, chains & tripping buoys
1 coil	10mm rope x 200m
1 coil	12mm rope x 200m
3	Shovels
3	Rakes
100	Heavy duty blue waste bags
1 roll	Polythene sheeting
2	Boom towing bridles
1	Tool Kit
1	First Aid Kit
4	Lengths of 3m oil absorbent boom
3	Packs of oil absorbent sheets
1	Oil absorbent roll
10 pairs	Rubber gauntlets and disposal overalls
5 pairs	Safety Glasses
50	Sand bags (empty)
1	Roll red and white barrier tape

Minimum Sorbent Warehouse Inventory

Absorbent Booms

Code	Description	Size	Qty per pack	No. packs
0112/NET/3	Drizit Netted Absorbent Boom	20 cm x 3m	4	100
0105/NET/3	Drizit Netted Absorbent Boom	12.5cm x 3m	4	100

Absorbent Cushions

Code	Description	Size	Qty per pack	No. packs
0110	Drizit Oil Absorbent Cushions	55 x 35 x 10 cm	10	40
0110	Drizit Oil Absorbent Cushions (one off)	55 x 35 x 10 cm	1	150

Absorbent Pads

Code	Description	Size	Qty per pack	No. packs
0140	Drizit Oil Absorbent Pads	40cm x 52cm	200	300
0140/1	Drizit Oil Absorbent Pads	40cm x 50cm	200	100

Absorbent Rolls

Code	Description	Size	Qty per pack	No. packs
0142	Drizit Oil Absorbent Roll	100cm x 42m	1	120
0143	Drizit Oil Absorbent Mini Roll	50cm x 42m	1	120
0142/D	Drizit Oil Absorbent Double Roll	100cm x 42m	1	25
0143/D	Drizit Oil Absorbent Double Mini Roll	50cm x 42m	1	25

Absorbent Socks

Code	Description	Size	Qty per pack	No. packs
0130/125/10	Drizit Oil Absorbent Socks	7.5 x 125 cm	10	25
0130/300/5	Drizit Oil Absorbent Socks	7.5 x 300 cm	5	20
0130/125	Drizit Oil Absorbent Socks (one off)	7.5 x 125 cm	1	600
0130/300	Drizit Oil Absorbent Socks (one off)	7.5 x 300 cm	1	200

Booms

Trident Silverboom 75i	1500m
Trident Silverbeach 550	800m
Vikoma Sentinel 750 200m powered reel system	200m
Vikoma Sentinel 450	140m
Vikoma Shoreguardian 550	500m
Darcy Fenceboom (various sizes)	2000m
Fence Boom 1500	600m
Troil Boom	90m
Single Ship Sweep system	2

Recovery Skimmers

Minimax Weir Skimmers	6
Dragonfly/ Minifly Weir skimmers	8
Komara 12k System	2
GT 185 Weir System with light oil adaptor	1
Ro-Clean Diesel Driven Rope Mop	5
Cowen Flowline towable Rope Mop and Separator unit	1
Vikoma T Disc	1
Air Rope Mop	1

Pumps

Double Diaphragm 2 inch ATEX air driven pumps	4
Double Diaphragm 1 inch ATEX air driven pumps	1
Diesel Driven Wilden Pumps	3
Submersible pumps	Numerous
SPATE 75c Diesel Driven Pumps	7
Trash Pumps	Numerous
Peristaltic Pumps	Numerous
Mobile High Capacity Diesel Driven Transfer Pump Units	6

Beach Vacuum / Powerpacks / Compressors and Blowers

Vikoma PB600	12
Vikoma Dual Pump and Powerpack	1
PHAROS 30 Kw Powerpack	1
Ro-Vac Beach Cleaning System	1
Vikoma Powervac System	1
Diesel Driven Compressors	Numerous

Dispersant Systems

Back Pack Sprayers	6

Storage Equipment

Fastank 2000	12
Roll-over tanks	6
Bowsers	Numerous
Bunded tanks / IBC	Numerous

Response Support Vehicles

200 Vehicles including HGVs, Trailers and Vans, ADR tankers, Vac Tankers, flat beds, HIABS and diggers

Ancillaries

Hot and cold pressure washers

Generators and lighting systems

CAT Scanners

Hand Augers

Mobile drill unit

Strimmers, ladders, cables, drop pipes, hoses

Gas monitors, Ventilators, Tripod and winch sets, safety harnesses, lifejackets

Intrinsically safe VHF

Grab bags, PPE

A.2.5.1 Adler and Allan Mobilisation

The procedure for mobilising Adler and Allan is by a single telephone call to the 24 hour response number detailed in the Emergency Contacts Directory. The caller should pass detail the nature of the incident and will receive a return call within 10 minutes of receipt from the Duty Manager.

Adler and Allan provide an emergency oil spill response service to achieve a response time as follows:

Fully equipped 2 tonne LRRV with one supervisor and one responder at spill site within 4 hours from call (during working hours) and within 6 hours (outside working hours).

Fully equipped 8.3 tonne HRRV with one supervisor and two responders at spill site within 4 hours from call (during working hours) and within 6 hours (outside working hours).

Adler and Allan also provides safe and legal disposal of oil, oily materials resulting from spillage clean up operations; including the forwarding of consignment notes.

A.2.6 Tier 3 Resources

United Kingdom ITOPF Country Profile (2014)

The MCA has on contract two dedicated surveillance aircraft; a Cessna F406 and a Cessna 404, located at East Midlands or Inverness Airports. The F406 can be fitted with a rapidly installed dispersant spray system. This can be used for test spraying of dispersant or for smaller oil spills.

For dispersant spraying, the MCA also includes two Lockheed Electra L188 aircraft, ready to operate at the nominated airfield within six hours of being called. Each aircraft can deliver up to 15 tonnes of dispersant.

The UK Government equipment stockpiles (boom, skimmers, dispersant spraying equipment, hot water washers and other associated equipment) are held primarily in Barnsley with smaller stores at Bristol and Dundee.

A3. MEDIA STATEMENTS

A.3.1 Media Liaison

In the event of an oil spill that results in media attention Forth Ports Limited media consultants will handle the PR for Forth Ports Limited. This company will represent Forth Ports Limited to the media. For Tier 3 incidents there will be joint press releases between Forth Ports Limited and the MCA PR representatives.

A.3.2 The Media's Needs

The following summarises the media's interests in an oil spill event:

- first with news & meet deadlines
- publish details of casualties
- give human interest stories
- present facts including statistics
- bring stories to life with interviews and quotes
- show dramatic pictures
- describe events as they develop
- establish cause
- find new angles different from other coverage

A.3.3 Objectives in Dealing with the Media

The following should be borne in mind:

- To communicate quickly and honestly with all those affected by the emergency to:
- give safety information
- explain how your organisation is responding
- limit adverse comments and damage to reputation
- correct errors in reporting
- promote the positive aspects of your organisation.

NB: Unless you are designated as your organisation's spokesperson you are **NOT** authorised to offer a comment on behalf of the organisation therefore decline media requests and refer media requests to the Chief Harbour Master.

A.3.4 Sample Press Statements

Sample first public statement for a Clearwater Forth Harbour Oil Spill Incident

Public Statement 1 At ____:____ (Time) ____/____/____(Date)

"An oil spill incident occurred at ____:____ hours today within the Firth of Forth Harbour Area. The Harbour Area is operated by Forth Ports Limited.

First reports indicate that ____ amount of oil has been spilt. The cause of the spill is not known at this time.

Harbour operations have / have not been restricted at the present time. Forth Ports are presently dealing with the situation.

Further information will be made available in due course.

For further information telephone:_____ (name)

On:_____ (number)

A.4. OIL SPILL TREATMENT PRODUCTS APPROVED FOR USE IN THE UNITED KINGDOM

For a listing of approved oil treatment products go to the Marine Management Organisation (MMO) website:

https://www.gov.uk/government/publications/approved-oil-spill-treatment-products

The Marine Management Organisation (MMO) has been established to make a significant contribution to sustainable development in the marine area and to promote the UK government's vision for clean, healthy, safe, productive and biologically diverse oceans and seas.

MMO is an executive non-departmental public body (NDPB) established and given powers under the Marine and Coastal Access Act 2009 which brings together the key marine decision-making powers.

NB NatureScot is the statutory consultee in the event of an oil pollution incident occurring within territorial waters and has a duty to provide information and advice on the possible impacts of the incident and any proposed clean-up operations on the natural heritage interests in the area.

A.5. PRO-FORMAS

A5.1 Incident Log

From incident start-up to stand down, record as applicable to your role:

- Key events and times
- Key decisions and why
- Start and finish of tasks
- External contacts made and times
- Equipment receipts
- Boat operations (start/stop time)
- Positioning booms/boats/tugs
- Start/stop of recovery
- Meetings (internal/external)
- Volumes of oil recovered
- Equipment defects/shortages
- Weather/tide/wind changes

Use proforma overleaf.

OIL SPILL RESPONSE LOG

Date		Time		Area	
Reference		Location		Type	

Tide

Date	HW Time	HW Height	LW Time	LW Height

Weather

Time	Wind Direction	Wind Speed	Visibility	Daylight	Precipitation

Time	Narrative	Sitrep

A5.2 MCA Annual Return Proforma

OPRC Annual Return

Name of Port, Harbour or Oil Handling Facility:			
Annual Return Period:		**to**	
Plan Approval date:			**(5 year life span of plans)**
Summary of Incidents: (include date, source, type and quantity of pollution)			
Summary of Exercises: (include date and type of exercise conducted)			
Pollution Training Undertaken (include date, MCA Level, Name & certificate No.)			
Summary of Amendments: (include date, amendment No., & item(s) changed)			
Signed:	Print:		
Position:	Date:		

This form must be completed by Ports, Harbours and Oil Handling facilities at the end of each calendar year, nil returns are required, by the 31st January and returned to the Regional Counter Pollution & Salvage Officer. Continue on separate sheet if necessary.

A5.3 MCA Post Exercise Proforma

Post Exercise / Incident* Report

Name of Port/Harbour/Oil Handling Facility:	

Tier Level (T1,2 or 3)		Name exercise / incident	

Names of any other participating ports, harbours or oil handling facilities if joint equipment deployment exercise/incident	

Date of exercise / incident		Time of exercise / incident	

Location of exercise/incident:	

Name of exercise / incident co-ordinator:	

Name of personnel participating in exercise/incident and role played:		List of equipment deployed:	

Name of any other organisations or authorities participating in exercise / incident:	

Details of amendments to be made to the Contingency Plan resulting from this exercise / incident:
(in addition to this form the revision list is to be updated & the appropriate pages within the plan amended & issued to all plan holders)

I can confirm that the details on this form provide a realistic summary of the exercise/incident. Any action points resulting from this exercise/incident have been dealt with accordingly, the relevant documents updated and copies provided to the appropriate bodies for their attention.

Authorised by (name in block capitals):		Position / Job Title:	

Signature:		Date:	

* Delete as applicable

A5.4 POLREP

Part 1	Information which should be provided in an Initial Pollution Report
A	Classification and Category of Report: (1) Doubtful (2) Probable (3) Confirmed
B	DATE and TIME pollution observed/reported and identity of observer/reporter
C	POSITION and EXTENT of pollution (If possible, state range and bearing from some prominent landmark or Decca position and estimated amount of pollution, eg, size of polluted area; number of tonnes of oil spilled; or number of containers, drums etc lost. When appropriate, give position of observer relative to pollution)
D	TIDE and WIND speed and direction
E	WEATHER conditions and SEA state
F	CHARACTERISTICS of pollution (Give type of pollution, eg, oil, crude or otherwise; packaged or bulk chemicals; or garbage. For chemicals, give proper name or United Nations Number, if known. For all, give also appearance, eg, liquid; floating solid; liquid oil; semi-liquid sludge; tarry lumps; weathered oil; discolouration of sea; visible vapour; etc).
G	SOURCE and CAUSE of pollution if known (eg, from vessel or other undertaking. If from vessel, say whether as a result of apparent deliberate discharge or a casualty. If the latter, give a brief description. Where possible, give name, type, size, nationality and Port of Registry of polluting vessel. If vessel is proceeding on its way, give course, speed and destination, if known.)
H	VESSELS IN THE AREA (To be given if the polluter cannot be identified and the spill is considered to be of recent origin.)
J	Whether PHOTOGRAPHS or SAMPLES have been taken and/or SAMPLES for analysis.
K	REMEDIAL ACTION taken, or intended, to deal with the spillage
L	FORECAST of likely effect of pollution (eg, arrival on beach, with estimated timing)
M	NAMES of those informed other than addresses.
N	Any OTHER relevant information (eg, names of other witnesses, references to other instances of pollution pointing to source.)
Part 2	**Supplementary Information to be provided later.** (This section may be disregarded when POLREPS are for UK internal distribution only.)
O	RESULTS of SAMPLE analysis
P	RESULTS of PHOTOGRAPHIC analysis
Q	RESULTS of SUPPLEMENTARY ENQUIRIES (eg, inspection by Surveyors, statements from ship's personnel etc, if applicable)
R	RESULTS of MATHEMATICAL MODELS

When sending follow-up POLREPS ensure that you mark the POLREP follow-up number.

NAME OF PERSON TRANSMITTING REPORT		
CONTACT DETAILS	**TEL:**	**FAX:**
A		
B		
C		
D		
E		
F		
G		
H		
J		
K		
L		
M		
N		
Part 2	**Supplementary Information to be provided later.**	
O		
P		
Q		
R		

A5.5 Ports Incident Assessment

Checkpoints	Points to Consider	Your Notes
Identify extent of area polluted	❑ Which section of the dock is the spill in?	
Determine source of spill and type of hydrocarbons spilt	❑ Bunkering spill? • Hose rupture • Overfilling of tanks • Small leak from hose ❑ Leak from fuel tanks? ❑ Leak from cargo tanks? ❑ Spill entering dock from Firth of Forth? ❑ Product type? • Diesel • Gas oil • Heavy fuel oil • Light fuel oil • Hydraulic oil	
Assess hazard potential of spill to response personnel	❑ Is there a potential for fire or explosion? ❑ Note that a large spill may carry with it the danger of toxic / noxious fumes. Access appropriate Safety Data Sheet(s) from Vessel/Terminal.	
Establish how spill is progressing	❑ Is spill ongoing? ❑ Is spill one-off event?	
Estimate approximate quantity of hydrocarbons spilt and potential final size	❑ Quantity released or rate of release? It may be possible to estimate this from equipment. If not use the table in Spill Assessment Section 5 which uses colour and area covered to provide an estimate. Note that the thickest areas will be at the downwind side of the slick as shown in diagram over the page.	
Determine direction of movement of spilt oil	❑ What is wind direction ❑ Which dock corner is spill moving towards?	
Determine level of response required	❑ Assess level of response equipment required	

A5.6 Incident Assessment Firth of Forth

The Checklist below lists the information that the Initial Responder may be required to on-pass to Dock Office/FTNS/MEC. NOTE THAT INITIAL CATEGORISATION OF THE INCIDENT MAY NEED TO BE REVISED DEPENDING ON THE INFORMATION OBTAINED FROM INCIDENT ASSESSMENT.

A. LOCATION AND TIME OF INCIDENT.			
Time:	Date:		
Type of incident:	Fire/Explosion Grounding	Collision Other	
	Confirmed / Probable/doubtful		
Source of spill:	Tanker/Vessel	Jetty	Other
Identity of Observer / Reporter			
Any associated	Number of Deaths	Number of Casualties	Other Emergency?

B. SPILLAGE DETAILS		
Approximate spill size:		
Type of oil e.g. heavy/medium/light/gasoline	Characteristics e.g. liquid/solid/tarry lumps Associated gas?	
Safety Risk	To personnel on vessel At jetty Response personnel General public	
Who is responsible for the spill?		
Is assistance to be offered by responsible party		YES / NO
If yes what types of assistance?		
Are other organisations involved?		YES / NO State who
Actions taken so far to contain incident.		
Weather forecast updates – see continuation of proforma overleaf		Wind direction Wind strength Visibility
What level of Clearwater Forth Response is required?		TIER 1 TIER 2 TIER 3

A5.7a Marine & Weather Conditions

STATUS OF WEATHER AND MARINE CONDITIONS				
Parameter	**Actual**	**Predicted**		
		6 hrs	**12 hrs**	**24 hrs**
Wind speed				
Wind direction from				
Sea State				
Present State of Tide (hrs Before/After HW)				
		Maximum		
		Flood	Ebb	
Current Speed				
Current Direction (to)				

A5.7b Beaufort Wind Scales

Beaufort Scale (Force)	Wind Speed (knots)	Description	State of Sea	Probable Wave Height (m)
0	0 – 1	Calm	Like a mirror	0
1	1 – 3	Light Air	Ripples like scales are formed	0
2	4 – 6	Light Breeze	Small wavelets, short, more pronounced, not breaking	0.1
3	7 – 10	Gentle Breeze	Large wavelets, crests begin to break; a few white horses	0.4
4	11 – 16	Moderate Breeze	Small waves growing longer; fairly frequent white horses	1
5	17 – 21	Fresh Breeze	Moderate waves taking more pronounced form; many white horses, perhaps some spray	2
6	22 – 27	Strong Breeze	Large waves forming; white foam crests more extensive; probably some spray	3
7	28 – 33	Near Gale	Sea heaps up; white foam from breaking waves begins to blow into streaks	4
8	34 – 40	Gale	Moderately high waves of greater length; edge of crests breaks into spindrift; foam blown into well-marked streaks	5.5
9	41 – 47	Severe Gale	High waves with tumbling crests; dense streaks of foam; spray may affect visibility	7
10	48 – 55	Storm	Very high waves with long overhanging crests; dense streams of foam make surface of sea white. Heavy tumbling seas; visibility affected	9
11	56 – 63	Violent Storm	Exceptionally high sea waves, sea completely covered with long white patches of foam	11
12	64 and above	Hurricane	Air filled with foam and spray; sea completely white with driving spray; visibility very seriously affected	14

A5.8 Form to Report use of an Oil Treatment for Dispersant Use

(Name of Port Authority/ Oil Handling Company)

Incident No…… Date…….

Volume and type of oil……

Location……

Remedial action taken……

……

Name and type of oil treatment product……..

Date of manufacture…….. Efficacy last tested on……..

(if applicable)

Comments on effectiveness……..

……

……

Report made to MARINE SCOTLAND by……..

……

Other remarks……

……

……

A6. PLACES OF REFUGE

Taken from the National Contingency Plan - A place of refuge means a place where a ship in need of assistance can take action to enable it to stabilise its condition and reduce the hazards to navigation, and to protect human life and the environment. IMO Resolution A.949(23) Guidelines on Places of Refuge for Ships in Need of Assistance provides further information and guidance, as does EU operational guidance on places of refuge.

Except in the most severe incident, a ship is likely to retain some of its cargo, bunkers and other pollutants. It may be desirable to carry out a cargo and bunker transfer operation from the stricken ship to prevent or minimise further spills. It may help to move the ship to a more sheltered area, such as a port, anchorage, or oil terminal. Ship to ship transfers are regulated by the Merchant Shipping (Ship to Ship transfers) (Amendment) Regulations 2012.

It is safer to carry out cargo and bunker transfer operations in sheltered areas. However, the decision to use an area moves the risk of pollution to an area that the incident might otherwise not have affected. The SOSREP is the designated UK competent authority to assign Places of Refuge. The SOSREP has in mind that time may be short and the damaged ship may not be in a condition to travel very far.

The process of identifying an appropriate place of refuge is driven by the circumstances of the incident, including such event-specific data as the weather, the geographical whereabouts of the incident and the type of threat posed by the vessel and its cargo. The CPS Branch will identify, in consultation with any Environment Groups, and as far as is practicable, and carefully consider potential places of refuge and conduct risk assessments of those potential locations prior to submission to the SOSREP who will make the final decision to assign a Place of Refuge.

Further, the MCA's Marine Survey and Inspection Branch provides trained Marine Casualty Officers who may be requested by the SOSREP to assess casualty vessels and determine the wider risk of any marine incident and future response.

A.7. TIER 2 RESPONSE CONTRACT

A Tier 2 response contract is in place with Adler and Allan and Forth Ports Limited to cover the Forth Ports Harbour Area as defined in this OSCP.

A list of Tier 2 resources can be located in Appendix 2.

A.8. MCA STOP NOTICES

For the up to date MCA STOp Notices follow this link:

https://www.gov.uk/government/publications/scientific-technical-and-operational-advice-notes-stop-notes

For example MCA STOp 4 / 2001

"GUIDELINES FOR THE PREPARATION OF COASTAL AND ESTUARINE BOOMING PLANS"

(referred to in Section 5)

Can be found in full by following this link:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908620/STOp4-2009.pdf

A.9. ABBREVIATIONS

A&A	ADLER AND ALLAN
ACOPS	ADVISORY COMMITTEE ON POLLUTION OF THE SEA
BBMT	BRAEFOOT BAY MARINE TERMINAL
INEOS FPS	INEOS FORTIES PIPELINE SYSTEM
CEPO	COUNCIL EMERGENCY PLANNING OFFICER
MRCC	COASTGUARD OPERATIONS CENTRE
CPSO	COUNTER-POLLUTION AND SALVAGE OFFICER
CHM	CHIEF HARBOUR MASTER, FIRTH OF FORTH
CWF	CLEARWATER FORTH
FTNS	FORTH & TAY NAVIGATION SERVICE
HMCG	HER MAJESTY'S COASTGUARD
ITOPF	INTERNATIONAL TANKER OWNERS POLLUTION FEDERATION
ICS	INCIDENT COMMAND SYSTEM
LMIS	LLOYDS MARITIME INFORMATION SERVICE
MEC	MARINE EMERGENCY CENTRE
MoD	MINISTRY OF DEFENCE
MCA	MARITIME AND COASTGUARD AGENCY
NCP	NATIONAL CONTINGENCY PLAN FOR MARINE POLLUTION FROM SHIPPING
OPRC	MS (OIL POLLUTION PREPAREDNESS RESPONSE AND RECOVERY) REGS 1998
POLREP	POLLUTION REPORT
PoR	PLACE OF REFUGE
PMSC	PORT MARINE SAFETY CODE
RSPB	ROYAL SOCIETY FOR THE PROTECTION OF BIRDS
SCU	SALVAGE CONTROL UNIT
SEPA	SCOTTISH ENVIRONMENT PROTECTION AGENCY
SITREP	SITUATION REPORT
SOSREP	SECRETARY OF STATE'S REPRESENTATIVE
SSPCA	SCOTTISH SOCIETY FOR PREVENTION OF CRUELTY TO ANIMALS
ULCC	ULTRA LARGE CRUDE CARRIER
VLCC	VERY LARGE CRUDE CARRIER

A.10. Emergency Contacts Directory

The Emergency Contact Directory can be obtained from FTNS by calling 01324 498584 or contacting a member of Forth Ports marine management team.

PORT OF GRANGEMOUTH

Forth Ports Limited / INEOS Grangemouth

A.11. Supplementary Information

Grangemouth Port Office

Grangemouth

Stirlingshire

FK3 8UE

01324 498581

Fax 01324 668481

email ftns@forthports.co.uk

http://www.forthports.co.uk

A.11.1. The Location of the Port of Grangemouth

Port of Grangemouth is a non-tidal enclosed dock system to which access is available at all states of the tide depending on vessel draft and prevailing weather conditions. The port is located on the southern side of the Firth of Forth 30 kilometres west of Edinburgh. The port is a Statutory Harbour Authority owned and operated by Forth Ports Limited. Access to and from the Forth Estuary is via a system of lock gates, which are controlled by Forth Ports Limited. The Port Response Centre, from which the response would be managed, is located at the Marine Emergency Centre (MEC) at the Forth & Tay Navigation Service which is adjacent to the entrance lock gates as shown on the map.

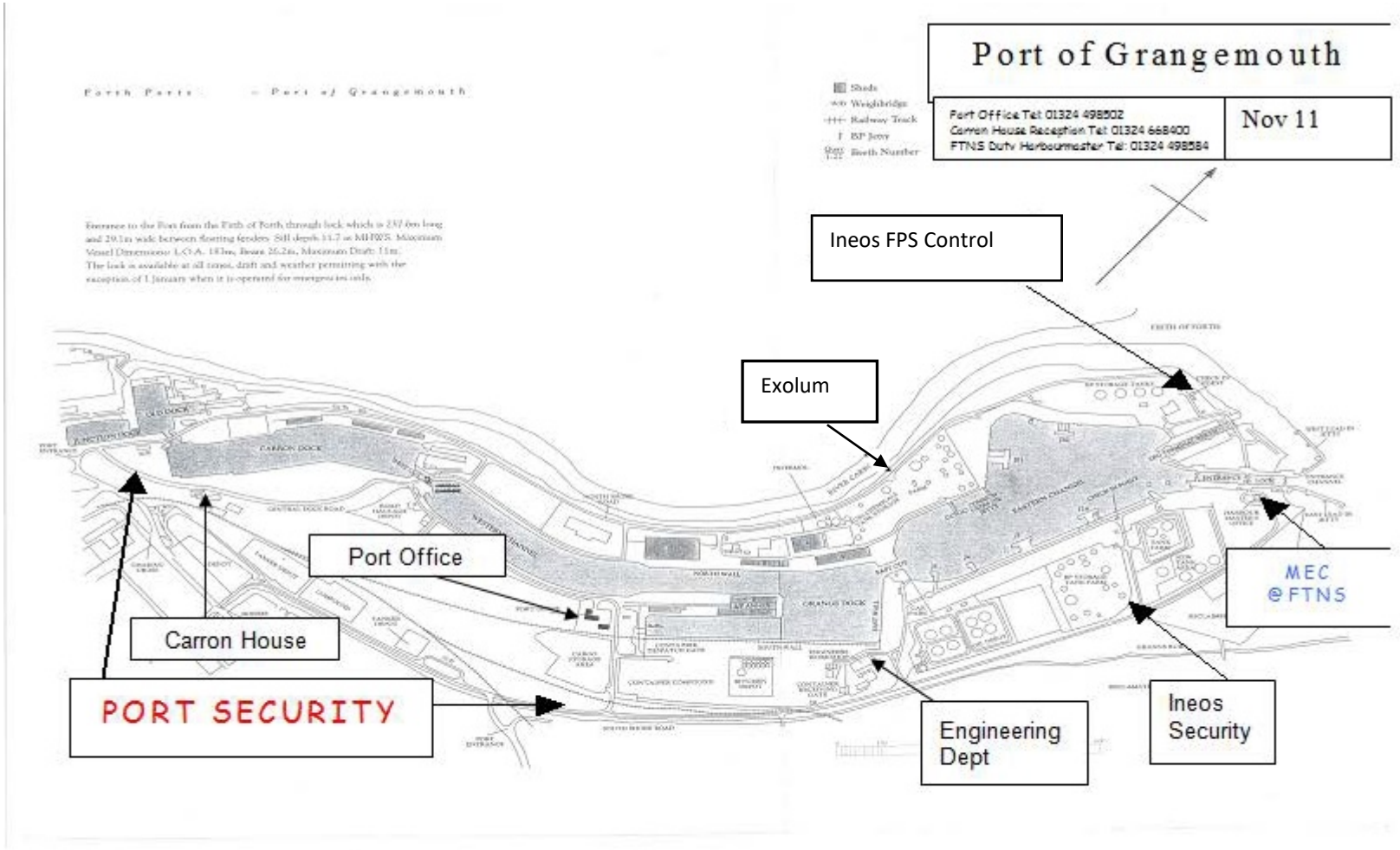

Port of Grangemouth
Port Office Tel: 01324 498502
Carron House Reception Tel: 01324 668400
FTNS Duty Harbourmaster Tel: 01324 498584
Nov 11
Ineos FPS Control
Exolum
Port Office
Carron House
PORT SECURITY
MEC @ FTNS
Engineering Dept
Ineos Security

Fig 1.1 A

A.11.2. Response Management System

Spill Scenarios

Forth Ports Limited and INEOS Grangemouth have agreed the allocation of responsibility for overall management and conduct of the response effort. The division of responsibility for each scenario is also shown in the table.

Allocation of Incident Management Responsibility

RESPONSIBILITY FOR THE OVERALL MANAGEMENT OF RESPONSE ACTIVITIES RESTS WITH FORTH PORTS LTD

INCIDENT SCALE AND LOCATION	RESPONSE CENTRE(S) TO BE ACTIVATED	RESPONSE EQUIPMENT TO BE USED & LOCATION	RESPONSE GUIDELINES	REQUIRED LIAISON AND METHOD
Tier 1 – Release from INEOS Grangemouth Jetties **(SCENARIO – 1)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	INEOS equipment at Jetties. Forth Ports equipment at the lock gates.	Guideline 1	Forth Ports' Duty Harbour Master will liaise directly with INEOS' response teams
Tier 2 – Release from INEOS Grangemouth Jetties **(SCENARIO – 2)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS) INEOS would set up their Incident Management Team as required	As above plus A&A Tier 2 response	Guideline 1	An INEOS Marine Assurance Member will attend Forth Ports' MEC @ FTNS located at the Harbour Master's Office (see map)
Tier 1 – Eastern Channel (other than INEOS Jetties) **(SCENARIO – 3)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	INEOS equipment at Jetties. Forth Ports equipment at the lock gates	Guideline 1	Forth Ports' Duty Harbour Master will co-ordinate the response
Tier 2 – Eastern Channel (other than INEOS Jetties) **(SCENARIO – 4)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	As above plus A&A Tier 2 response	Guideline 1	A&A On-Call will attend Forth Ports' MEC @ FTNS located at the Harbour Master's Office

RESPONSIBILITY FOR THE OVERALL MANAGEMENT OF RESPONSE ACTIVITIES RESTS WITH FORTH PORTS LTD				
INCIDENT SCALE AND LOCATION	**RESPONSE CENTRE(S) TO BE ACTIVATED**	**RESPONSE EQUIPMENT TO BE USED & LOCATION**	**RESPONSE GUIDELINES**	**LIAISON AND METHOD**
Tier 1 – Grange Dock **(SCENARIO – 5)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	INEOS equipment at Jetties. Forth Ports equipment at the lock gates	Guideline 2	Forth Ports' Duty Harbour Master will co-ordinate the response
Tier 2 – Grange Dock **(SCENARIO – 6)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	As above plus A&A Tier 2 response	Guideline 2	A&A On-Call will attend Forth Ports' MEC @ FTNS located at the Harbour Master's Office
Tier 1 – Western Channel **(SCENARIO – 7)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	INEOS equipment at Jetties Asset. Forth Ports equipment at the lock gates	Guideline 3	Forth Ports' Duty Harbour Master will co-ordinate the response
Tier 2 – Western Channel **(SCENARIO – 8)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	As above plus A&A Tier 2 response.	Guideline 3	A&A On-Call will attend Forth Ports' MEC @ FTNS located at the Harbour Master's Office

RESPONSIBILITY FOR THE OVERALL MANAGEMENT OF RESPONSE ACTIVITIES RESTS WITH FORTH PORTS LTD				
INCIDENT SCALE AND LOCATION	**RESPONSE CENTRE(S) TO BE ACTIVATED**	**RESPONSE EQUIPMENT TO BE USED & LOCATION**	**RESPONSE GUIDELINES**	**LIAISON AND METHOD**
Tier 1 – Carron, Junction & Old Docks **(SCENARIO – 9)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	INEOS equipment at Jetties. Forth Ports equipment at the lock gates	Guideline 4/5/6	Forth Ports' Duty Harbour Master will direct response teams
Tier 2 – Carron, Junction & Old Docks **(SCENARIO – 10)**	Marine Emergency Centre (MEC) @ Forth & Tay Navigation Service (FTNS)	As above plus A&A Tier 2 response	Guideline 4/5/6	A&A On-Call will attend Forth Ports' MEC @ FTNS located at the Harbour Master's Office

N.B. It can be noted that inherited incidents are always a possibility. This type of incident is difficult to plan for as there is little pre determination of the oil type, quantity or impact. There could be a potential spill from a river inlet which in turn will enter the Firth of Forth and cause CWF activation. Nevertheless, traffic is very uncommon on most river inlets and only usually consists of small pleasure/sailing boats.

A.11.3. Forth Ports/ INEOS Grangemouth Co-ordination

Liaison and co-ordination between Forth Ports Limited and INEOS Grangemouth would be required for the following reasons:

1. Incidents occurring at the INEOS Grangemouth Jetties (Scenarios 1+2) may result in the activation of the INEOS response organisation. To fulfil their corporate responsibilities, INEOS Grangemouth personnel may establish their Incident Command System. Meanwhile, the operational response to the incident would be conducted by the INEOS response teams, backed up by Adler & Alan for Tier 2 incidents. However, the management of any incident within the Port of Grangemouth will, at all times, be the executive responsibility of Forth Ports Limited. There will therefore be a need for the two organisations to co-ordinate their actions, press statements etc. During Tier 1 incidents, direct communications between the Duty Harbour Master and the response teams will be sufficient to ensure adequate liaison. A Tier 2 incident will require a greater degree of co-ordination. To achieve this, an INEOS Marine Assurance Member will attend Forth Ports' MEC at FTNS. The `Marine Assurance Member` will provide the link between INEOS' Grangemouth Incident Management Team, the teams conducting the response and Forth Ports' Overall Commander.

2. The operational response for all Tier 1 and 2 incidents, elsewhere in the port (Scenarios 3-10), will be carried out by Forth Ports and/or Adler and Allan. Again, the management of any incident within the Port of Grangemouth will, at all times, be the executive responsibility of Forth Ports Limited. To ensure that Forth Ports MEC at FTNS is provided with regular and accurate situation reports during Tier 2 incidents, all response teams will remain in direct communications with the Duty Harbour Master. Tier 2 incidents within the port but not associated with any of the INEOS Jetties would not require the INEOS Incident Management Team to be established. The A&A Supervisor will however attend Forth Ports' MEC at FTNS who will provide the link between the teams conducting the response and Forth Ports' Overall Commander. Tier 1 incidents not associated with INEOS Jetties will be co-ordinated by Forth Ports.

INEOS Response Organisation

INEOS' Emergency Response and Crisis Management describes two levels of incident response organisation. These teams are listed in the table below and their functional responsibilities given. The two-team levels are activated as required by the nature of the incident and they would closely co-ordinate their actions if all three are activated.

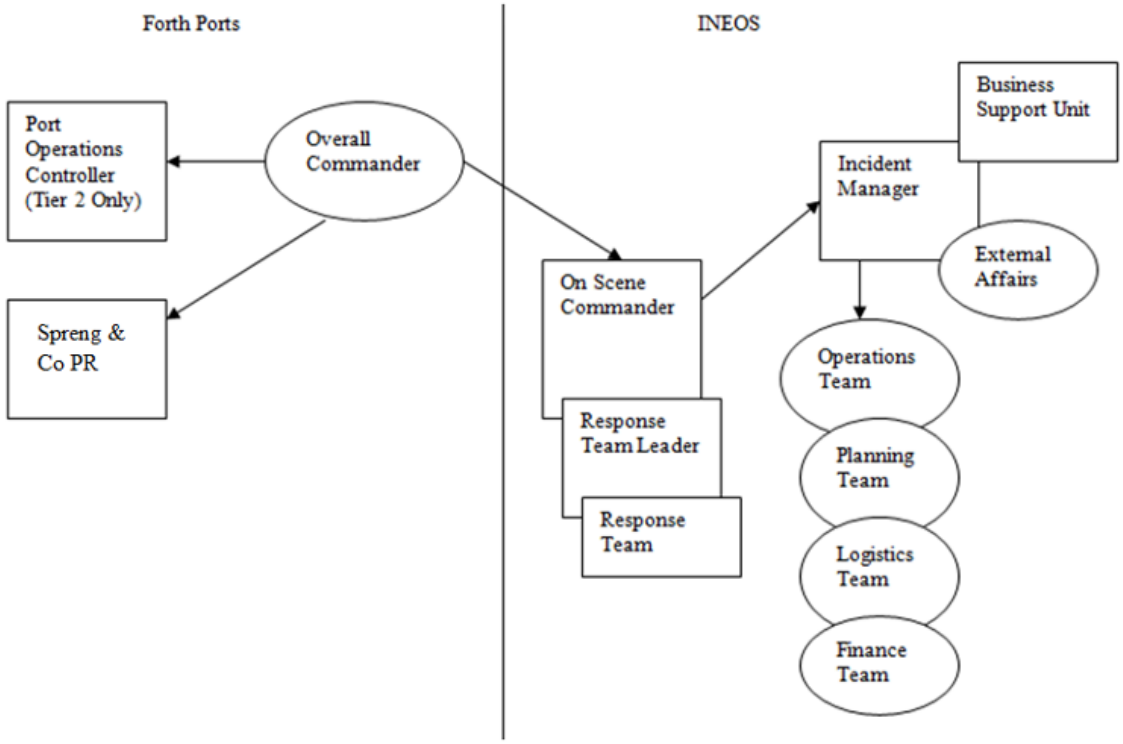
INEOS' 2 Tier Response Organisation		
Team	**Team Leader**	**Team Function**
Incident Management Team	❑ Incident Manager; responsible for overall management of the incident	• Initiate incident response • Manages physical response to incident • Provides co-ordination links with external authorities during incident. • Mobilises specialist external resource

		requirements
Business Support Team	❑ Business Support Manager; responsible for forming Business Support Team	• Assists with back-up support and will provide overall policy guidance. • Manages ongoing business at Grangemouth. • Develops & co-ordinates the business response to the incident.

2. The two levels of organisation are applied to Grangemouth as follows:
3. The Incident Management Team (IMT) will manage the physical response to incidents at the INEOS Jetties.
4. If additional business support is required, the Business Support Team (BST) at INEOS Grangemouth will become involved in the incident. This team will develop and co-ordinate the business response to the incident.

Forth Ports/ INEOS Grangemouth Liaison

Liaison and co-ordination between INEOS Grangemouth and Forth Ports Limited will be necessary during the response to pollution incidents within the Port of Grangemouth.



Command & Control Structure between Forth Ports Limited & INEOS Grangemouth

A.11.4. Fast Facts

Port of Grangemouth

Photograph of the Port of Grangemouth

Harbour Office contact details	Senior Harbour Master Port Office Central Dock Road Grangemouth FK3 8UE	
	Telephone: e-mail: web site:	01324 498584 FTNS@forthports.co.uk www.forthports.co.uk
Latitude & Longitude – *harbour entrance*	56 02.15 N 003 41'.0 W	
Admiralty chart numbers	734, 735, 736, 737 & 741	
Maximum available draft	Oil Jetties 10.5m, Cargo Berths 7.7m	
Maximum available length	Overall size of lock: 237m x 29m	
Maximum beam	As above	
Navigational access – *ie. buoyage*	Buoyed navigation channel	
Environmental Sensitivities	Numerous mudflats and River Forth SSSI's and SPA's	
Tugs	2 x 38 BP Voith with numerous other tugs available in the area	
Pilotage	Compulsory over 45m	
Anchorages	Numerous deepwater anchorages available on the Forth	
Repair facilities – *ie. dry docks and slipways*	Dry dock available: dimensions 105 x 16 x 4.8m	
Cargo handling facilities – *ie bulk, fuel, containers*	Bulk, fuel and containers	
Local authority	Falkirk Council	
Hazards – *pipelines, overhead cables*	Numerous subsea cables and pipelines in the inner Forth. Gas pipeline in the outer Forth. Two bridges with safe airdraft of 44m.	
Tidal Range	Impounded dock.	
ISPS compliant	Yes	

A.11.5. Products Handled

PRODUCT	JETTY USED
Chemicals	
Benzene	Jetty No. 2, 3 or 4
Butadiene	Jetty No. 3, 4
Ethanol	Jetty No. 2 or 3
Hexene	Jetty No. 4
Propylene	Jetty No. 2, 3
Raffinates	Jetty No. 3 or 4
Styrene Monomer	Jetty No. 4
Fame	Jetty No. 4, E1
Refined Petroleum Products	
Fuel Oils	Jetty E1, E2, No. 2, 3, 4
Gas Oils	Jetty E1, E2, No. 2, 3, 4
Jet A1 (ATK)	Jetty E1, E2, No. 2, 3 4
Kerosene	Jetty No. 2, 3, 4
Light distillate Feedstock	Jetty E1, E2, No. 2 or 3
LPG – Refrigerated	Old Lock Berth
Motor Spirit	Jetty E1, E2, No. 2, 3, 4
Ethane	Jetty No. 2

At the Jetties there are refrigeration and storage facilities for 10,300 tonnes of propane and 9,700 tonnes of butane. All other imported / exported products pass to and from the jetties via pipeline to / from INEOS' Refining and Chemical Tank Farms.

The Jetties includes five jetties (Jetty E1, Jetty E2, Jetty No. 2, Jetty No.3, Jetty No. 4), and the Old Lock Berth that are all situated in the Eastern Channel near the entrance to the docks. The jetties on the eastern side of the docks (Jetties No. 2, 3, 4) have facilities for handling chemicals and most petroleum products. Jetties E1 and E2 on the western side of the docks are mainly used for handling fuel oils, gas oils, Jet A1, Light distillate Feedstock and Motor Spirit. The Old Lock Berth has facilities for handling refrigerated LPG and is operated by INEOS FPS.

The Jetties handle approximately 900 vessels each year. Vessels range in size from 1000 to 40000 DWT. Loading rate varies up to a maximum of approximately 1,000 tonnes per hour.

A.11.6. INEOS Grangemouth Incident Observer

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL INCIDENTS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions **ALL TIERS**	• Immediately raise the alarm and notify HYDROCARBONS SHIFT MANAGER and FTNS Duty Harbour Master	❑ Radio Ch. 5 ❑ Tel: ext 6151 or 07901 622393 ❑ 01324 498584
Initial Actions **ALL TIERS**	• Provide the following INFORMATION	❑ Location of incident ❑ Product type ❑ Estimated quantity ❑ Source of release
Initial Actions **ALL TIERS**	• WARN personnel nearby	
Initial Actions **ALL TIERS**	• If SAFE to do so attempt to stop or reduce release	❑ Stop all TRANSFER operations
FURTHER ACTIONS – ALL TIERS		
Further Actions **ALL TIERS**	• Act on instructions from HYDROCARBONS SHIFT MANAGER	
FINAL ACTIONS – ALL TIERS		
Final Actions **ALL TIERS**	• When released from the scene, proceed to the CONTROL ROOM and complete an incident report. Submit this to the HYDROCARBONS SHIFT MANAGER	

A.11.7. INEOS Grangemouth Jetties On-Scene Commander (HYDROCARBONS SHIFT MANAGER [HSM])

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL TIERS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions ALL TIERS	• Receive notification of oil / chemical spill at Jetties Asset and obtain the following information	❑ Location of incident ❑ Product type ❑ Estimated quantity ❑ Source of release ❑ Actions taken ❑ Notifications made
Initial Actions ALL TIERS	• Open INCIDENT LOG	
Initial Actions ALL TIERS	• Alert MARINE ASSURANCE ON-CALL	
Initial Actions ALL TIERS	• NOTIFY Forth Ports DUTY HARBOUR MASTER	❑ Tel: 01324 498584 ❑ Fax: 01324 668480
Initial Actions ALL TIERS	• Inform other vessels	
Initial Actions ALL TIERS	• Assume role of ON SCENE COMMANDER	
Initial Actions ALL TIERS	• Proceed to SCENE of incident and if SAFE assess release and conduct a HAZARD RISK ASSESSMENT	
Initial Actions ALL TIERS	• Ensure appropriate shut down operations are carried out (ACTIVATE DOCKS AREA SHUTDOWN SYSTEM IF NECESSARY)	

Initial Actions **ALL TIERS**	• Determine ACTIONS to be taken and RESOURCES required	
Initial Actions **ALL TIERS**	• If release involves highly FLAMMABLE substances, eliminate all ignition sources and call out INEOS FIRE SERVICE	❑ Notes: INEOS Fire Service will notify Central Scotland Fire & Rescue
Initial Actions **ALL TIERS**	• Notify the following	❑ Jetty operators ❑ INEOS Jetty tank farm control room
FURTHER ACTIONS		
Actions Further **TIER 2**	• Set up FORWARD INCIDENT SUPPORT ROOM if necessary at either East or West Jetties ~~Office~~	
Further Actions **TIER 2**	• **Mobilise Adler & Alan Tier 2 Responders** **Via FTNS Duty AHM**	**Tel: 01234 49 8584** **Ch 14 (VHF)**
Further Actions **ALL TIERS**	• Ensure all statutory NOTIFICATIONS have been carried out	
FINAL ACTIONS – ALL TIERS		
Final Actions **ALL TIERS**	• Complete INCIDENT LOG detailing all events and communications and submit to Hydrocarbons Plant Manager.	

A.11.8. INEOS Grangemouth Jetty Technicians

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL TIERS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions **ALL TIERS**	• Receive notification of oil / chemical release at Jetties	
Initial Actions **ALL TIERS**	• Carry out SHUTDOWN OPERATIONS / pollution response as directed by HYDROCARBONS SHIFT MANAGER	
FURTHER ACTIONS – ALL TIERS		
Further Actions **ALL TIERS**	• Carry out response as directed by the HYDROCARBONS SHIFT MANAGER	
FINAL ACTIONS – ALL TIERS		
Final Actions **ALL TIERS**	• When incident is declared closed report to HYDROCARBONS SHIFT MANAGER for further instructions	

A.11.9. INEOS Grangemouth Marine Assurance On-call

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL TIERS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions **ALL TIERS**	• Receive notification of oil / chemical release at Jetties Asset obtain the following information	❑ Location of incident ❑ Product type ❑ Estimated quantity ❑ Source of release ❑ Actions taken ❑ Notifications made
Initial Actions **TIER 2**	• **Ensure HSM, SSM & FTNS Duty Harbour Master have been notified**	**Tel: 07879 432357 (SSM)** **Tel: 07901 622393 (HSM)** **6536 (internal) (SSM)** **6151 (internal) (HSM)** ❑ **Ch 5 (UHF)** ❑ **01324 498584 (FTNS)**
Initial Actions **ALL TIERS**	**If incident is Category / Tier 1 and no further assistance is required, monitor situation and request updates**	
	~~**FURTHER ACTIONS – ALL TIERS**~~	
	• ~~**Assume role of OSC**~~	

A.11.10 INEOS Grangemouth Site Shift Manager (SSM)

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL TIERS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions **ALL TIERS**	• Receive notification of oil / chemical release at Jetties Asset obtain the following information	❑ Location of incident ❑ Product type ❑ Estimated quantity ❑ Source of release ❑ Actions taken ❑ Notifications made
Initial Actions **TIER 2**	• ~~Notify~~ Ensure Adler & Alan Oil Spill Response have been mobilised **(via FTNS Duty AHM)**	❑ **Tel: 01324 49 8584**
Initial Actions **TIER 2**	• Notify DUTY INCIDENT MANAGER and determine need to establish INCIDENT MANAGEMENT TEAM.	❑ Tel: As per Duty Roster
Initial Actions **ALL TIERS**	• If incident is Category / Tier 1 and no further assistance is required, monitor situation and request updates	
FURTHER ACTIONS – ALL TIERS		
Further Actions **ALL TIERS**	• If incident requires establishment of INCIDENT MANAGEMENT TEAM (IMT) request FIRE & SECURITY CONTROL ROOM to effect callout of IMT	❑ FIRE & SECURITY CONTROL ROOM to provide ON CALL team with incident information and request IMT to assemble at INCIDENT MANAGEMENT ROOM
FINAL ACTIONS – ALL TIERS		

Final Actions ALL TIERS	• Co-ordinate all calls until IMT is established. DUTY INCIDENT MANAGER will advise when no further action is required	

A.11.11. INEOS Grangemouth Duty Incident Manager

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS –TIERS 2/3		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions TIERS 2/3	• Receive notification from SITE SHIFT MANAGER obtain briefing, determine actions taken and confirm classification of incident	
Initial Actions TIERS 2/3	• Liaise with Forth Ports' OVERALL COMMANDER and determine appropriate response actions.	❑ Tel: 01324 498584
Initial Actions TIERS 2/3	• Establish and maintain communications with INEOS ON - SCENE COMMANDER	
Initial Actions TIERS 2/3	• Delegate tasks to IMT	
Initial Actions TIERS 2/3	• Place on standby or call out equipment as required	
Initial Actions TIERS 2/3	• Assess availability of further INEOS manpower	
FURTHER ACTIONS – TIERS 2/3		
Further Actions TIERS 2/3	• Ensure relevant external NOTIFICATIONS are carried out	
Further Actions TIERS 2/3	• Ensure all media enquiries are handled by EXTERNAL AFFAIRS and CATCHLINE P.R	

Further Actions **TIERS 2/3**	• Determine response manning requirements and subsistence needs of personnel at response site	
Further Actions **TIERS 2/3**	• Deal with personnel issues (injury etc.)	
Further Actions **TIERS 2/3**	• Ensure INEOS management is kept informed	
Further Actions **TIERS 2/3**	• Consider implication for Petroineos REFINERY Operations	
Further Actions **TIERS 2/3**	• Ensure BUSINESS and LEGAL issues are considered	
Further Actions **TIERS 2/3**	• Monitor EFFECTIVENESS of the response	
FINAL ACTIONS – TIERS 2/3		
Final Actions **TIERS 2/3**	• Declare the incident closed in consultation with Forth Ports' OVERALL COMMANDER	
Final Actions **TIERS 2/3**	• Ensure all external authorities and INEOS staff are notified of incident closure	
Final Actions **TIERS 2/3**	• Ensure all INCIDENT LOGS are completed and forwarded to appropriate authorities	

A.11.12 INEOS Grangemouth Incident Management Team

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS –TIER 2/3 INCIDENTS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions TIER 2/3	• On notification report to IMT	
Initial Actions TIER 2/3	• Complete Incident Board and initiate checklist of actions	
Initial Actions TIER 2/3	• Allocate task of updating Incident Board	
Initial Actions TIER 2/3	• Confirm liaison with Forth Ports	
Initial Actions TIER 2/3	• Request ON SCENE COMMANDER to ensure that evidence of cause of incident is preserved	
FURTHER ACTIONS – TIER 2/3		
Further Actions TIER 2/3	• EXTERNAL AFFAIRS on call to carry out duties as per MEDIA plan	
Further Actions TIER 2/3	• Ensure notification and liaison with external authorities in consultation with Forth Ports Overall Commander	
Further Actions TIER 2/3	• Ensure provision of LOGISTIC support to Response Teams etc.	

Further Actions **TIER 2/3**	• Ensure additional equipment and personnel are mobilised as required	
Further Actions **TIER 2/3**	• Carry out further duties as requested by DUTY INCIDENT MANAGER	
FINAL ACTIONS – TIER 2/3		
Final Actions **TIER 2/3**	• Collate INCIDENT LOGS and carry out reporting procedures as detailed in INEOS GRANGEMOUTH INCIDENT MANAGEMENT PLAN	

A.11.13. INEOS Grangemouth Actions (Scenario 1)

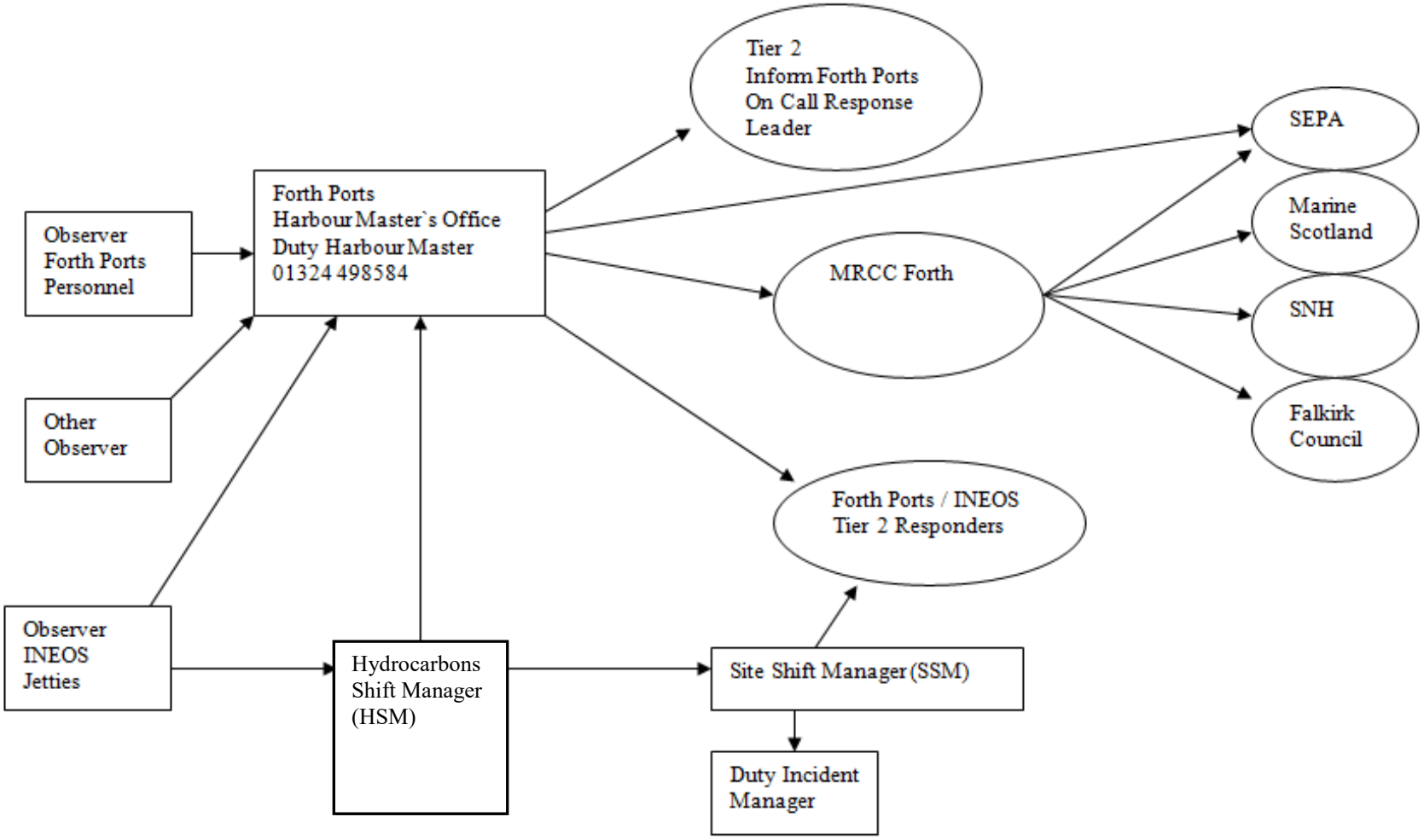
EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL TIERS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions **TIER 1**	• On receiving call out obtain INCIDENT DETAILS	❑ Location of incident ❑ Product type ❑ Estimated quantity ❑ Source of release ❑ Actions taken ❑ Notifications made ❑ Call Back number for information
Initial Actions **ALL TIERS**	• Place on standby / call out Forth Ports Personnel and • Boatmen	❑ Tel: 01324 498584 ❑ Tel: 01324 482510
Initial Actions **TIER 1**	• Make contact with INCIDENT REPORTER on Call Back number	
Initial Actions **TIER 2**	• Notify Adler & Alan Oil Spill Response via Forth Ports Duty Harbour Master	**01324 498584 (FTNS)**
Initial Actions **TIER 1**	• Proceed to Jetties and liaise with Jetty Technician. Carry out ASSESSMENT of incident if required.	❑ **Refer: Assume role of INCIDENT COMMANDER if required.**
Initial Actions **TIER 1**	• If product IDENTITY is not known authorise sampling if SAFE to do so and arrange for chemical analysis	

FURTHER ACTIONS – ALL TIERS		
Further Actions **TIER 1**	• Determine appropriate response	
Further Actions **TIER 1**	• Provide regular updates to Forth Ports' OVERALL COMMANDER	
FINAL ACTIONS – ALL TIERS		
Final Actions **TIER 1**	• Conduct thorough check of clean up results when incident is declared closed	
Final Actions **TIER 1**	• Prepare INCIDENT REPORT for Forth Ports' OVERALL COMMANDER	

A.11.14. INEOS Grangemouth Marine Assurance On-Call

EVERY EFFORT MUST BE MADE TO CONTAIN THE SPILL WITHIN THE HARBOUR		
INITIAL ACTIONS – ALL MARINE SPILLS		
STAGE	**ACTIONS**	**INFORMATION**
Initial Actions **ALL TIERS**	• On receiving call request incident details	
Initial Actions **ALL TIERS**	• Proceed to Grangemouth IMR or MEC if activated. OTHERWISE proceed to incident site	❑ IMR or MEC location will depend upon level of support required
FURTHER ACTIONS – ALL TIERS		
Further Actions **ALL TIERS**	• Liaise with Harbour Authority regards salvage, towage and cargo transfer etc.	❑ Tel: 01324 498584
Further Actions **ALL TIERS**	• Liaise with vessel owners, charterers etc. if required	
Further Actions **ALL TIERS**	• Liaise with marine contacts within and out-with INEOS	
Further Actions **ALL TIERS**	• Provide marine expertise to IMT as required	
FINAL ACTIONS – ALL TIERS		
Final Actions **ALL TIERS**	• Provide expertise to subsequent marine investigations	

Reporting and Communication Roles



A.11.16. Control and Clean-Up Guidelines

Use of Guidelines

The following control and clean up guidelines will provide the following:

- A listing of equipment, its location and manpower available to respond to oil spills within Grangemouth Docks.
- Guidelines for responding to spills within Grangemouth Docks. The guidelines are based on the following 6 scenarios:

GUIDELINE	SCENARIO
GUIDELINE 1	Spills in the Eastern Channel
GUIDELINE 2	Spills in Grange Dock
GUIDELINE 3	Spills in the Western Channel
GUIDELINE 4	Spills in Carron Dock
GUIDELINE 5	Spills in Old Dock
GUIDELINE 6	Spills in Junction Dock

NOTE: These response guidelines are written assuming the following:

1. The area has been declared safe to work in.
2. All response personnel are wearing appropriate personal protective equipment and are familiar with the health and safety guidance.

The Port of Grangemouth is an enclosed dock system and therefore use of dispersants is not valid due to the nature of the Port.

Response Guidelines-1 (Eastern Channel)

NO POLLUTION RESPONSE SHOULD BE ATTEMPTED UNTIL IT IS SAFE TO DO SO	
Winds from **Westerly** Sector	• A release from any of the INEOS Jetties or the CUOJ would be driven by the wind towards the LPG terminal and the Entrance Lock.
First Actions	• Ensure lock gates are closed as soon as practical. • Deploy booms to seal the entrance to the LPG berth and the Entrance locks.

Winds from **Easterly** Sector	• A release from any of the INEOS Jetties or the CUOJ would be driven by the wind towards the East Cut.
First Actions	• Consider need to suspend lock operations • Deploy booms to prevent oil passing through the east cut into the Grange Dock.

Response Guidelines- 2 (Grange Dock)

NO POLLUTION RESPONSE SHOULD BE ATTEMPTED UNTIL IT IS SAFE TO DO SO	
Winds from **Westerly** Sector – Northern Section of Grange Dock	• A release from northerly section of Grange Dock would be driven towards the East Cut
Winds from **Westerly** Sector – Southern Section of Grange Dock	• A release from the southerly section of Grange Dock would also be driven towards the East Cut
First Actions	• Deploy booms to seal the East Cut and prevent oil passing into the Eastern Channel

Winds from **Easterly** Sector – **Northern** Section of **Grange** Dock	• A release from the northerly section of the Grange Dock would be driven towards the Western Channel and the West Cut
First Actions	• Deploy booms to prevent oil passing through the West Cut
Winds from **Easterly** Sector – **Southern** Section of **Grange** Dock	• A release from the southerly section of Grange Dock could be corralled and contained at the west end of the dock section.
First Actions	• Deploy booms to corral and contain the oil.

Response Guidelines- 3 (Western Channel)

NO POLLUTION RESPONSE SHOULD BE ATTEMPTED UNTIL IT IS SAFE TO DO SO	
Winds from **Westerly** Sector	• A release within the Western Channel would be driven towards Grange Dock and the East Cut
First Actions	• Deploy booms to prevent oil passing through the East Cut • Deploy booms where the dock width narrows (near the new Port Office) to prevent oil passing into Grange Dock

Winds from **Easterly** Sector	• A release within the Western Channel would be driven towards the West Cut
First Actions	• Deploy booms to prevent oil passing through the West cut into Carron Dock.

Response Guidelines- 4 (Carron Dock)

NO POLLUTION RESPONSE SHOULD BE ATTEMPTED UNTIL IT IS SAFE TO DO SO	
Winds from **Westerly** Sector	• A release within Carron Dock would be driven towards the West Cut
First Actions	• Deploy booms to prevent oil passing through the West Cut and into the Western Channel

Winds from **Easterly** Sector	• A release within Carron Dock would be driven towards the Swing Bridge
First Actions	• Deploy booms to prevent oil passing underneath the Swing Bridge and into the Old Dock

Response Guidelines- 5 (Old Dock)

NO POLLUTION RESPONSE SHOULD BE ATTEMPTED UNTIL IT IS SAFE TO DO SO	
Winds from **Westerly** Sector	• A release within Old Dock would be driven towards the Swing Bridge and the graving dock
First Actions	• Deploy booms to prevent oil passing Underneath the Swing Bridge and into Carron Dock

Winds from **Easterly** Sector	• A release within Old Dock would be driven towards Junction Dock
First Actions	• Deploy booms to prevent oil passing Into Junction Dock • Deploy booms underneath the Swing Bridge to retain the oil within the Old Dock

Response Guidelines- 6 (Junction Dock)

NO POLLUTION RESPONSE SHOULD BE ATTEMPTED UNTIL IT IS SAFE TO DO SO	
Winds from **Westerly** Sector	• A release within Junction Dock would be driven towards Old Dock and the Swing Bridge
First Actions	• Deploy booms to prevent oil spreading from Junction Dock • Deploy booms at the Swing Bridge to prevent oil entering Carron Dock

Winds from **Easterly** Sector	• A release within Junction Dock would be driven towards the western end of Junction Dock
First Actions	• Deploy booms across the eastern end of Junction Dock to contain the oil within

A.11.17. Environmental Information

The following environmental information relates to oil pollution incidents within the Port of Grangemouth only. Part 1, Section 10 of the Clearwater Forth Plan highlights environmental information for areas adjacent to the Port of Grangemouth.

ARE THERE HABITAT TYPES SENSITIVE TO OIL POLLUTION?	**YES**	**√**	**NO**	
The following habitat types are vulnerable to oil pollution (listed in order of decreasing vulnerability): (1) saltmarsh, (2) sheltered tidal flats, (3) sheltered rocky coast, (4) gravel beach, (5) mixed sand and gravel beach, (6) exposed compacted tidal flats, (7) coarse/fine sand beaches, (8) eroding wave cut platform, (9) exposed rocky headland.	**NOTES**: There are extensive areas of inter tidal mudflats in the estuarine embayments of Skinflats and Kinneil Kerse which are to the west and east of the Port of Grangemouth respectively.			
ARE BIRDS PRESENT IN NATIONALLY OR INTERNATIONALLY IMPORTANT NUMBERS?	**YES**	**√**	**NO**	
(>1% EU population = International importance; >1% GB population = National importance).	**NOTES*:*** Immediately adjacent to the Port of Grangemouth the mudflats and surrounding coastline of Skinflats and Kinneil Kerse support internationally important numbers of wintering and moulting waders and wildfowl – most vulnerable period is from July – March. Skinflats support internationally important numbers of wintering knot and redshank; nationally important numbers of shelduck, dunlin and golden plover. Skinflats is also regionally important for passage migrants, with species such as greenshank, ruff and spotted redshank occurring regularly. Kinneil Kerse supports internationally important numbers of wintering shelduck, a large flock of post breeding moulting shelduck, and nationally important numbers of wintering great crested grebe and knot.			

ARE THERE FISH SPAWNING OR NURSERY GROUNDS?	**YES**	**√**	**NO**	
	NOTES: There are significant nursery areas for flatfish, notably plaice, in the shallow waters of Skinflats and Kinneil Kerse.			
ARE THERE NATIONAL CONSERVATION SITES?	**YES**	**√**	**NO**	
(i.e. National Nature Reserves; Sites of Special Scientific Interest; Local Nature Reserves; Areas of Special Protection; Areas of Outstanding Natural Beauty, National Parks, Country Parks).	NOTES: The inter tidal mudflats, Skinflats and Kinneil Kerse, located to the west and east of the Port of Grangemouth respectively have been designated as SSSI's.			
ARE THERE INTERNATIONAL CONSERVATION SITES?	**YES**	**√**	**NO**	
(i.e. Ramsar Sites – designated under the Convention on wetlands of international importance especially as waterfowl habitat; Special Protection Areas – designated under the 1979 EC Directive on the Conservation of Wild Birds; Special Areas of Conservation – designated under the 1992 EC Habitats Directive).	**NOTES*:*** The foreshore adjacent to the Port of Grangemouth is included in the "Inner Forth" Ramsar Site and Special Protection Area.			
ARE THERE OTHER CONSERVATION SITES?	**YES**	**√**	**NO**	
(e.g. Nature Conservation Review Sites, Geological Conservation Review Sites, Heritage Coasts, Sensitive Marine Areas, National Trust Sites, RSPB Sites, Wildfowl & Wetlands Trust Sites).	**NOTES*:*** A section of Skinflats SSSI (to the west of the Port of Grangemouth) is operated as as an RSPB Reserve.			
ARE THERE ANY COMMERCIAL FISHERIES?	**YES**		**NO**	√
	NOTES:			
ARE THERE ANY RECREATIONAL ACTIVITIES?	**YES**		**NO**	√
(e.g. waterskiing, windsurfing, sailing, marinas / mooring, birdwatching, wildfowling)	**NOTES:**			

A map is available of all the designated sites in the vicinity of Grangemouth at the following website:
www.snh.gov.uk/publications-data-and-research/snhi-information-service/

A.11.18. Oil Spill Risk Assessment

The Risk Assessments for CWF are now included in the Forth Ports Risk Assessment matrix which is kept live online. The latest version of Risk Assessment's can be found on the Forth Ports Website at www.forthports.co.uk/marine/pmsc.

Port of Grangemouth is a non-tidal impounded wet dock system to which access is available at all states of the tide depending on vessel characteristics and prevailing weather conditions. The port lies on a promontory which juts NE from the South side of the Firth of Forth 30 kilometres west of Edinburgh. The river Carron runs parallel to the West side of the promontory and the Grange Burn to the East. There are a number of anchorages with good holding ground available to a vessel on passage to Grangemouth in the River Forth.

The port is approached by a channel with a least width of 120m from the Hen and Chickens buoy and entered through a lock equipped with 3 sets of mitred gates forming 2 chambers of 90m and 112m lengths respectively. There are approach jetties protecting the locks on both sides. Larger vessels will berth at slack water due to the strength of the tidal currents. The maximum ship size normally accepted is 187m * 27.4m. The deepest berths in the port are in the Eastern Channel which can accommodate vessels of up to 11.00m draft. Leading from the Eastern Channel is the Grange Dock with a maximum draft of 7.7m and through the Western Channel the Carron Dock which has a maximum draft of 5.9m.

The port is owned and operated by Forth Ports Limited being a Statutory Harbour Authority and provides a total of 20 berths of 2350 metres total length. In addition there is a Common User Oil Jetty (CUOJ), an LPG private berth, 5 other private oil berths, lay-by berths and a dry dock. Approximate annual tonnage is 8.6 million tonnes and is comprised of a variety of cargoes detailed as follows: Containers and unit loads; Vehicles and wheeled cargoes; Dry bulks; Liquid bulk; Steel; Grain and Feedstuffs; Refrigerated products; Hazardous cargoes; Forest products; Oil and petroleum; General cargo; Project cargo.

The six private user berths are associated with INEOS Manufacturing Scotland Ltd. These berths lie within the jurisdiction of Forth Ports Limited, but are operated by INEOS Grangemouth (subject to the Forth Byelaws and General Directions for Navigation).

Grangemouth is in a compulsory pilotage area. Pilots licenced by Forth Ports as the Statutory Harbour Authority are available at all times for vessels using the port. Two tugs are based in the port and are available at all times; additional tugs are available from other ports in the Forth Estuary.

Potential Oil Spill Sources

Sources of oil spillage to the marine environment associated with activities at the Port of Grangemouth may be broadly divided into:

- Leak / failure of pipelines
- Leaks from valves and pipework on jetties
- Loading arm / connection seals leakage / failure
- Vessel tank overflow
- Human error during loading/bunkering operations
- Vessel sea valve leakage
- Structural damage to vessel due to collision or grounding
- Structural damage to vessel due to fire

Facilities Assessed

In order to provide an analysis of spill frequency for the Port of Grangemouth that is as specific as possible to the range of activities carried out in the port, quantitative risk analyses have been carried out for the following areas of risk:

1.INEOS Grangemouth Jetties
2.Common User Oil Jetty
3.Grange Dock
4.Carron Dock
5.Container Berths

Oil Spill Risk Assessment Results

The following risk assessment results have been produced using a combination of the vessel traffic data for berths within the Port of Grangemouth and historical oil spill frequency data. The historical data have been provided by BP Shipping and are based upon Lloyds Maritime Information Service (LMIS) and BP shipping casualty database which relates to tanker incidents.

	AT SEA	**IN PORT**
Frequency of Pollution Incidents (all sizes)	1.9E-04 (one event in every 5263 tanker days)	5.06E-04 (one event in every 1976 port calls)

Facility Specific Results

FACILITY	**INEOS JETTIES**
Spill Risk	$7.1x10^{-1}$
Estimated Event Frequency	1 event every 1.39 years
FACILITY	**COMMON USER OIL JETTY**
Spill Risk	$5.4x10^{-2}$
Estimated Event Frequency	1 event every 18.2 years
FACILITY	**GRANGE DOCK**
Spill Risk	$2.4x10^{-2}$
Estimated Event Frequency	1 event every 18.2 years
FACILITY	**CARRON DOCK**
Spill Risk	$5.06x10^{-3}$
Estimated Event Frequency	1 event every 197.6 years
FACILITY	**CONTAINER BERTHS**
Spill Risk	$2.13x10^{-1}$
Estimated Event Frequency	1 event every 4.68 years

Slick Trajectory Analysis

In tidal areas, oil on water is affected by a combination of wind and tide. Spilt oil within Grangemouth Docks will only be affected by the wind. For this reason oil spill modelling is of little value for spills within the enclosed dock system. However, the potential exists for oil pollution to spread beyond the lock gates where it will be influenced by both the wind and tide. For this reason modelling has been carried out for a release beyond the lock gates. Deterministic slick trajectory modelling has been carried out using OSIS under a range of conditions. The modelling has been to predict times to shoreline impact for the purpose of establishing a minimum theoretical beaching time.

Slick Trajectory Analysis. Summary of Results			
LOCATION: 0.25 NAUTICAL MILES NORTH EAST OF GRANGEMOUTH DOCKS ENTRANCE			
Oil type and volume	**State of Tide**	**Wind Direction & Speed**	**Location of Beaching and Time Taken**
Heavy fuel oil 50 tonnes	Spring ebb.	225° (S.W) 09 Knots (F. 3)	Initial impact: Longannet Point Time taken: 1 hour 10 minutes
Forties blend 10 tonnes	Neap flood	090° (E) 09 Knots (F.3)	Initial impact: 0.8 nautical miles south of Kincardine Bridge Time taken: 5 hours 12 minutes
Forties blend 10 tonnes	Neap flood	300° (W.N.W) 09 Knots (F.3)	Initial impact: Foreshore of Grangemouth Refinery Time taken: 3 hours 49 minutes

Bunkering

Marine gas oil bunkers are available at the Port of Grangemouth. The controls which are in place to prevent pollution are similar to those listed in `Spill Prevention`. The Jetty Regulations for the private berths in the Eastern Channel operated by INEOS, contain a pre-bunkering checklist which must be completed 1 hr before the bunkering operation commences to verify that the controls are in place. These controls include the requirement for constant supervision and checking during the loading process, the maintenance of good communications and the continuous availability of counter pollution equipment. Bunkering does not take place at the CUOJ. In the Grange and Carron Dock bunkering is permitted provided that Notice to Mariners 3 of 2010 is strictly adhered to at all times. This notice imposes similar restrictions and controls to the Jetty Regulations. Taking into account the level of controls in place and the oil spill frequency data the risk of an incident from bunkering is assessed as low.

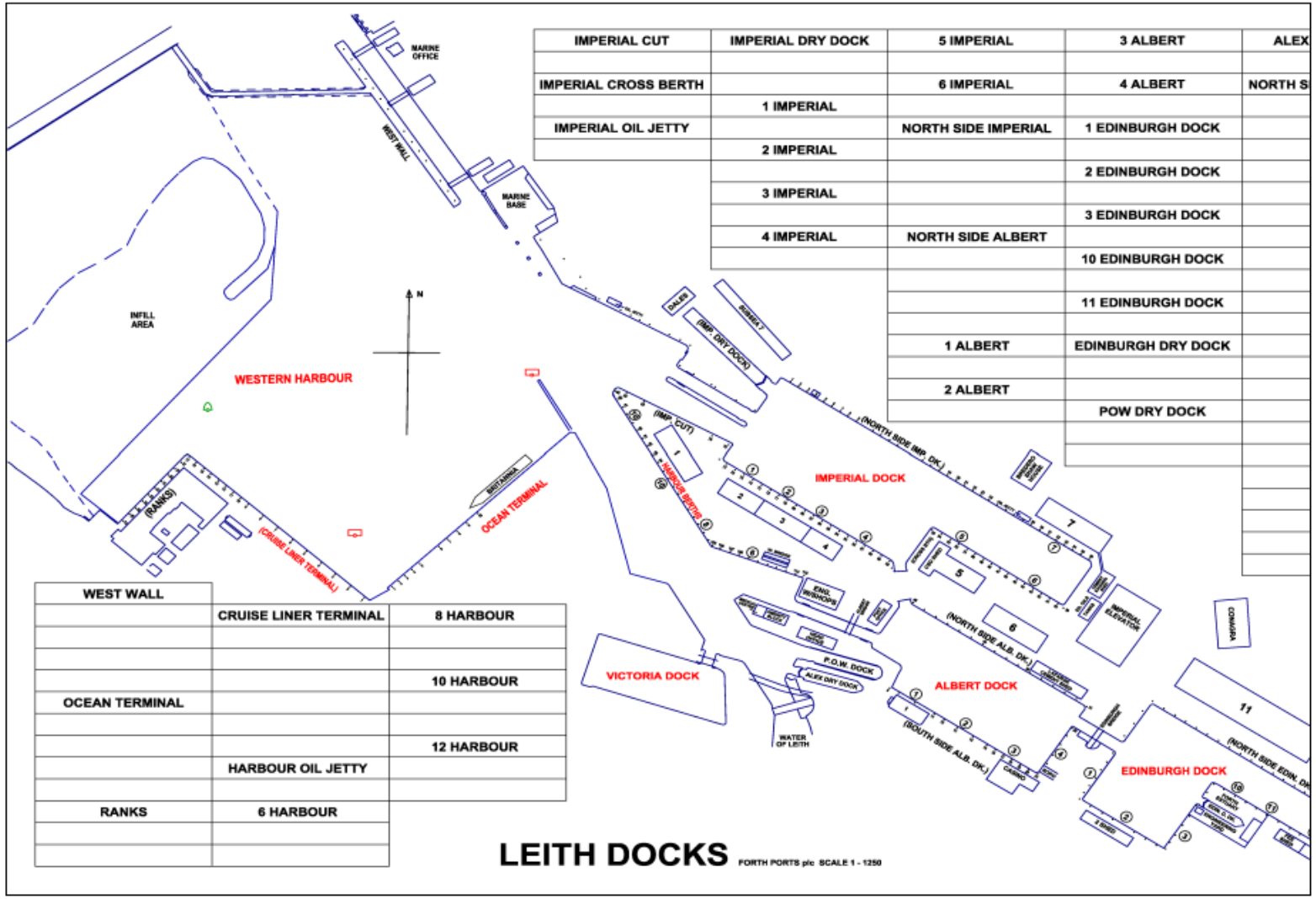
PORT OF LEITH

A.12. Supplementary Information

Forth Ports Limited
Imperial House
Leith Port Office
Albert Dock
Leith
Edinburgh

Tel 0131 555 8750

A.12.1. Harbour Plan

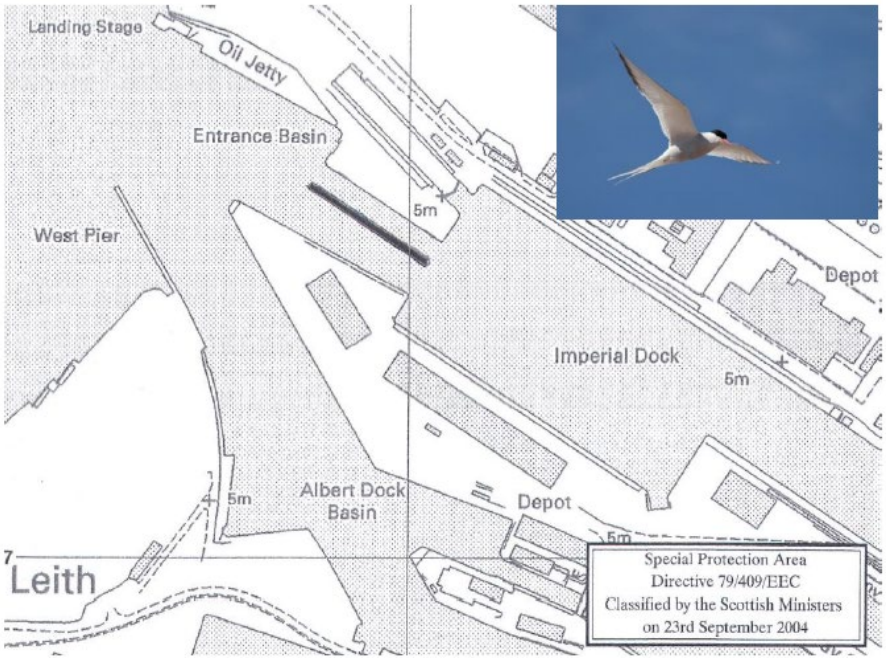


A.12.2. Environmental Sensitivities and Priorities for Protection

Sensitive Areas in and Around the Port of Leith

The Imperial Dock Lock, within Port of Leith Harbour is a designated Special Protection Area. It qualifies as an SPA by regularly supporting a significant breeding population of European Importance of the species Common Tern. An average of 558 pairs return each year to breed between May and August, making this the largest colony in the Forth and one of the largest in the UK.

Although terns are generally sensitive to disturbance this colony appears to be resilient to disturbance from port activities and has been steadily increasing in size. A gantry crane was built on the quayside adjacent to the colony and although it has not been operated regularly, recently use of the crane seems to be increasing. Regular monitoring of the colony during the breeding season should highlight any increased disturbance from this source.



Imperial Dock SPA and Common Tern (inset)

Dispersant Use

It is not the Port of Leith's policy to use dispersants unless a 'force majeure' situation exists.

A.12.3. Booming Plans and Waste Disposal

Spills at Western Harbour:

Unless the wind is from N and NE direction, divisionary booming at the entrance to Imperial Dock is priority to minimise egress of oil into the Dock.

If spill is of heavy fuel oil immediate mobilisation of tier two equipment is required.

Spills at Imperial, Albert & Edinburgh Docks:

Spills in Imperial Dock should be contained by a boom across the entrance.

In general, spills should be contained in the smallest area possible. This can be achieved by drawing booms across corners of docks or around vessels to capture the oil. If this is not possible due to the prevailing weather conditions all spills should be contained in the dock area by means of shutting the lock gates.

A.12.4. Risk Assessment

The Risk Assessments for CWF are now included in the Forth Ports Risk Assessment matrix which is kept live online. The latest version of Risk Assessment's can be found on the Forth Ports Website at www.forthports.co.uk/marine/safety

Assessment Scope

This assessment covers operations carried out within the jurisdiction of Port of Leith operated by Forth Ports LTD. The Port of Leith is the largest deep water port in Scotland and is situated within lock gates on the south bank of the Firth of Forth, to the north of Edinburgh. It comprises a series of jetties, docks and dry docks in the eastern section of the Port and in the western section, the entrance lock gates which open into the Western Harbour, the largest area of open water within the Port.

Factors of Assessment

The Albert and Edinburgh docks are mainly used for laid up vessels such as offshore supply and safety boats. General ship repairs for visiting vessels are also undertaken at these docks. The Imperial Dock is the busiest with bulk cargoes being handled. However, dry cargo vessels can berth at any point of the dock system. Oil is no longer handled at the Imperial Dock. There are also deep water facilities for bulk and semi bulk cargoes. Large offshore multi-role support vessels conduct modifications for offshore projects and undertake repair and maintenance tasks. Visiting cruise liners currently dock at the Cruise Liner Terminal, adjacent to the berth of the Royal Yacht Britannia. Visiting vessels such as warships and cruise liners also make use of the facilities within Port of Leith. Naval, Fisheries Protection and Survey vessels also use the port. Tankers and very occasionally bunker barges also berth within the Port. Annual vessel numbers for the Port of Leith can be seen below:

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Voyages	494	567	596	463	478	415	367	346	340	353	462

Over recent years there have been few oil spill incidents within the Port of Leith. One of the most notable spills involved the loss of 200 litres of Marine Diesel (2007).

Pre Arrival Checks

Harbour control discusses passage and berthing with all vessels prior to their entry into the Port. Pilotage is compulsory for vessels over 80m in length, vessels carrying dangerous goods and Pax (passenger) vessels. All vessels are required to report their operational condition in accordance with statutory regulations (Schedule 2), 24 hours prior to arrival; this is normally done through the ships agent.

Under the terms of chapter IX of SOLAS there is a mandatory enforcement of the ISM code (International Management Code for the Safe Operation of Ships and for Pollution Prevention). The international requirements require that all vessels (including cargo ships and Mobile Offshore Units all of 500 GT and over) will comply no later than 1st of July 2002.

FTNS enforces regulations to ensure all vessels approaching Port of Leith comply with the relevant regulations and legislation all of which are enforced prior to the vessel crossing the Eastern Limits. To comply with the "Port Marine Safety Code (PMSC)" a full risk assessment based on ALARP principle was carried out along with producing a formal safety management system and developing policies and procedures in accordance with the standards of the Code. Port passage plans are required to be completed by individual vessels. Port of Leith is also compliant with the ISPS Code.

Vessels in Transit

The statutory duty for reporting and dealing with pollution from any vessel en route to Port of Leith, prior to entering the harbour area, lies with the Harbour Master within the jurisdiction of Forth Ports and vessel owners. Reporting and response to any oil spill incident will be co-ordinated by the Clearwater Forth Plan.

Availability of Tugs and Private Vessels

There are 2 Forth Estuary Towage tugs based in the Port with additional tugs available elsewhere if required. Pilot vessels at Granton can also be mobilised.

A.13. STATEMENTS OF PLAN APPROVAL

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	CBurton
Name and Position	Caroline Burton, EPO
Representing	West Lothian Council
Date	23/6/21

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	Malcolm Fraser
Name and Position	Area Officer – Forth
Representing	NatureScot
Date	16 June 2021

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	N. Gpl
Name and Position	NEIL COPLAND
Representing	SHELL
Date	11/6/2021

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	Paul Young
Name and Position	Paul Young, Senior Resilience Specialist
Representing	Resilience service, The City of Edinburgh Council
Date	14 June 2021

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	*Alex Baptie*
Name and Position	Sandy Baptie. Emergency Planning, Risk & Resilience Manager
Representing	East Lothian Council
Date	230621

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	Roger May
Name and Position	Roger May Duty Officer MS Spillresponse
Representing	Marine Scotland
Date	11/06/21

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	
Name and Position	Brian Mackay / INEOS Marine Assurance Manager
Representing	INEOS Grangemouth
Date	14th June 2021

Statement from Consultee

Statement for MCA	
I can confirm that the Clearwater Forth Oil Spill Contingency Plan gives a realistic assessment of the perceived risk of Oil Pollution, and the response strategy required, for the areas covered by this plan.	
Signed	
Name and Position	John Moran – Marine Operations Manager
Representing	Ineos FPS
Date	18/06/21

No statement of approval was received from either Fife Council or SEPA.
The lack of statement or comment from either party has been assumed as approval of the plan.

A.14. Marine Hazard Safety Data Sheets

Different products and chemicals require different responses if a spill occurs. This is because they vary in their general properties and also the hazards they present to response personnel. The data of these products is of importance to clean-up personnel and all personnel likely to be involved in a response should be aware of the contents of the hazard assessment sheets prior to any action on site. The data sheets contained in this below DO NOT contain comprehensive details of each product or chemical stored on-site. For further information refer to Product Data Sheets held on-site at Jetties, Terminal HSSE Specialists and/or INEOS Grangemouth IMT (if involved).

N.B: Material Safety Data Sheets are available from terminal operators

Hazard Assessment Data Sheet No. 1 ATMOSPHERIC RESIDUE

PRODUCT IDENTIFICATION				
Chemical Name	Atmospheric Residue			
Other Chemical / Trade Name	Atres			
Chemical Composition	Selected residues obtained after atmospheric distillation of crude petroleum which consists of paraffinic, naphthenic and aromatic hydrocarbons; up to 3% sulphur may be present; traces of hydrogen sulphide may be present.			
UN Classification	**UN Number :** N/A	**UN Hazard Class :** N/A	**Subsidiary Risks e.g. ADR/RID :**	**Packaging Group:** N/A
PHSICAL PROPERTIES				
Appearance and Odour	Brown to black viscous liquid			
Relative Density (Specific Gravity)	0.9 – 0.98 kg/l @ 15˚C			
Solubility in water (mg/100ml)	Insoluble			
Boiling Point or Range	-			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Avoid contact with strong oxidising agents.			
Decomposition Products	Include oxides of carbon and sulphur; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: large amounts will cause nausea & diarrhoea. Inhalation: irritant. Eye splash: irritant. Skin contact: long-term exposure results in dermatitis, and skin burns.			
Fire and Explosion Hazard	Vapour in tank headspaces should be regarded as potentially flammable.			
Flashpoint	Not less than 60˚C (PMCC)			
Explosive Limits	**Upper Limit:**		**Lower Limit:**	

Hazard Assessment Data Sheet No. 2 BENZENE

PRODUCT IDENTIFICATION				
Chemical Name	Benzene			
Other Chemical / Trade Name	Benzol, Benolene, Phynyl Hydride, Coal naphtha			
Chemical Composition	C_6H_6 (Aromatic hydrocarbon)			
UN Classification	**UN Number :** 1114	**UN Hazard Class :** 3.2	**Subsidiary Risks e.g. ADR/RID :**	**Packaging Group:**
PHSICAL PROPERTIES				
Appearance and Odour	Clear colourless liquid; characteristic aromatic odour. N.B. ODOUR does not provide adequate warning of hazards.			
Relative Density (Specific Gravity)	0.88			
Solubility in water (mg/100ml)	Immiscible in water (0.17% at 20˚C)			
Boiling Point or Range	80˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Reacts vigorously with oxidising materials, concentrated mineral acids + halogens.			
Decomposition Products	None unusual; burning will produce smoke, carbon monoxide and carbon dioxide.			
Thermal Stability	Very stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: highly toxic, and carcinogenic. Inhalation: irritation, but repeated inhalation may lead to severe or even fatal blood diseases. Eye splash: irritant Skin contact: irritant, prolonged contact may result in dermatitis.			
Fire and Explosion Hazard	Highly flammable, dangerous when exposed to heat or flame; moderate to severe explosion hazard in confined spaces.			
Flashpoint	-11˚C			
Explosive Limits	**Upper Limit:** 8%		**Lower Limit:** 1.4%	

Hazard Assessment Data Sheet No. 3 BUTADIENE

PRODUCT IDENTIFICATION				
Chemical Name	Butadiene			
Other Chemical / Trade Name	Buta-1,3-diene, 1,3-butadiene, vinyl ethylene			
Chemical Composition	CH_2: CH-CH:CH_2 (C_4H_6)			
UN Classification	**UN Number :** 1010	**UN Hazard Class :** 2	**Subsidiary Risks e.g. ADR/RID :** 3	**Packaging Group:**

PHSICAL PROPERTIES		
Appearance and Odour	Colourless liquid or gas; mild, aromatic odour.	
Relative Density (Specific Gravity)	Liquid 0.62, gas 1.87 i.e. heavier than air	
Solubility in water (mg/100ml)	Insoluble (735mg/litre at 20˚C)	
Boiling Point or Range	-4.5˚C	
CHEMICAL PROPERTIES		
Incompatibility / Reactivity	Very reactive; polymerises with oxidising agents, caustic substances, amines, alkanolamines, halogenated compounds, alcohol's, glycol's, ethers, alkylene oxides, ammonia + acid anhydrides.	
Decomposition Products	-	
Thermal Stability	Very unstable; avoid exposure to air.	
HAZARDS		
Hazard to personnel	Ingestion: irritant Inhalation: irritant; narcotic at high concentrations Eye splash: irritant Skin contact: irritant; cold burns..	
Fire and Explosion Hazard	Severe explosion hazard; extremely flammable gas; on prolonged contact with air will form peroxides which are explosive. May explode when heated under pressure.	
Flashpoint	-70˚C	
Explosive Limits	**Upper Limit:** 12%	**Lower Limit:** 2%

Hazard Assessment Data Sheet No. 4 RAW C4's

PRODUCT IDENTIFICATION				
Chemical Name	Butenes			
Other Chemical / Trade Name	Mixed C4s, crude C4s, raw C4s			
Chemical Composition	A mixture of C4 paraffin's, olefins, diolefins + acetylenes. Principal components are n-butane, butene-1, cis + trans butene-2, isobutene, butadiene.			
UN Classification	**UN Number :** 1965	**UN Hazard Class :** 2	**Subsidiary Risks e.g. ADR/RID :** 3	**Packaging Group:**

PHSICAL PROPERTIES		
Appearance and Odour	Colourless liquid or gas; hydrocarbon odour	
Relative Density (Specific Gravity)	Liquid 0.60, gas 1.87 i.e. heavier than air	
Solubility in water (mg/100ml)	Insoluble	
Boiling Point or Range	-12 to + 12°C	
CHEMICAL PROPERTIES		
Incompatibility / Reactivity	Very reactive; polymerises with oxidising agents, caustic substances, amines, alkanolamines, halogenated compounds, alcohol's, glycol's, ethers, alkylene oxides, ammonia + acid anhydrides.	
Decomposition Products	Uncontrolled polymerisation can lead to explosion; burning will produce smoke and carbon monoxide + carbon dioxide.	
Thermal Stability	Unstable; avoid exposure to air.	
HAZARDS		
Hazard to personnel	Inhalation: irritant; narcotic at high concentrations. Eye splash: irritant; cold burns. Skin contact: irritant; cold burns.	
Fire and Explosion Hazard	Severe explosion hazard; extremely flammable gas.	
Flashpoint	-70°C	
Explosive Limits	**Upper Limit:** 12%	**Lower Limit:** 1.6%

Hazard Assessment Data Sheet No. 5 CONDENSATE

PRODUCT IDENTIFICATION				
Chemical Name	Condensate			
Other Chemical / Trade Name	Forties condensate, North Sea condensate			
Chemical Composition	Complex mixture of hydrocarbons ranging from C3 – C11, principally paraffin's, naphthenes and aromatics; up to 19% of n-hexane may be present.			
UN Classification	**UN Number :** 1208	**UN Hazard Class :** 3.1	**Subsidiary Risks e.g. ADR/RID :** N/A	**Packaging Group:** II
PHSICAL PROPERTIES				
Appearance and Odour	Clear virtually colourless volatile low viscosity liquid, characteristic odour.			
Relative Density (Specific Gravity)	0.66 – 0.67 kg/l @ 15˚C			
Solubility in water (mg/100ml)	Practically insoluble			
Boiling Point or Range	25 to - 150˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Can react with strong oxidising agents			
Decomposition Products	May include oxides of carbon; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: large amounts will cause nausea & diarrhoea. Inhalation: irritant & drowsiness. Aspiration: excessive fume intake results in lung damage. Eye splash: irritant. Skin contact: long-term exposure results in dermatitis, and skin burns.			
Fire and Explosion Hazard	Highly flammable – danger of fire and explosion; vapour/air mixture explosive			
Flashpoint	Typically below -40˚C			
Explosive Limits	**Upper Limit 7%**		**Lower Limit 1.1%**	

Hazard Assessment Data Sheet No. 6 DERV

PRODUCT IDENTIFICATION				
Chemical Name	DERV (Diesel Engine Road Vehicle)			
Other Chemical / Trade Name	Diesel; PB Gas Oil RV; National Diesel			
Chemical Composition	A mixture of hydrocarbons predominantly paraffinic but with some aromatics & naphthenes. Winter grade products may also contain some amounts of flow improver additive.			
UN Classification	**UN Number :** 1202	**UN Hazard Class :** 3.3	**Subsidiary Risks e.g. ADR/RID :** 3.4	**Packaging Group: III**
PHSICAL PROPERTIES				
Appearance and Odour	Pale yellow liquid			
Relative Density (Specific Gravity)	0.84 – 0.86 kg/l @ 15˚C			
Solubility in water (mg/100ml)	Will float on water surface; will evaporate especially when temperatures are warm.			
Boiling Point or Range	180 to - 360˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Will react with strong oxidising agents, and nitric acid.			
Decomposition Products	Include oxides of carbon, nitrogen and sulphur; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: Hazardous Inhalation: irritant Asphiration: highly hazardous Eye splash: irritant Skin contact: irritant and can cause dermatitis			
Fire and Explosion Hazard	High hazard, combustible.			
Flashpoint	Approx. 65˚C			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 7 ETHANOL

PRODUCT IDENTIFICATION				
Chemical Name	Ethanol			
Other Chemical / Trade Name	Alcohol, ethyl alcohol			
Chemical Composition	C_2H_5OH (Aliphatic alcohol)			
UN Classification	**UN Number :** 1170	**UN Hazard Class :** 3.2	**Subsidiary Risks e.g. ADR/RID :** 6.1	**Packaging Group:**
PHSICAL PROPERTIES				
Appearance and Odour	Clear, colourless liquid; ethereal, wine like odour.			
Relative Density (Specific Gravity)	0.8			
Solubility in water (mg/100ml)	Completely miscible with water.			
Boiling Point or Range	78˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Reacts violently with a wide range of oxidants, including silver nitrate, which results in explosion. Can react violently with potassium oxides and potassium. Ignites in contact with platinum-black catalyst.			
Decomposition Products	None unusual; burning will produce carbon monoxide + carbon dioxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: Harmful narcotic, may result in loss of consciousness and can be fatal. Has a toxic affect on the central nervous system. Inhalation: intoxicating; Eye splash: irritant.			
Fire and Explosion Hazard	Highly flammable, potentially explosive.			
Flashpoint	13˚C			
Explosive Limits	**Upper Limit** 19%		**Lower Limit** 3.3%	

Hazard Assessment Data Sheet No. 8 FUEL OIL

PRODUCT IDENTIFICATION				
Chemical Name	Fuel Oil			
Other Chemical / Trade Name	Light FO SG, Light Marine FO; Medium FO 25S / SG, Medium Marine FO; Heavy FO 10S / 20S / 30S / DH / SG, Heavy Marine FO; Bunker FO; Baglan Bay FO; Heavy FO CEGB; Low / High Sulphur FO; Heavy FO 3.5C [Note: FO = Fuel Oil].			
Chemical Composition	Selected residues obtained from petroleum oils which consist of paraffinic, naphthenic and aromatic hydrocarbons; traces of H_2S may be present.			
UN Classification	**UN Number :** 1202	**UN Hazard Class :** 3	**Subsidiary Risks e.g. ADR/RID :** 3.4	**Packaging Group:** N/A
PHSICAL PROPERTIES				
Appearance and Odour	Light Fuel Oil – brown, free flowing liquid; Medium Fuel Oil – brown/black, less flowing liquid; Heavy Fuel Oil – black, viscous liquid.			
Relative Density (Specific Gravity) (kg/l @ 15˚C)	Light Fuel Oil – 0.980 maximum; Medium & Heavy Fuel Oil – 1.005 maximum.			
Solubility in water (mg/100ml)	Insoluble			
Boiling Point or Range	>200˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Can react with strong oxidising agents.			
Decomposition Products	May include oxides of carbon, nitrogen and sulphur; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: minor; Inhalation: irritant; Eye splash: irritant; Skin contact: long-term exposure results in dermatitis, and skin burns when hot.			
Fire and Explosion Hazard	Flammable			
Flashpoint	Not less than 66˚C (PMCC)			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 9 DIESEL / GAS OIL

PRODUCT IDENTIFICATION				
Chemical Name	Diesel / Gas Oil			
Other Chemical / Trade Name	Diesel, Gas Oil LS, Gas Oil SG, Domesticol 35, UK Dieso, Marine Gas Oil			
Chemical Composition	Mixture of hydrocarbons predominantly paraffinic but with some aromatics andnaphthenes; small quantities of red dye and quinizarin as required by HM Customs and Excise will be in product not intended for use on public roads within the UK; small quantities of additives may also be present such as cold flow and cetane number improvers and anti-static additives.			
UN Classification	**UN Number :** 1202	**UN Hazard Class :** 3.3	**Subsidiary Risks e.g. ADR/RID :** 3.4	**Packaging Group:** III
PHSICAL PROPERTIES				
Appearance and Odour	Diesel – straw/amber/gold coloured liquid; Gas oil – red liquid			
Specific Gravity	0.820 – 0.870 kg/l @ 15˚C			
Solubility in water (mg/100ml)	Insoluble			
Typical Point Range	180 - 360˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Avoid contact with strong oxidising agents.			
Decomposition Products	Include oxides of carbon, nitrogen and sulphur; incomplete combustion will generate smoke and hazardous gases including carbon monoxice.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: harmful. Inhalation: irritant. Eye splash: irritant. Skin contact: long-term exposure results in dermatitis, and skin burns when hot.			
Fire and Explosion Hazard	Flammable			
Flashpoint	56˚C minimum (PMCC)			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 10 HEXENE

PRODUCT IDENTIFICATION				
Chemical Name	Hexene			
Other Chemical / Trade Name	1-Hexene, Hex-1-ene			
Chemical Composition	C_3H_6 (Alkene / olefin – unsaturated hydrocarbon)			
UN Classification	**UN Number :** 2370	**UN Hazard Class :** 3.1	**Subsidiary Risks e.g. ADR/RID :** 3.3	**Packaging Group:** III
PHSICAL PROPERTIES				
Appearance and Odour	Colourless liquid.			
Relative Density (Specific Gravity)	0.67			
Solubility in water (mg/100ml)	Insoluble			
Typical Point Range	64˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	May react with strong oxidising agents.			
Decomposition Products				
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: may be harmful by ingestion. Inhalation: irritant; vapour is narcotic in high concentrations and can act as an asphyxiant. Eye splash: irritant Skin contact: irritant			
Fire and Explosion Hazard	Highly flammable.			
Flashpoint	-25˚C			
Explosive Limits	**Upper Limit** 7%		**Lower Limit** 1.2%	

Hazard Assessment Data Sheet No. 11 JET A-1

PRODUCT IDENTIFICATION				
Chemical Name	Jet A-1			
Other Chemical / Trade Name	Aviation Turbine Kerosene (ATK), Jet A-1 with AL38, AVTUR			
Chemical Composition	Complex mixture of hydrocarbons principally C9 to C16 primarily composed of straight run distillates; may contain small amounts of proprietary additives such as antioxidants, anti-static and anti-icing additives, corrosion inhibitors and metal deactivators.			
UN Classification	**UN Number :** 1863	**UN Hazard Class :** 3.3	**Subsidiary Risks e.g. ADR/RID :** 3.3	**Packaging Group:** III
PHSICAL PROPERTIES				
Appearance and Odour	Clear, colourless to pale yellow, low viscosity liquid.			
Relative Density (Specific Gravity)	0.77 minimum – 0.830 maximum kg/l @ 15°C			
Solubility in water (mg/100ml)	Insoluble			
Typical Point Range	150 - 300°C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	May react with strong oxidising agents.			
Decomposition Products	May include oxides of carbon; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: large amounts result in nausea & diarrhoea. Inhalation: irritant. Eye splash: irritant. Skin contact: long-term exposure results in dermatitis.			
Fire and Explosion Hazard	Flammable.			
Flashpoint	>38°C (PMCC)			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 12 KEROSENE

PRODUCT IDENTIFICATION				
Chemical Name	Kerosene – Standard Grade and Premium Grade			
Other Chemical / Trade Name	Standard Grade: Kerosene SG, Marine T Kerosene, Solvent 300, Domesticol 28 Premium Grade: Pink Paraffin, Signal Oil, PG PGBP (pink), Kerosene LS, Paraffin.l			
Chemical Composition	Mixture of hydrocarbons predominantly paraffinic and naphthenic but with some aromatics; small quantities of markers such as coumarin for HM Customs and Excise purposes may be present.			
UN Classification	**UN Number :** 1223	**UN Hazard Class :** 3.3	**Subsidiary Risks e.g. ADR/RID :** 3.3	**Packaging Group:** III
PHSICAL PROPERTIES				
Appearance and Odour	Colourless, pale yellow (standard grade) or pink (premium grade) coloured liquid.			
Relative Density (Specific Gravity)	Standard grade : maximum 0.820 kg/l @ 15˚C Premium grade : maximum 0.805 kg/l @ 15˚C			
Solubility in water (mg/100ml)	Insoluble			
Typical Point Range	150 - 225˚C (maximum 300˚C)			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	May react with strong oxidising agents.			
Decomposition Products	May include oxides of carbon; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: large amounts result in nausea & diarrhoea. Inhalation: irritant. Skin contact: irritant, & long-term exposure results in dermatitis. Eye splash: irritant.			
Fire and Explosion Hazard	Flammable.			
Flashpoint	Standard grade : 38˚C premium grade : 43˚C			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 13 LIGHT DISTILLATE FEEDSTOCK

PRODUCT IDENTIFICATION				
Chemical Name	Light Distillate Feedstock (LDF 115/01)			
Other Chemical / Trade Name	Refinery Grade LDF 19			
Chemical Composition	Complex mixture of hydrocarbons ranging from C4 to C11, based on straight run petroleum distillate.			
UN Classification	**UN Number :**	**UN Hazard Class :**	**Subsidiary Risks e.g. ADR/RID :** 3.1	**Packaging Group:** II

PHSICAL PROPERTIES		
Appearance and Odour	Clear pale yellow liquid	
Relative Density (Specific Gravity)	0.66 – 0.67 kg/l @ 15˚C	
Solubility in water (mg/100ml)	Insoluble	
Typical Point Range	30 - 175˚C	
CHEMICAL PROPERTIES		
Incompatibility / Reactivity	Can react with strong oxidising agents.	
Decomposition Products	May include oxides of carbon; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.	
Thermal Stability	Stable at ambient temperatures.	
HAZARDS		
Hazard to personnel	Ingestion: nor normally fatal. Inhalation: irritant (see aspiration) Aspiration: highly dangerous Eye splash: irritant. Skin contact: long-term exposure results in dermatitis	
Fire and Explosion Hazard	Highly flammable.	
Flashpoint	Typically -40˚C	
Explosive Limits	**Upper Limit** 7%	**Lower Limit** 1.1%

Hazard Assessment Data Sheet No. 14 LPG

PRODUCT IDENTIFICATION				
Chemical Name	LPG			
Other Chemical / Trade Name	RLPG (refrigerated LPG). The term LPG "liquefied petroleum gases" includes all grades of butane, propane and mixtures thereof.			
Chemical Composition	Complex mixture of hydrocarbons ranging from C4 to C11, principally paraffin's naphthenes and aromatics; small quantities of benzene and n-hexane may be present.			
UN Classification	**UN Number :** 1978	**UN Hazard Class :** 2	**Subsidiary Risks e.g. ADR/RID :** 2(b)	**Packaging Group:**
PHSICAL PROPERTIES				
Appearance and Odour	Clear colourless liquid or invisible gas; gaseous at normal ambient temperature and pressure.			
Relative Density (Specific Gravity)	Liquid 0.57; gas 2.02			
Solubility in water (mg/100ml)	Insoluble			
Typical Point Range	-45°C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Strong oxidising agents.			
Decomposition Products	Combustion will generate oxides of carbon.			
Thermal Stability	If storage vessels are subjected to excessive heat, product will expand and may cause storage vessel pressure relief valves to open and discharge highly flammable vapour.			
HAZARDS				
Hazard to personnel	Inhalation: fatal (asphyxia) Skin contact: cold burns.			
Fire and Explosion Hazard	Highly flammable; severe explosion hazard in an enclosed space in the presence of a source of ignition.			
Flashpoint	<-18°C			
Explosive Limits	**Upper Limit** 10%		**Lower Limit** 2.2%	

Hazard Assessment Data Sheet No. 15 — MOTOR SPIRIT – LEADED/UNLEADED

PRODUCT IDENTIFICATION				
Chemical Name	Motor Spirit – Leaded / Unleaded			
Other Chemical / Trade Name	Leaded Petrol – Premium Grade (4 star), Unleaded Petrol – Premium Unleaded Grade, Supergreen Unleaded Grade, Gasoline, Motor Gasoline, Motor spirit			
Chemical Composition	Complex mixture of hydrocarbons ranging from C4-C12, consisting primarily of highly branched olefins, naphthenes and aromatics. Oxygenates, e.g. MTBE, and up to 5% benzene may be present. Small quantities of performance enhancing materials may also be added and in the case of leaded petrol's these will include small amounts of alkyl lead compounds.			
UN Classification	**UN Number :** 1203	**UN Hazard Class :** 3	**Subsidiary Risks e.g.** 3.1(a)	**Packaging Group:** II
PHSICAL PROPERTIES				
Appearance and Odour	Clear virtually colourless liquid			
Relative Density (Specific Gravity)	0.715 – 0.78 kg/l @ 15˚C			
Solubility in water (mg/100ml)	Insoluble			
Typical Point Range	25 - 220˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	May react with strong oxidising agents.			
Decomposition Products	May include oxides of carbon, incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures.			
HAZARDS				
Hazard to personnel	Ingestion: large amounts result in nausea & diarrhoea. Inhalation: irritant and drowsiness. Asphiration: excessive intake of fumes results in lung injury. Skin contact: irritant. Eye splash: irritant.			
Fire and Explosion Hazard	Highly Flammable.			
Flashpoint	<-40˚C (PMCC)			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 16 C4 RAFFINATE

PRODUCT IDENTIFICATION				
Chemical Name	C4 Raffinate			
Other Chemical / Trade Name	Raffinates 1 and 2, Butadiene raffinate, PIB raffinate			
Chemical Composition	Mixture of C4 paraffins, olefins and acetylenes. Principal components are: n-butane, isobutane/butene, butene-1, CIS and transbutene-2			
UN Classification	**UN Number :**	**UN Hazard Class :**	**Subsidiary Risks e.g. ADR/RID:**	**Packaging Group:**
PHSICAL PROPERTIES				
Appearance and Odour	Colourless liquid or gas with hydrocarbon odour			
Relative Density (Specific Gravity)	1.95			
Solubility in water (mg/100ml)	Insoluble in water			
Typical Point Range	-12 to + 12˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Reactive with oxidising agents, fuming sulphuric acid and concentrated nitric acid.			
Decomposition Products	-			
Thermal Stability	-			
HAZARDS				
Hazard to personnel	Ingestion: Irritation. May cause loss of consciousness. Eye splash: Irritant Skin contact: Cold burns, can cause frost bite.			
Fire and Explosion Hazard	Extremely flammable, severe explosion hazard			
Flashpoint	-70˚C			
Explosive Limits	**Upper Limit**		**Lower Limit** 1.6%	

Hazard Assessment Data Sheet No. 17 PROPYLENE

PRODUCT IDENTIFICATION				
Chemical Name	Propylene			
Other Chemical / Trade Name	Propene, methylethylene			
Chemical Composition	$CH_3.CH:CH_2$ (Content: 92 – 99.7% propylene + 8 – 0.3% propane)			
UN Classification	**UN Number :** 1077	**UN Hazard Class :** 2	**Subsidiary Risks e.g. ADR/RID:** 3	**Packaging Group:**

PHSICAL PROPERTIES		
Appearance and Odour	Colourless gas or liquid; slight, characteristic odour.	
Relative Density (Specific Gravity)	0.51	
Solubility in water (mg/100ml)	Negligible (0.26% w/w at 20˚C)	
Typical Point Range	-47.7˚C	
CHEMICAL PROPERTIES		
Incompatibility / Reactivity	Reacts vigorously with strong oxidising agents, nitric and sulphuric acids, halogens + nitrogen dioxide.	
Decomposition Products	Irritating fumes.	
Thermal Stability	Stable – hazardous polymerisation will not occur. Dangerous when exposed to heat or flame.	
HAZARDS		
Hazard to personnel	Inhalation: May result in loss of consciousness due to CNS depression and oxygen deficiency (asphyxiant). Eye splash: Irritant; causes frostbite. Skin contact: irritant, can cause frostbite.	
Fire and Explosion Hazard	Highly flammable. Vapours heavier than air, may travel, be ignited at remote locations and flash back. Explosive air vapours mixtures may occur.	
Flashpoint	<18˚C	
Explosive Limits	**Upper Limit** 11%	**Lower Limit** 2%

Hazard Assessment Data Sheet No. 18 REFORMATE

PRODUCT IDENTIFICATION				
Chemical Name	Reformate			
Other Chemical / Trade Name	Light Cat Reformate, Heavy Cat Reformate, Full Range Cat Reformate, Platformate.			
Chemical Composition	Complex mixture of hydrocarbons ranging from C3 to C12, principally aromatics, paraffin's and naphthenes; up to 10% of benzene may be present.			
UN Classification	**UN Number :** 1268	**UN Hazard Class :** 3.1	**Subsidiary Risks e.g. ADR/RID:** 3.1	**Packaging Group:**
PHSICAL PROPERTIES				
Appearance and Odour	Clear, light green low viscosity liquid			
Relative Density (Specific Gravity)	0.78 – 0.88 kg/l @ 15˚C			
Solubility in water (mg/100ml)				
Typical Point Range	25 - 210˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	May react with strong oxidising agents.			
Decomposition Products	May include oxides of carbon; incomplete combustion will generate smoke and hazardous gases including carbon monoxide.			
Thermal Stability	Stable at ambient temperatures			
HAZARDS				
Hazard to personnel	Ingestion: large amounts result in nausea & diarrhoea. Asphiration: lung injury and cancer. Inhalation: irritant, drowsiness and cancer. Skin contact: irritant, & Long-term exposure results in dermatitis and burns. Eye splash: irritant.			
Fire and Explosion Hazard	Highly flammable – danger of fire and explosion.			
Flashpoint	Less than ambient			
Explosive Limits	**Upper Limit**		**Lower Limit**	

Hazard Assessment Data Sheet No. 19 STYRENE

PRODUCT IDENTIFICATION				
Chemical Name	Styrene			
Other Chemical / Trade Name	Styrene monomer; vinylbenzene.			
Chemical Composition	$C_6H_5CH:CH_2$			
UN Classification	**UN Number :** 2055	**UN Hazard Class :** 3.3	**Subsidiary Risks e.g. ADR/RID:**	**Packaging Group:**
PHSICAL PROPERTIES				
Appearance and Odour	Colourless or pale yellow oily liquid, with a penetrating disagreeable odour.			
Relative Density (Specific Gravity)	0.9			
Solubility in water (mg/100ml)	Negligible			
Typical Point Range	146˚C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Polymerises violently on heating. Autocatalytic exothermic polymerisation at >65˚C			
Decomposition Products	Burning will produce carbon, carbon monoxide and carbon dioxide.			
Thermal Stability	Very unstable – slowly polymerises on exposure to light, rapidly if heated.			
HAZARDS				
Hazard to personnel	Ingestion: poisonous. Toxic effect on central nervous system. Inhalation: can cause respiratory distress Eye splash: can cause severe eye injury Skin contact: dermatitis			
Fire and Explosion Hazard	Flammable; moderate explosion hazard by ignition of vapour in an enclosed space or if polymerisation occurs.			
Flashpoint	31˚C			
Explosive Limits	**Upper Limit** 6%		**Lower Limit** 1.1%	

Hazard Assessment Data Sheet No. 19 FAME

PRODUCT IDENTIFICATION				
Chemical Name	Fatty Acid Methyl Ester			
Other Chemical / Trade Name	FAME, biodiesel, RME			
Chemical Composition	The substance consists mainly of saturated and unsaturated fatty acids methyl ester (chain length C16- C18, origin: vegetable oils). The substance may contain residuals of glycerol and partial glycerides (total < 3.5%) and traces of methanol (< 0.2 %). To improve the properties the substance may contain additives in small concentrations: Cold flow improvers consisting mainly of oligomers of vinyl acetate and other monomers and oxidation stabilizers containing mainly steric hindered phenols. The single active components do not exceed a concentration of 1000 mg/kg (0.1%) in relation to the whole substance.			
UN Classification	**UN Number :** N/A	**UN Hazard Class :** N/A	**Subsidiary Risks e.g. ADR/RID :**	**Packaging Group:** N/A
PHSICAL PROPERTIES				
Appearance and Odour	Yellowish liquid			
Relative Density (Specific Gravity)	878 – 895 kg/m3 @ 15°C			
Solubility in water (mg/100ml)	0.023 g/l			
Boiling Point or Range	302.5 – 570 C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Stable at ambient temperature. No hazardous reactions known.			
Decomposition Products	In combustion emits toxic fumes of carbon dioxide / carbon monoxide.			
Thermal Stability	Substance is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.			
HAZARDS				
Hazard to personnel	Ingestion: No sign of toxicity Inhalation: irritant. Eye splash: irritant. Skin contact: eye contact will cause some irritation.			
Fire and Explosion Hazard	Flammable.			
Flashpoint	120 – 180 C			
Explosive Limits	**Upper Limit:**	**Lower Limit:**		

Hazard Assessment Data Sheet No. 19 ETHANE

PRODUCT IDENTIFICATION				
Chemical Name	Ethane			
Other Chemical / Trade Name	C2H6			
Chemical Composition	Ethane is an organic chemical compound with chemical formula C_2H_6. At standard temperature and pressure, ethane is a colourless, odourless gas. Like many hydrocarbons, ethane is isolated on an industrial scale from natural gas and as a petrochemical by-product of petroleum refining. Its chief use is as feedstock for ethylene production.			
UN Classification	**UN Number :** N/A	**UN Hazard Class :** N/A	**Subsidiary Risks e.g. ADR/RID :**	**Packaging Group:** N/A
PHSICAL PROPERTIES				
Appearance and Odour	Colourless gas			
Relative Density (Specific Gravity)	0.54			
Solubility in water (mg/100ml)	61 mg/l			
Boiling Point or Range	-88 C			
CHEMICAL PROPERTIES				
Incompatibility / Reactivity	Oxidizing agents. Chlorine dioxide. Chlorine. Chlorine dioxide and ethane explode spontaneously; chlorine and ethane mixtures have been known to explode.			
Decomposition Products	At high temperature and low pressure, ethane decomposes to form hydrogen. Thermal decomposition may produce: Carbon dioxide. Carbon monoxide.			
Thermal Stability	Stable under normal conditions			
HAZARDS				
Hazard to personnel	Contact with liquid may cause cold burns/frostbite.			
Fire and Explosion Hazard	EXTREMELY FLAMMABLE GAS. Forms explosive mixtures with air and oxidizing agents.			
Flashpoint	- 135 C TCC			
Explosive Limits	**Upper Limit:**		**Lower Limit:**	