

GALWAY HARBOUR

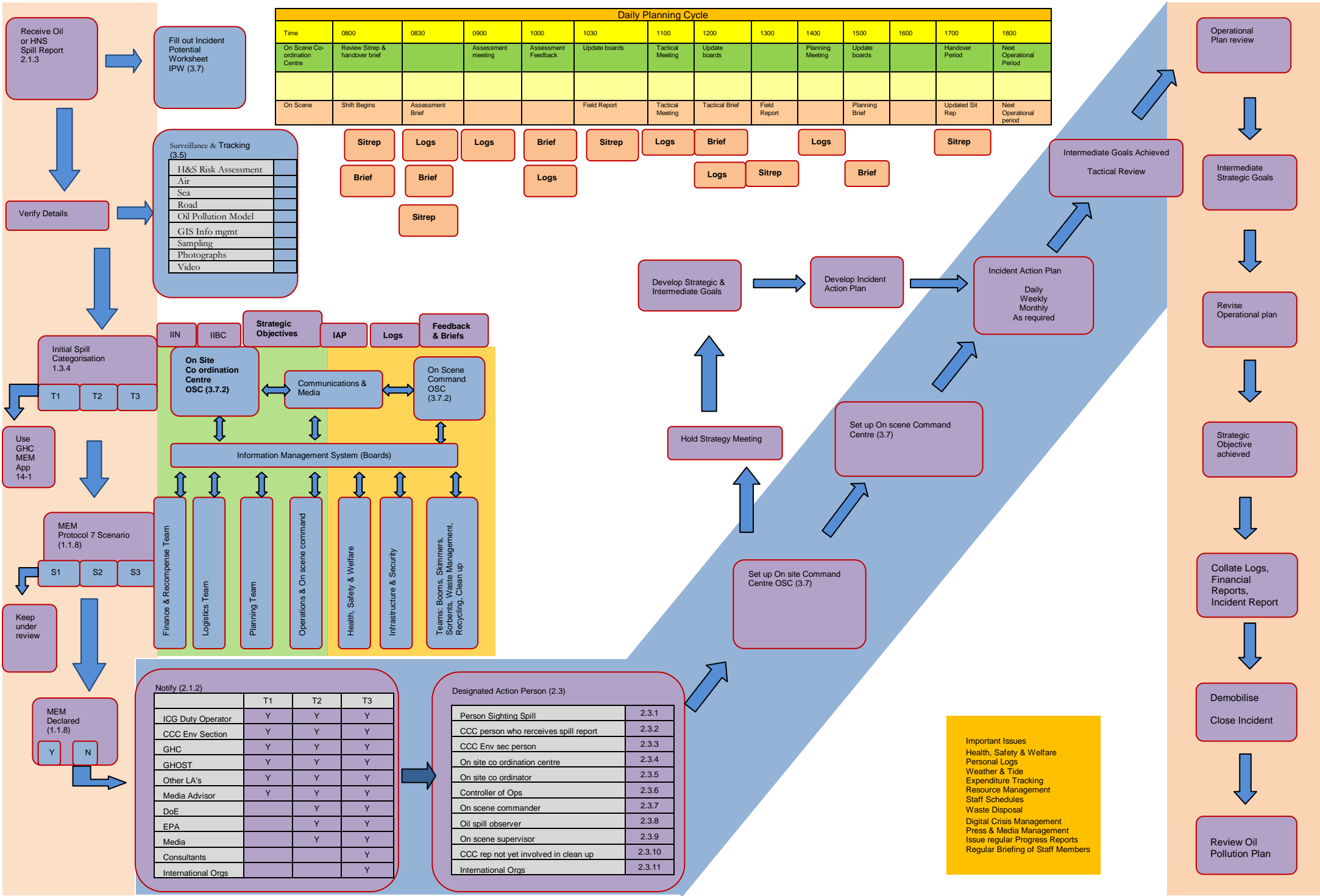



Oil / HNS (Chemical) Spill Contingency Plan

APPROVED BY : HARBOUR MASTER
EFFECTIVE DATE : 20th September 2013.

**Galway Harbour Company,
New Docks,
Galway**

Copy Number:	
Issued to:	
Date of Issue:	



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0.2 IRCG LETTER OF APPROVAL

0.4 ACTIVATION AND STAND DOWN

When will this Plan be activated?

This Plan will be activated without delay when:

- A major accident occurs involving an oil/HNS spill.
- An uncontrolled event occurs which could be reasonably expected to lead to a major oil/HNS spill.

A major accident under this plan is an occurrence resulting from uncontrolled developments, leading to serious danger to human health or the environment, immediate, or delayed, inside or outside the Galway Harbour and involving one or more polluting or dangerous substances.

Responsibility for Activating this Plan

The following Galway Harbour Company personnel may activate this plan:

Name	Position	Contact Number
Captain Brian Sheridan	Harbour Master	091 561874 087 664 6633
Captain Bob Ellis	Duty Harbour Master	091 561874 087 650 1803
Captain Kevin Walsh	Duty Harbour Master	091 562329 087 650 1824

0.5 DOCUMENT CONTROL PROCEDURE

The responsibility for controlling the document is with Galway Harbour Company.

The Plan will be kept under constant review to ensure that the document is suitable for all the Ports activities.

The Port Company is responsible for issuing the Plan and any subsequent amendments as required.

To meet Irish Coast Guard, Statutory and Harbour Authority requirements the maximum period between formal reviews of the Plan will be 5 years.

Public will have access to the Marine Emergency Plan on the Port Company Website www.galwayharbour.com which will be amended in line with reviews every three years.

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0.8 DEFINITIONS

The following are the definitions of terms used in this Plan.

OIL SPILL / HNS (Chemical) Coastal Pollution Response Plan

This Plan is part of the Galway harbour MARINE EMERGENCY PLAN known as '**GALFIRE**' and sets out the action to be taken in the event of an Oil / HNS Pollution incident.

SPECIAL PROTECTION AREA (SPA)

Special Protection Area is a statutory designation which is made under the terms of the European Communities Act 1972, in accordance with the EU Birds Directive (79/409/EEC). The European Communities (Natural Habitats) Regulations 1997 also apply to SPAs and require any development which may have an impact on such areas to be subject to Environmental Impact Assessment. The SPA designation is intended primarily to protect bird populations but their habitats are also protected against pollution, deterioration or excessive disturbance.

NATURAL HERITAGE AREA (NHA)

Several other areas, not covered by the SPA designation, have been proposed as Natural Heritage Areas. This is a non-statutory listing at present but is expected to be covered, in due course, by an amendment to the Wildlife Act, 1976. The protection of NHAs (formally known as Areas of Scientific Interest) is usually an objective of County Development Plans. Ecological assessments have been compiled by the National Parks and Wildlife Service for most NHAs but there are no statutory management plans.

OIL POLLUTION SYNDICATE

Also known as the Galway Harbour Oil Spill Team (G-HOST). It consists of all the major fuel oil and petroleum product users and importers together with Ports Local Authorities (Galway City & County) who individually would have responsibility for dealing with any pollution incidents: Syndicate members are listed in Section 1.2.1

OIL POLLUTION COMMITTEE

This is a committee headed by the On Scene Commander who assemble in the event of a pollution incident and organise a unified response. The organisations represented on the Committee are listed in Section 1.2.3:

IRISH COAST GUARD

Who respond to all marine emergencies in the country. **Irish Coast Guard** is part of the **Department of Transport**.

JOINT RESPONSE CENTRE (JRC)

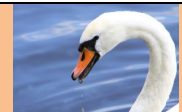
The control centre for an Oil Pollution incident will be the Joint Response Centre at the Offices of Galway Harbour Company. In the event of a major incident then the possibility of moving the JRC and all other equipment necessary to establish a control centre closer to the scene can be arranged.

SHORELINE RESPONSE CENTRE (SRC)

A Shoreline Response Centre will be established if serious oil pollution occurs and there is an intensive coastline clean-up operation. The SRC will be as close as possible to the impacted area. The local authority will control the centre which will require its own expertise to meet logistics demands and control shore based manpower and equipment.

ON SCENE COMMANDER

Reference throughout this Plan to the On Scene Commander shall, unless otherwise stated, refer to the Harbour Master or in his absence the Duty Harbour Master.

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ABSORBANT BOOM

Absorbent boom relies on capillary action drawing oil into the core of the boom. The heavier the oil the more open the weave needs to be. Works best with light oils and fresh crude oils.

ADSORBENT BOOM

Adsorbent boom relies on adhesion of the oil to the surface of the boom. The stickier the oil the better the adhesion. Works best with heavy viscous oil.

0.9 Plan Format

The Plan has four elements:

Element 1: Strategy Plan- (Section 1)

Describes the purpose and scope of the plan, including the geographical coverage. It shows the relationship of the plan to the National Contingency Plan and other related plans. Also included are perceived risks, and the Incident Response Organisation and responsibilities of organisations and individuals for defined categories of spill.

Element 2: Action Plan - (Section 2)

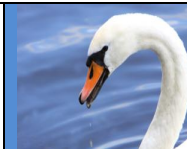
Sets out the emergency procedures that will allow rapid mobilisation of resources and an early response to the situation.

Element 3: Data Directory - (Section 3)

Contains all supplementary information relevant to the performance of the plan such as; Checklists, Dispersants, Surveillance & Tracking of spilled oil and Resources. Personal telephone contact details will not be published on the Galway Harbour Company web site (www.galwayharbour.com)

Element 4: Annexes

Annexes which are listed in the plan contents include: Sampling regime, Contacts Directory and Wildlife procedure.

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1.1 INTRODUCTION

1.1.1 Purpose of the Plan

The plan is provided to assist Galway Harbour Company in dealing with an accidental discharge of HNS including oil. Its primary purpose is to set in motion the necessary actions to stop or minimise the discharge and to mitigate its effects. Effective planning ensures that the necessary actions are taken in a structured, logical and timely manner.

This plan guides On-Scene Commander and other involved personnel through the decisions, which will be required in an incident response. The tables, figures and checklists provide a visible form of information, thus reducing the chance of oversight or error during the early stages of dealing with an emergency situation.

For the plan to be effective, it must be:

- familiar to those with key response functions in the harbour
- regularly exercised; and,
- reviewed and updated on a regular basis.

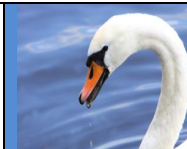
This plan uses a tiered response to oil pollution incidents. The plan is designed to deal with Tier One and to provide guidance for the response to a Tier Two & Tier Three incident (see section 1.3.4). Where a spillage is associated with a wider emergency, then additional factors involving the safety of personnel will take precedence over the pollution response. Note that this plan is part of the **Galway Harbour Marine Emergency Plan 'GALFIRE'** (see section 1.1.4). The salvage and casualty management of any vessel which poses a threat of pollution are priority considerations.

During oil spill response activities account must be taken of the following:

- site hazard information
- adherence to permit procedures
- spill site pre-entry briefing
- boat safety
- Hazardous Materials Regulations and material safety data sheets
- personal protective equipment needs
- heat stress, cold stress and hypothermia
- decontamination

1.1.2 Area of Operation

The area covered by this plan includes the waters of the harbour in Galway and those waters within the jurisdiction of Galway Bay under the control of the Galway Harbour Company. The plan details the contingency arrangements for responding to actual or threatened oil pollution incidents within the defined area.

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1.1.3 Functions of Port Authorities and Harbour Master.

Harbour Masters are responsible for the safety of navigation within their Harbour Authority defined areas of jurisdiction under various Acts and have specific powers to regulate and control all Shipping/Craft movements in the Harbour and its approaches. Inter-alia, the Harbour Master may also exercise the following powers:

- A Harbour Master may refuse entry into the harbour, over which s/he has control, to a ship, which s/he has reasonable cause to believe would cause a serious threat of damage to flora or fauna, living marine resources, the harbour or other ships, unless the entry of the ship is necessary for the purpose of saving life or maybe seeking a Place of Refuge;
- A Harbour Master may decide to close the harbour and/or restrict movements;
- No vessel is to be moved from any jetty, mooring buoy or anchorage, after the receipt of an emergency notification, without the permission of the Harbour Master, except when the vessel is in immediate danger. Such movements should only take place where absolutely necessary and the Harbour Master must be informed as soon as possible;
- Under no circumstances may any vessel on fire or in danger of sinking, or causing major pollution, be moved or brought into the harbour, without the specific authority of the Harbour Master, who will designate a suitable berth or where a ship is seeking a Place of Refuge;
- If a pollution incident or potential pollution incident occurs, the Harbour Master will activate the Oil Spill/HNS Contingency Plan and inform all the relevant agencies;
- A Harbour Master shall notify the Irish Coast Guard of any pollution or ship casualty incident within his/her area of responsibility.

In accordance with national legislation, one of the principal objectives of each Port Company/Harbour Authority is “to take all proper measures for the management, control, operation and development of its harbour and the approach channels thereto”.

In that context, each Port Company/ Harbour Authority has prepared plans to deal with marine emergencies within its functional area. These plans outline the procedures to be implemented in various scenarios, including collision, grounding and fire, and the callout of the emergency services, including the Local Authority Fire Service, the Irish Coast Guard, the ambulance service, An Garda Síochána and other agencies. The plan also lists the resources available to deal with such emergencies. This plan is known as the ‘**GALFIRE**’ Plan.

The plan also deals with the actions to be taken where there is an incident involving a “SEVESO” establishment, which is adjacent to the harbour. In cases where the external emergency plan of a Seveso Establishment is activated, the Harbour Master provides advice to the emergency services, co-ordinates the deployment of marine resources and controls the movement of shipping, where required. There is 1 SEVESO site located at Galway Harbour Enterprise Park which is operated by Topaz Energy Limited.

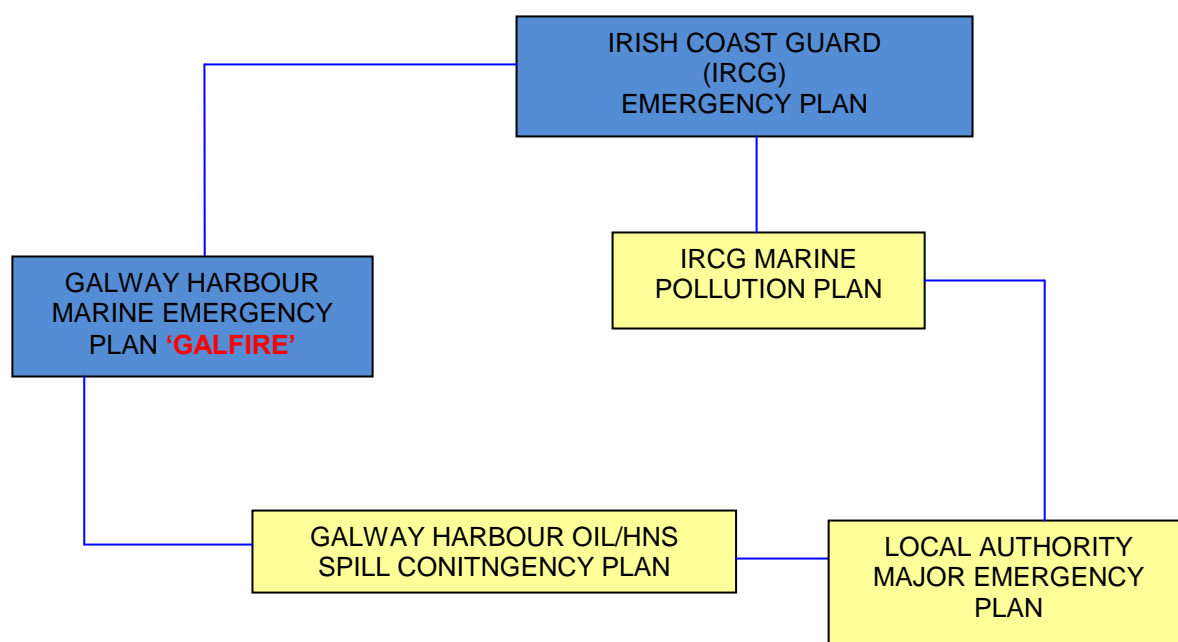
Port Company/Harbour Authority Oil Pollution plans are activated where there is a threat of pollution from an incident.


Under the Sea Pollution (Amendment) Act, 1999, the Minister for Transport through designated Officers of the Irish Coast Guard may give direction, to the Harbour Authority to do or refrain from doing something, which in his opinion is necessary for incident response.

1.1.4 Interfacing Emergency and Pollution Response Plans (Figure 1.1.4)

(see Section 1.2 figures 1.2.1 - 1.2.8)

FIGURE 1.1.4



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1.2 ROLES AND RESPONSIBILITIES OF INVOLVED PARTIES (see figure 1.2.8)

1.2.1 Lead Authority

The Department of Transport, through the Irish Coast Guard, has the principal responsibility for exercising the Irish Government's duties in respect of counter pollution response at sea, arising from spillage or loss of oil, or hazardous or noxious substances, which threaten pollution of the Irish coastline or related interests. The Irish Coast Guard is responsible for preparedness and response to marine pollution incidents within the Irish Economic Exclusive Zone (EEZ).

In the event of pollution occurring in a port or harbour, the Harbour Master must be informed as soon as possible and all steps taken to isolate the cause and prevent further pollution. The Harbour Master will initiate the Galway Harbours Oil Spill Contingency Plan if required and will report the spill to the Irish Coast Guard. Under the Sea Pollution (Amendment) Act 1999, the Minister for Transport may give a direction, to the Harbour Authority to do or refrain from doing something, which in his opinion is necessary for incident response and has warranted senior officers in the Irish Coast Guard to act on his behalf.


The Irish Coast Guard has been given the statutory responsibility to inspect, approve and audit the contingency plans for all the various harbours and local authorities under the Convention for Oil Pollution Preparedness Response and Co-operation (1990) and to oversee and where necessary direct any required response.

The overall objective of the IRCG is to reduce the loss of life within the Irish Search and Rescue Region and on rivers, lakes and inland waterways, to protect the quality of the marine environment within the Irish Pollution Responsibility Zone, harbours and maritime Local Authority areas, and to preserve property.

The Minister for Transport has the responsibility for a national system of marine emergency management and this task is assigned to the Irish Coast Guard, which is a division within that Department. The delivery of Maritime SAR, its participants and their functions are listed in the National Maritime SAR Framework. This document is available at www.transport.ie. The marine emergency management functions which the Irish Coast Guard carries out include the following:

- Providing a national marine search and rescue response service;
- Providing a coastal, inland and where appropriate, cliff search and rescue service;
- Providing a casualty/body search and recovery service and a family liaison service;
- Provide a national maritime communications, paging and surveillance system including incident alert and notification;
- Provide and co-ordinate response to marine pollution and ship casualty incidents and the preparation, co-operation, direction and co-ordination of sea and on-shore recovery and clean-up operations;
- Issuing directions, or taking direct action under the Minister's powers of intervention, to prevent, mitigate or eliminate pollution;
- Developing and co-ordinating an effective regime in relation to marine pollution cooperation, preparedness and response;
- Approving Local Authority, harbour/port and off-shore oil pollution and hazardous and noxious substances (HNS) response plans; and
- Provide a coastal vessel traffic management information system

These functions of the Irish Coast Guard are derived from Government policy and a variety of national and international legislation

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Pollution Emergencies on the coastline

In the event of pollution occurring on the coastline, the affected Local Authority must be informed as soon as possible and all steps taken to isolate the cause and prevent further pollution. The Local Authority will initiate the Local Authority's Oil Spill Contingency Plan, if required, and will report the spill to the Irish Coast Guard.

Under the Sea Pollution (Amendment) Act 1999, the Minister for Transport may give a direction, to the Local Authority to do or refrain from doing something, which in his opinion is necessary for incident response and has warranted senior officers in the Irish Coast Guard to act on his behalf.

Intervention

The Minister has nominated senior officers within the Irish Coast Guard, with warranted authority under national legislation, to monitor/intervene in actual or threatened marine pollution incidents following a maritime casualty, for the purpose of preventing, mitigating or eliminating danger from pollution, or threat of pollution, by oil, or by any other hazardous or noxious substance. These warranted officers may issue binding directions to a harbour master, the owner, master, salvor or person in charge of a ship, following a maritime casualty, to take such actions and do such things as s/he considers necessary and reasonable for the purpose of preventing, mitigating or eliminating danger from pollution or the threat of pollution.

Existing Legislation

The existing IRCG pollution legislation is contained in the Sea Pollution Act 1991, as amended by the Sea Pollution (Amendment) Act 1999 and the Sea Pollution (Miscellaneous Provisions) Act 2006. These Acts outline the structure of the Irish Government's oil pollution prevention and response plans, with respect to ship and offshore pollution incidents, and include both preventative and post-incident powers. An overview of these powers is provided in the following sub sections.

Contingency Planning


The Sea Pollution (Amendment) Act 1999 provides the Minister with the legislative power to require Ports Companies, Harbour Authorities, the operators of offshore units, oil handling facilities and maritime Local Authorities to prepare oil spill contingency plans, based on a realistic risk assessment, and to submit these for approval by the Irish Coast Guard. These contingency plans should include the risk assessment and a comprehensive breakdown of response capabilities, including command and control, communications, manpower, equipment, training and exercises. These contingency plans are part of the overall National Contingency Plan, also required by the above Act, which is being prepared by the Irish Coast Guard. Masters of vessels calling at ports in Ireland are required to ensure that there is, on-board the ship, an emergency plan for a pollution incident.

Strategy for Combating Pollution at Sea

In the event of pollution at sea, a response plan to combat the pollution is prepared and executed based on reports received from aerial surveillance. The main strategy is to recover floating oil from the sea surface, applying mechanical recovery systems and cargo transfer capabilities. The stated Irish Coast Guard policy on dispersants is that no dispersants will be used close to shore, without the approval from the Minister, provided through the Irish Coast Guard, except in life threatening situations. The decision to use dispersants will be made on a case-by-case basis, based on the real-time evaluation of the likely fate of the oil and on the possible impact of the dispersed oil. Where dispersants are to be considered the Irish Coast Guard will, wherever possible, consult with other relevant Government agencies.

Strategy for Combating Pollution Ashore

The main strategy for combating pollution ashore is physical recovery, based on mechanical and manual means, undertaken with the aid of public works equipment. Depending on the type of oil involved, the recovery will be executed by a combination of mechanical means, a mix of booming/ recovery systems and

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manpower. Local Authorities and Harbour Authorities will remove the oil from the shoreline, under the direction and with the assistance of the Irish Coast Guard;

- Implementing the search and rescue plan where required;
- Monitoring the performance of other assets participating in the search
- Developing and implementing the rescue plan (when needed)
- Providing regular SITREPS to the SAR Mission co-ordinator (SMC)

1.2.2 Pollution Resources

The Minister may arrange for the provision of equipment and materials for the prevention or minimising of damage resulting from discharges of oil or hazardous noxious substances (HNS). This equipment and materials may also be used for the purposes of operations, undertaken in relation to vessels in distress, in accordance with Section 7 of the Merchant Shipping (Salvage and Wreck) Act 1993, or in relation to salvage operations, as defined in Section 12 of that Act.

The Irish Coast Guard maintains national stockpiles of pollution response equipment and materials at Killybegs, Castletownbere and Dublin. Regular exercises are carried out using these stockpiles. The equipment, as far as possible, compliments the equipment held at the ports and harbours. This equipment is being added to each year.

The equipment is divided into 30% appropriate to offshore response and 70% appropriate to on-shore response. No country has sufficient State equipment and materials to respond to every pollution emergency.


However, there are commercial companies who will provide equipment and materials on request and guarantee it will be on-site within 12/24 hours. The Irish Coast Guard has authority to contract such equipment and materials as required.

There are 21 principal ports around the coast of Ireland and each Port Company, Harbour Authority and maritime Local Authority has some pollution response equipment and materials, based on a local risk assessment. These resources are typically equipped for what could be considered localised response and would be available in the event of a pollution incident on a local or national scale.

1.2.3 Oil Pollution Team.

Also known as the Galway Harbour Oil Spill Team (G-HOST), the Group is available to assist the On Scene Commander for pollution incidents in the area covered by the Galway Harbour Oil Spill Contingency Plan. The members of the Team are:

- Galway Harbour Company
- Topaz Energy Limited
- Valero Ireland Ltd.
- Galway City Council
- Galway County Council

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1.2.4 On Scene Commander

The On-scene Commander will be the officer designated to take charge of the oil pollution response. He shall designate tasks as appropriate and establish a communications base to co-ordinate all radio traffic at the scene between watercraft, aircraft, shore radio and the command or control centre. Reference throughout this Plan shall, unless otherwise stated, refer to the Harbour Master at Galway.

All incidents will be reported to Irish Coast Guard, giving details of the amount of oil involved, type of oil, present and future actions, and the possible impact of the incident to the environment and industry in the area. The Committee has representatives from all members who send their person responsible for oil spill response. When the response is shore based then the local authority becomes the on scene commander.

1.2.5 Salvage Operations

Within Galway Harbour, the On Scene Commander will be responsible for managing any salvage operation. The On Scene Commander must ensure that the owner of the vessel salvages the casualty and that a Salvage Master is appointed. That Salvage Master must submit a Salvage Plan to the On Scene Commander which describes all and any operations that might cause oil to be released into the water. Even if there has been no actual oil spillage, the threat of pollution must be discussed and combated. In the event of a salvage operation the On Scene Commander may be advised by representatives from:

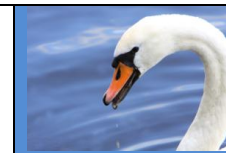
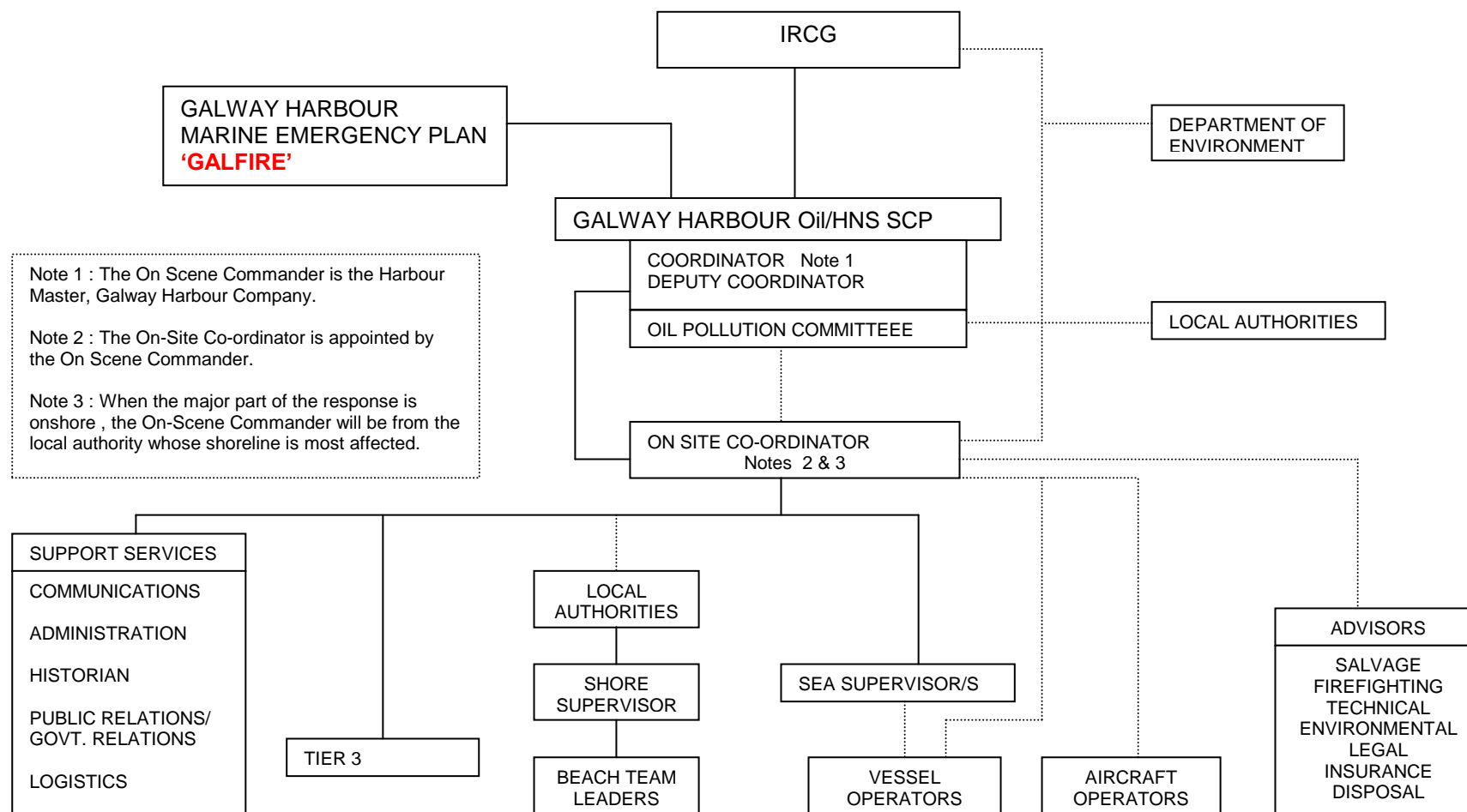
- Ships Owners
- Ships Master
- Ships Agent
- Surveyors
- P&I Club
- ITOPF
- Classification Society

1.2.6 Environment Protection Agency (EPA)

Under normal circumstances the Environment Protection Agency have no functions, but could be called upon by the Department of the Transport and/or IRCG to provide assistance and advice as required.

1.2.7 Local Authorities

Local Authorities have the responsibility to carry out shoreline clean-up under the control of the Pollution Officer of Galway City & Galway County Council.

**FIGURE 1.2.8 – GALWAY HARBOUR COMPANY OIL SPILL RESPONSE**

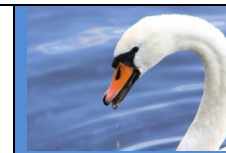
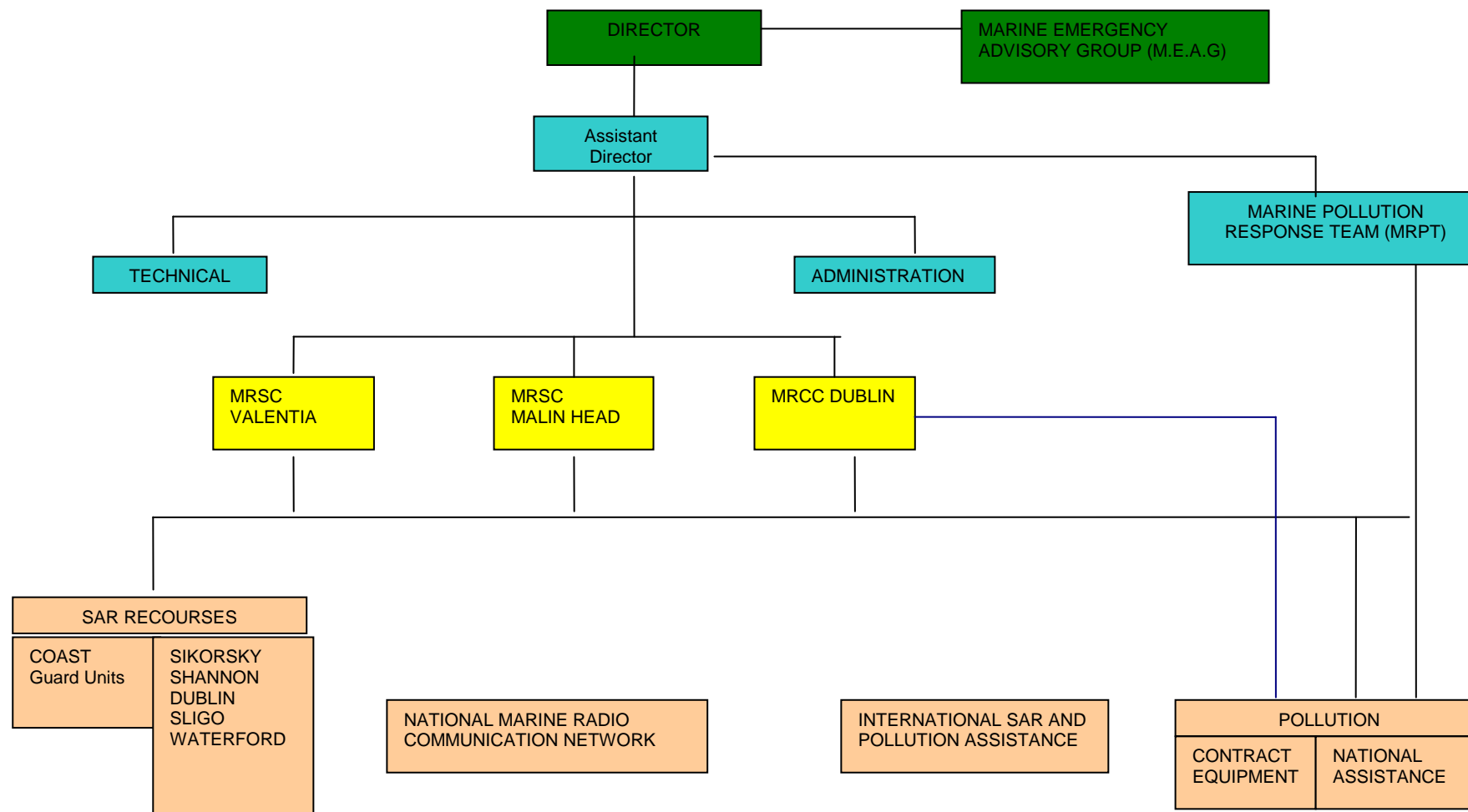
**FIGURE 1.2.9 – IRISH COAST GUARD STRUCTURE**

FIGURE 1.2.10 IRISH NATIONAL PLAN ALERT PROCEDURES

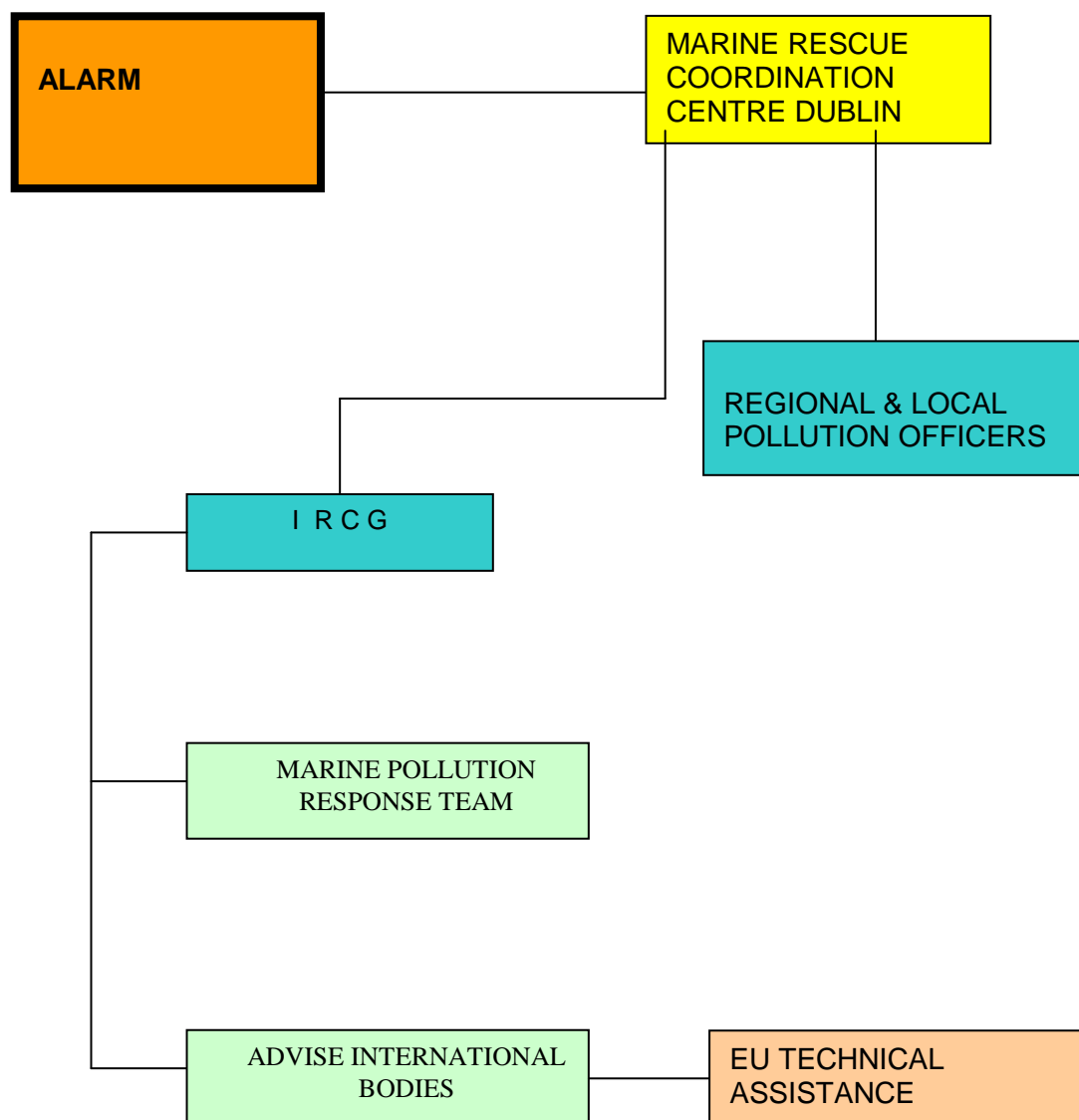


FIGURE 1.2.11 Role of IRISH COAST GUARD

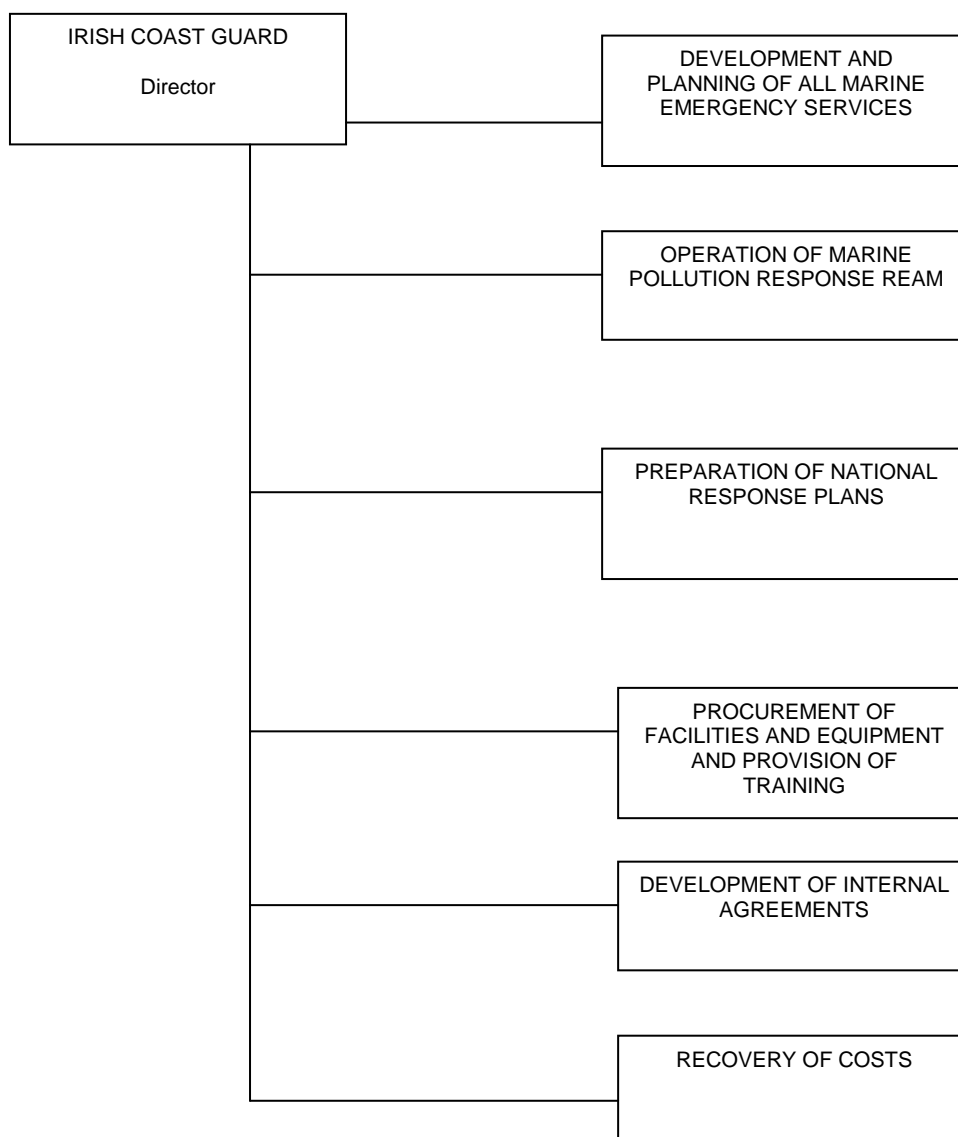
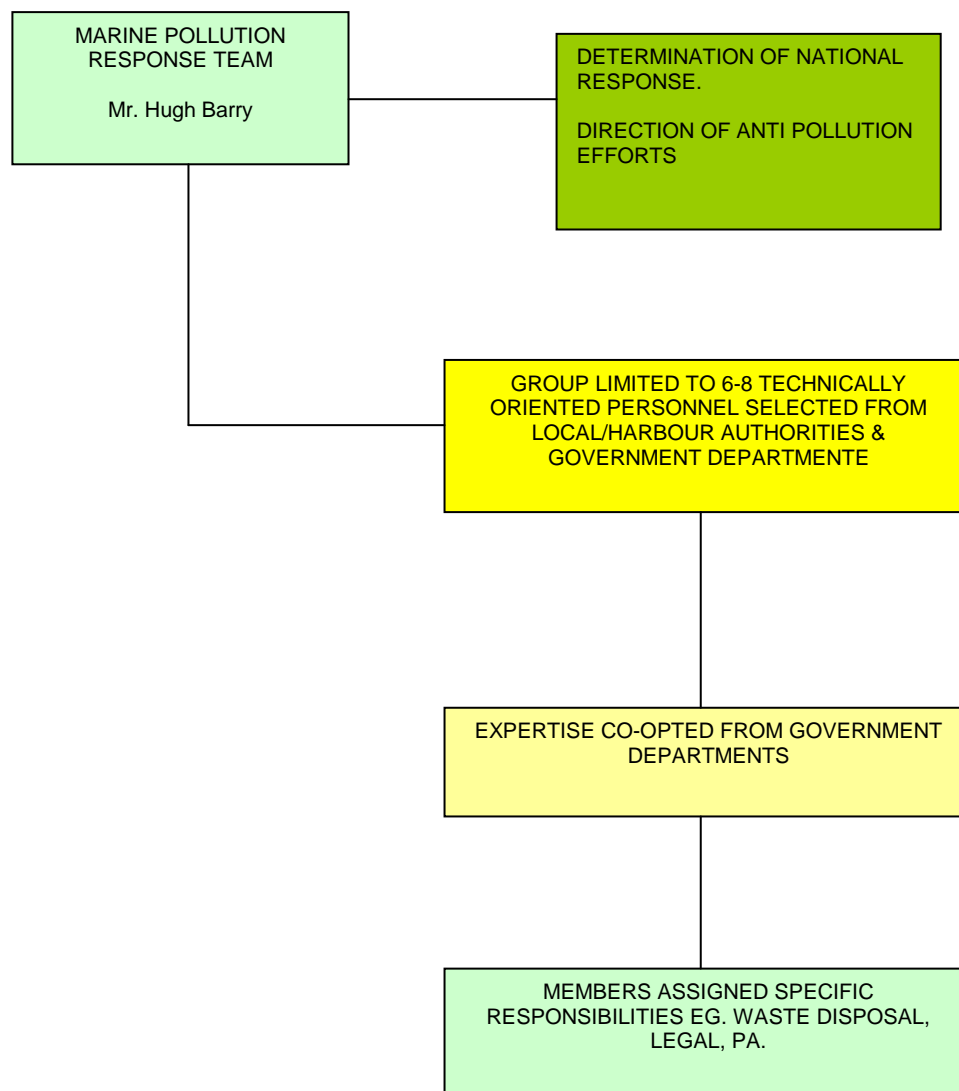



FIGURE 1.2.12 MARINE POLLUTION RESPONSE TEAM



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1.3 RISK ASSESSMENT

1.3.1 Introduction

Galway harbour is situated on the River Corrib in a sheltered position at the innermost eastern corner of Galway bay, on the West coast of Ireland. The harbour is used extensively by oil tankers carrying refined petroleum and Bitumen Tankers carrying class III petroleum.

Typical ship sizes are ever increasing and the most common tanker size is 4,500 tonnes. The next generation of tanker will be 6,000 tonnes deadweight. The total quay length will allow up to six vessels to berth in the inner dock at any one time.

Cargo Ferries operate daily out of Galway to the Aran Islands. Galway is also becoming popular with passenger cruise liners who now use the port on a regular basis. The cruise liners generally anchor in a position SSW of Mutton Island and bring its passengers ashore by tender.

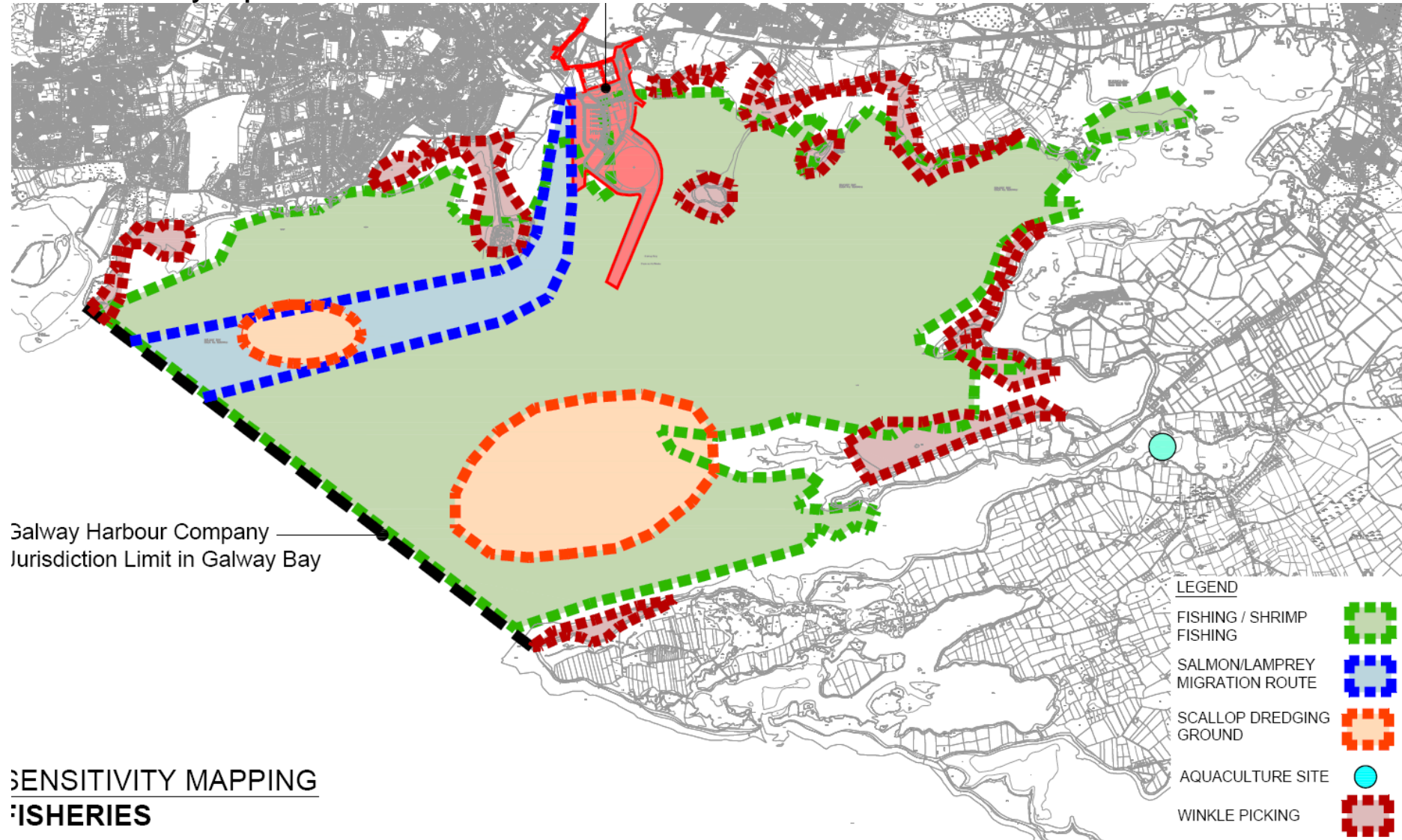
The size of the largest vessel that can be accommodated will be governed by three factors:

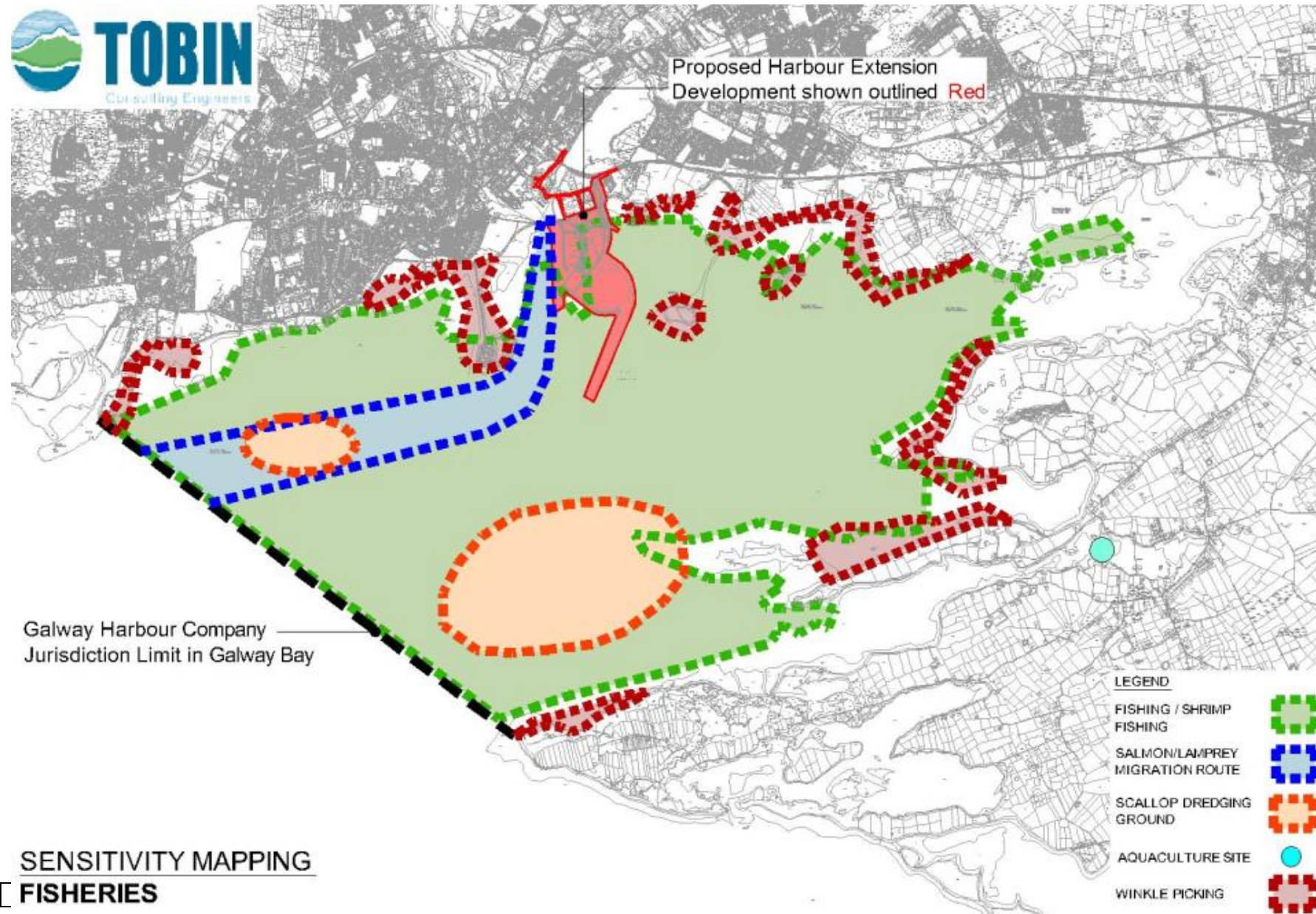
1. The length of the turning area, 146m
2. Depth of water 8.53 (springs) and 7.31 (Neaps)
3. Width of the entrance, 19.81m

The harbour is tidal; however a high water level is maintained inside the inner docks by dock gates.



1.3.2 Sensitivity Map





1.3.3 Resources at Risk

All tanker operations occur within the inner harbour and if an incident occurs here, the oil should remain contained within the harbour. However should an incident occur outside of the harbour due to collision or grounding etc. there are a number of resources that could be threatened.

Identification of these resources during contingency planning can assist the strategy decision making process at both the planning and response stages.

Nature conservation

The following areas have been identified as being potentially at risk from an oil spill incident:

- Mutton Island. A small island to the South of the Harbour entrance, which has recently been joined to the main land via a causeway. The Island is inhabited by a variety of wildlife species.
- Up river of the harbour entrance, at Claddagh Quay there is a strong population of swans. Known locally as the 'Claddagh Swans' they are popular with locals and visitors and tend to stay around the Quay where the public feeds them.

The strength of the River Corrib should protect them from pollution heading upriver to Claddagh Quay but there is potential for the swans to come down river at the time of an incident.

Fisheries and aquaculture

Fishing is not a large industry in Galway but even a small spill may affect those involved in the industry.

A number of local fishing boats moor up inside of the inner harbour, should a spill occur the Harbour Master will not open the dock gates by use of the sluice gate until the spill has been cleaned up. This will prevent these fishermen putting to sea for the duration of an incident. However, many of the active vessels operate out of the quay at the lay-by.

There are some local oyster beds (located in the south bay) which may be affected should a spill occur outside of the locked harbour.

Recreation and amenity


The West Coast of Ireland is becoming extremely popular with tourists and one of the most popular destinations is the Aran Islands.

Canoeing is popular and it is common to see canoeists at the mouth of the River Corrib around the harbour entrance. This is most common around lower water at a time when high rainfall has the river in flood.

Leisure fishing occurs in the area but a spill contained inside the harbour should have very little effect on this activity.

To the West of the Harbour is Salthill, the local seaside area, with a small beach and promenade. Small spills are unlikely to affect this area as the causeway to the Mutton Island Waste Water Treatment Plant gives some protection against the movement of oil from the harbour to that area, however if a larger incident should happen away from the harbour Salthill may be impacted.

Again, Grattan Beach is afforded great protection from spills due to the newly constructed causeway to Mutton Island.

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Industry and Shipping

Shipping may be considerably disrupted if the harbour dock gates are operated for limited periods to assist in the containment of a spill. The Harbour Master will make any decision on traffic movements.

The Inner Galway Bay Complex is an important for nature conservation and has been designated as an SAC site. A large section of the inner Estuary is also a designated Special Protection Area (SPA), mainly due to its importance for wintering birds.

Responsibility to Protect the SAC and SPA

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as SACs and SPAs. The Government and its agencies, and especially the local authorities, are responsible for the enforcement of regulations that will ensure the ecological integrity of these sites.

The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I.No. 477 of 2011) consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the judgements of the European Court of Justice, especially cases C-418/04 and C-183/05, for failure to transpose essential elements of the Birds Directive and the Habitats Directive into Irish law.

Part 4 of these Regulations set out the responsibilities of the Minister for Arts, Heritage and the Gaeltacht, and the similar responsibilities of public authorities *“to secure compliance with, the requirements of the Habitats Directive and the Birds Directive and these Regulations”*.


Section 27 of the Regulations requires public authorities to:

“(a) take the appropriate steps to avoid, in candidate special protection areas, pollution and deterioration of habitats and any disturbances affecting the birds insofar as these would be significant in relation to the objectives of Article 4 of the Birds Directive, (b) outside those areas, strive to avoid pollution or deterioration of habitats, and, (c) take appropriate enforcement action” (Section 27 (4)); And to *“take the appropriate steps to avoid damage to European Sites through activities that may cause deterioration of natural habitats or to the conservation status of the species for which the sites have been designated, including such activities that take place outside the boundaries of the sites”* (Section 27 (5) (b)).

1.3.4 Risk Assessment Summary

In 2012 saw 159 vessel movements the majority of these were petroleum tankers delivering to the only oil storage depot located at the Galway Harbour Enterprise Park that use the harbour.

Vessels delivering a total of 500,741tonnes of cargo visited the harbour. In addition to this all vessels entering and leaving the area will carry fuel to power their engines. There is also the threat from vessels passing through the area of responsibility enroute to their final

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destinations. This is an undetermined threat but significant when considering the actual threat to the area.

Vessels waiting to enter Galway Harbour are required to anchor to the South of Mutton Island to await suitable tide or availability of berth in order to proceed. Sometimes there may be a number of vessels in this area. Such a build up of shipping categorises this as an area of high risk.

The terminal operated by Topaz Energy Limited use the berths at Folan/North Dun Aengus Quay.

In 2012 Topaz Energy imported in the region of 384,132 tonnes of product. Tankers delivering to the Topaz Energy terminal are unloaded by the use of flexible hoses. The product is then piped underground to the terminal.

Currently the vessels delivering to the terminal are in the range of 3,700 dwt. Ship sizes are increasing and more often vessel sizes will be in the order of 6,000t dwt. These vessels are delivering to the Topaz Energy Terminal and such vessels berth at Dun Aengus dock North where three 10 inch pipelines have been constructed to the new oil terminal at EnWest at the Harbour Enterprise Park. They will discharge using flexible hose connections.

A Bitumen storage facility continues to be developed at the Harbour Enterprise Park. In 2012 bitumen tankers that called to Galway totalled to 7 vessels. Bitumen is offloaded via flexible hose into a pipeline which is preheated by electric tracing to ensure that the product remains fluid all the way to storage. The flexible hose runs across the quayside and enters a manifold from where it is piped to the terminal. For the majority of the route the pipe is underground, however for a short distance along the quayside and across the bridge to the Enterprise Park the pipe is above ground. In 2012, the Cold Chon Terminal handled 31,071 tonnes of bitumen.

1.3.5 Categories of Incident

All Tiers need to be reported to the Irish Coast Guard.

- **TIER 1** - A tier 1 incident is one in which a small spill can be dealt with by personnel in the immediate vicinity and has no external impact. Each installation in the area of the plan has enough equipment to respond to a **Tier 1** incident
- **TIER 2** - A tier 2 incident is one which will require the combined resources of the organisations represented on the Galway Harbour Oil Spill Team. It will also require the involvement of regulatory bodies, local authorities, advisors and advisory bodies.
- **TIER 3** - A Tier 3 incident is a major oil pollution event with potential for actual environmental, social and economic impacts. It will require local, national and probably international resources.

TIER 1 - MINOR SPILLS

RESPONSE BY:
THE INSTALLATION
INVOLVED

TIER 2 – MODERATE SPILLS

RESPONSE BY:
INSTALLATION INVOLVED, HARBOUR COMPANY AND
LOCAL AUTHORITIES

TIER 3 – MAJOR SPILLS

RESPONSE BY:
HARBOUR COMPANY AND LOCAL AUTHORITIES
ASSISTED BY G-HOST AS REQUIRED.
IRISH COAST GUARD NATIONAL RESPONSE AND
INTERNATIONAL RESOURCES AS REQUIRED (OSR)

Tiers are not defined by spill size because as an example, a relatively small spill, which threatens an environmentally sensitive area, could require a Tier 2 response. Galway Harbour Company has primary responsibility for Harbour incidents whilst each Local Authority is responsible for onshore incidents and each has responsibility to escalate the response as required.

1.3.6 Scenarios

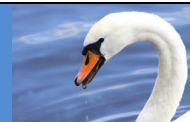
Emergency Scenarios for Galway Harbour are included in the **Galway Harbour Marine Emergency Plan ('GALFIRE')**. They cover all types of emergency including fire and explosion. All of the scenarios have the potential for an oil spill.

1.3.4 Port Operations

1.3.4.1 Pilotage

Pilotage is compulsory for all vessels from the harbour limits to the docks.

Pilot exemption is available for local fishing boats and ferries as decided by the Harbour Master/Pilotage Superintendent.

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The pilots are assisted by a state of the art leading light system positioned near to the Harbour office. The leading light has a duplicate backup system in case of failure and has a 40 day battery back up system with integrated SMS failure (text messaging alerts) warning system.

1.3.4.2 Speed Limit

5 knots in the approach channel and 3 knots inside the harbour.

1.3.5 Specific Risks

The following sub sections highlight the specific areas of risk that could cause oil to be introduced into the Galway Harbour waters.

1.3.5.1 Collision between vessels

As with the majority of harbour / port operations, there is always a risk for those vessels operating in a close proximity to collide with each other.

Within Galway Harbour, this risk is reduced by virtue of the fact that vessels will be operating at extreme slow speed due to the size of the harbour and they will be under the advice of a harbour pilot. Therefore the chances of an oil spillage as a result of a collision is considered remote.

Outside of the harbour the risk of collision is low as Galway Bay opens into a deep wide channel. It is to be noted that Galway Bay is particularly free of fog. All tankers are fitted with Automatic Identification System (AIS) which has improved inter-vessel tracking. The pilot cutter is also fitted with AIS and electronic chart plotter with radar overlay.

1.3.5.2 Collision between vessel and fixed installation

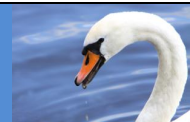
The potential of a vessel impacting a fixed installation must be considered. An incident could occur either inside or outside of the inner harbour in a number of ways

- Impact with the Pier whilst entering or leaving the Harbour.
- Impact whilst berthing.

An impact could occur in each of these areas due to the following occurrences:

- Loss of power to the vessels engines / maneuvering aids.
- Misjudgment of tide and current influences.

The second of these occurrences is the most likely at Galway as the flow from the River Corrib pushes the entering vessels towards the New Pier. To control the vessel against the influence

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of the river the tanker must approach the dock gates at a speed of two – three knots. Operations at this speed carry with them the risk of incident.

To mitigate the effects of such maneuvers it is common practice with larger vessels to bring them alongside New Pier before allowing them to transit through the dockgates.

The width of the lock gates can on occasion leave only 1m clearance either side of a vessel as it enters the inner harbour.

There is also a potential pollution risk associated with moving vessels colliding with moored vessels. Such an event is unlikely and would probably not result in a spill incident.

1.3.5.3 Vessel Grounding

The chances of a vessel grounding and causing oil to enter the water is viewed as remote due to a number of factors.

The inner harbour is maintained at a high water level being filled by the previous high tide. Therefore no vessel should go aground or take to the ground whilst in the inner harbour.

The approach to the inner harbour is dredged to 3.4m (chart datum) and is only transited with a pilot on board.

The dock gates can only be opened once the seaward depth equals the harbour depth. This is achieved by operating the dock sluice gate to equalise the harbour depth to that of the seaward depth. The gates are only opened approximately 2 hours before high water, which dictates that vessel movements into and out of the inner harbour will occur during that period.

1.3.5.4 Bunkering Operations

Vessels wishing to take on bunkers can do so via road tankers. The tanker will deliver to anywhere inside the inner harbour and can also bunker ferries and other smaller vessels that are berthed on New Pier.

It is most common for the vessels visiting Galway using Gas Oil / Marine Diesel Bunkers.

Bunkering may result in pipeline failure or human error which could ultimately lead to a spillage. The risk of spillage is present but is considered to be relatively low.

The vessels and road tanker are required to complete a transfer checklist and be issued with an ullage report prior to bunkering operations.

1.3.5.5 Inherited Incident.

The west of Ireland is a busy traffic route, therefore, potentially there is a risk that oil pollution may occur within Galway's jurisdictional waters from an incident occurring outside of the boundaries, i.e. pollution that has been driven into Galway's Harbour area by the wind and tide. This type of incident is difficult to plan for, as there can be no pre knowledge of the type and the potential quantity of oil spilled.

1.3.6 Quantitative Risk Assessment

ITOPF statistics demonstrate that most shipping transport oil spill incidents occur during routine cargo handling operations and that some 91% of these incidents resulted in spillage's of less than 7 tonnes.

The table below outlines credible spill events that may occur at Galway. These estimates are based on the existing specific operating parameters within the harbour and historical comparisons of events at other locations.

The table shows the potential scenarios, credible release quantity, worst-case release quantity and probability of occurrence for each potential scenario.

For the purpose of planning, the worst case scenarios have been based on the following assumptions:

- Vessel involved being 4,500 dwt Oil Tanker.
- All Collisions result in 1 wing tanks being ruptured.
- Road Tankers assumed to carry 20 tonnes of Oil.
- Pumping rates from tankers assumed to be 360 tonnes per hour.
- Flexible hoses 20 metres long, diameter 300 mm.
- Vessel discharge shutdown operation assumed to take 30 seconds.
- Vessel Bunker Tank capacity is 100 tonnes.
- Wing Tank capacity is 250 tonnes.

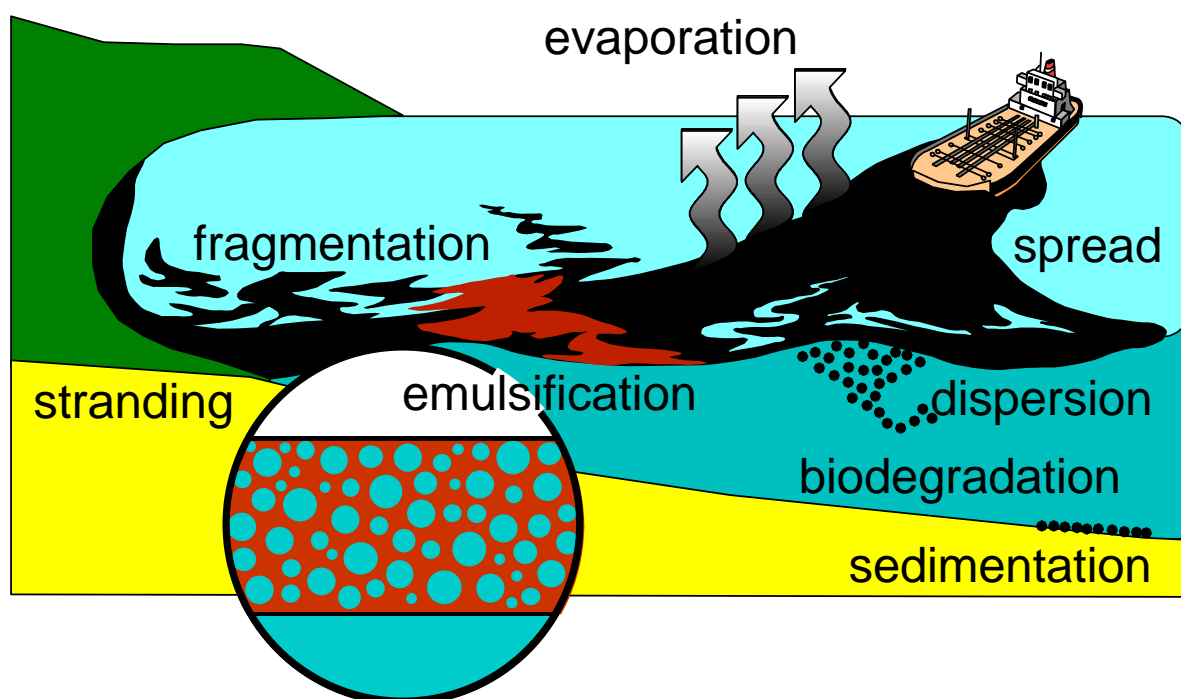
Scenario	Product	Worst Case Quantity	Credible Case Quantity	Probability
Vessel receiving Bunkers from Road Tanker	Diesel	20	<1	Medium
Vessel has heavy impact with quayside during berthing operations – main fuel tank ruptured	Diesel	100	<10	Low
Two vessels collide with each other within Harbour Walls	White Oil product or Bitumen	80	<10	Very Low
Vessel transferring diesel oil between tanks within the vessel. Incorrect set up of system causing oil leak	Diesel	40	<5	Low
Vessel collides with Tanker at Anchor, rupturing 1 tank.	White Oil Product or Bitumen	250	25	Low
Tanker runs aground damaging one tank	White Oil Product or Bitumen	250	25	Low
Spill of oil from maintenance or equipment failure	Lubricant / Hydraulic Oil	20 barrels	1 barrel	Low
Failure of Hydraulic Oil Supply pipes for the dock gates	Hydraulic Oil	120 litres	50 litres	Low
Failure of hydraulic oil for vessel deck mooring equipment	Hydraulic Oil	300 litres	75 litres	Low

1.4 FATE OF SPILLED OIL

1.4.1 Fate: General


In considering the fate of oil on the water a distinction is frequently made between non-persistent oils, which tend to dissipate rapidly from the sea's surface and persistent oils, which do not. Non persistent oils are commonly referred to as white oils, and have an API > 45. Persistent oils are commonly referred to as black oils and have an API < 45. The physical and chemical changes which spilled oil undergoes are collectively known as "weathering" (see Figure 1.4.1). Knowledge of these processes and how they interact to alter the nature and composition of the oil with time is valuable in preparing and implementing this contingency plan for effective oil spill response.

Fig 1.4.1 Fate of Spilled Oil (General)



1.4.2 Fate Processes

Spreading - Laboratory scale and field investigations have demonstrated that, when crude oil or refined petroleum product is poured onto clear water surfaces, it tends to spread out to a thin film. Most crude oils poured onto clear water surfaces spread to a thickness of some tenths of a millimetre after one hour and to only a few microns after two or three hours. In practice oil when spilt onto the sea will form wind-rows which are elongated thick patches of oil separated by areas of clear water or water covered by a thin film of oil. The spreading rate will be affected by many parameters such as oil thickness near the source of spill, type of oil (boiling range, wax content, viscosity, presence of natural surface active compounds), state of sea, weather conditions, unimpeded surface area water available.

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1.4.2 Fate Processes / cont.

Evaporation - Oil will evaporate at rates dependent on the boiling range, the vapour pressure of the component hydrocarbons, the ambient conditions and the surface area. This evaporation reduces the volume of oil, its flammability and its toxicity, but increases the viscosity and density of the residue. Overall these factors will have a retarding effect on the rate of spreading. A consequence of this evaporation is that the residue from an exposed crude oil may approach the specific gravity of water (Fresh water 1.0, Salt Water 1.025) and become submerged.

Solution - Solution of oil in water is slight and confined mainly to some of the lighter components. The rate and extent of solution depends on oil composition, physical properties, extent of spreading, water temperature, turbulence and amount dispersion.

Dispersion - Under certain conditions part of the oil can be dispersed by the mechanical action of the sea. The rate of dispersion is a function of the sea state and of the nature of the oil. Dispersion begins soon after the oil is discharged and can be significant after a few hours.

Emulsification - Experience has highlighted the phenomenon of “chocolate mousse” formation when crude oils are spilled onto water surfaces. This mousse is a water-in-oil emulsion containing up to 80% water, so volume is increased. The manner by which oil is spilt on the sea and the sea state both affect the rate of emulsion formation. Even a gently rolling sea can generate emulsions which are extremely viscous and persistent thus impeding the rate of degradation and weathering by reducing the surface area exposed to water and air. Emulsification greatly increases the volume to be dealt with and also creates disposal problems. The emulsion stability is determined by the origin of the oil.

Oxidation - Hydrocarbons by themselves are considered to be relatively resistant to oxygen. But, in contact with water and in the presence of light, they are oxidised much more quickly. However the precise mechanisms are not yet fully understood and the exact impact is unknown.

Biodegradation - Biodegradation is a time consuming process whereby the enzymes, bacteria and yeast's present in the water break down the hydrocarbons. The process relies on the interface of oil, oxygen and water. Accelerators include nutrients and increased water temperature. Any action, which increases the surface area of the oil (spreading, dispersion, etc.) helps to increase the rate of biodegradation.

Sedimentation - Due to weathering, the density of some heavy spilt oils may increase and become higher than that of the sea water, so that they sink. Oil may also be absorbed by heavy mineral particles e.g. sand, silt, etc and thus sink. All these parameters have a very large influence on the change in oil characteristics during weathering.

1.4.3 Fate: Specific

The oil terminals at Galway handle white oils which are non-persistent. In their 'fresh oil' state the products will have a specific gravity of < 0.85 and a viscosity of $0.5 - 8 \text{ cSt}$. The nature of these products dictates that they will spread extremely quickly when they are spilled onto the surface of the water. The effects of current and wind direction will also influence how the oil is distributed within the Harbour.

Bunker fuels may range from Diesel to Heavy Fuel Oil (HFO). Diesel can be classified as a non-persistent oil and would act as described above.

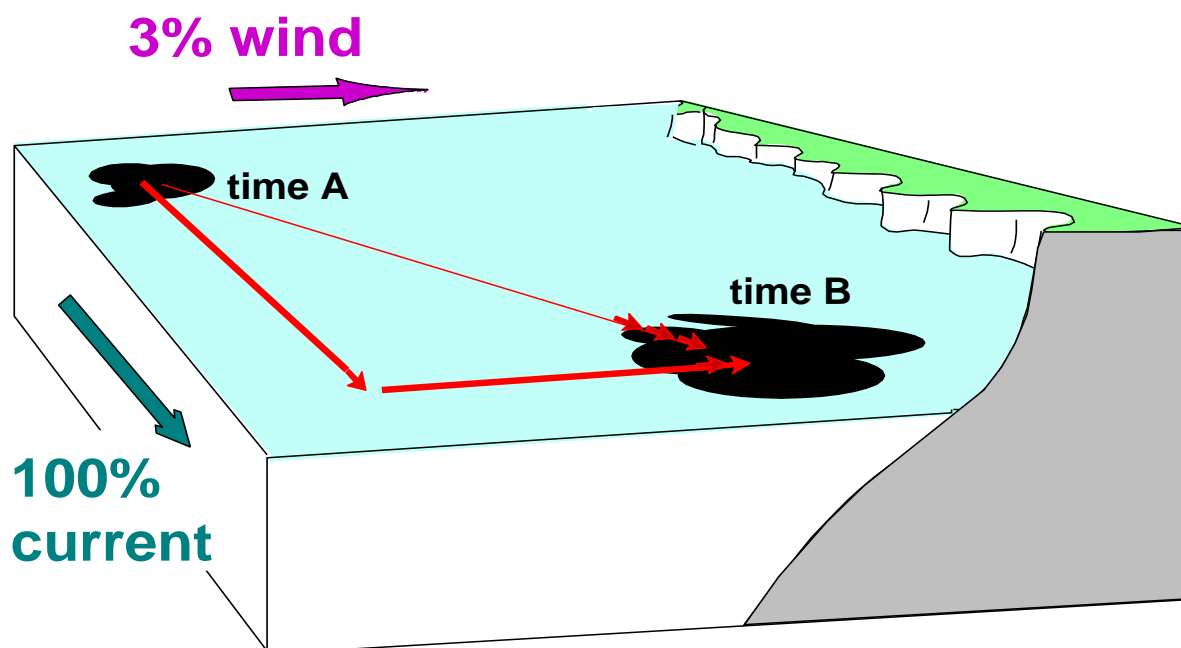
HFO on the other hand is persistent and will behave differently to white oils if spilt. It will spread less rapidly and is less affected by evaporation. If it begins to emulsify it may eventually sink if not recovered from the water surface inside the first 3 days.

Bitumen that is being delivered to the Cold Chon storage facility is transported heated to ensure that its viscosity is low enough for it to be transferred to the storage terminal. If spilt into the water it will cool violently creating a large amount of steam. Once cool the Bitumen will be floating on the water surface in a very viscous state.

If spilt onto the quayside the Bitumen would cool rapidly. It would be highly viscous and unlikely to flow into the water. It is unlikely to weather in any way and will require a labour intensive manual clean up.

1.4.4 Manual Plotting of Oil Movement

Oil moves as a function of current and wind. The current has a 100% influence, the wind has a 3% influence. As with the figure below apply first the current set and rate, then second the wind direction and speed, this gives the resultant vector. For best results plot by the hour and update estimated position with over flight updates.



1.4.5 Oil Spill Modeling

A computer model called Adios was used to create fate predictions for oils that may be encountered at Galway. Details of this computer model can be found in section 3.4.

1.4.6 Quantification

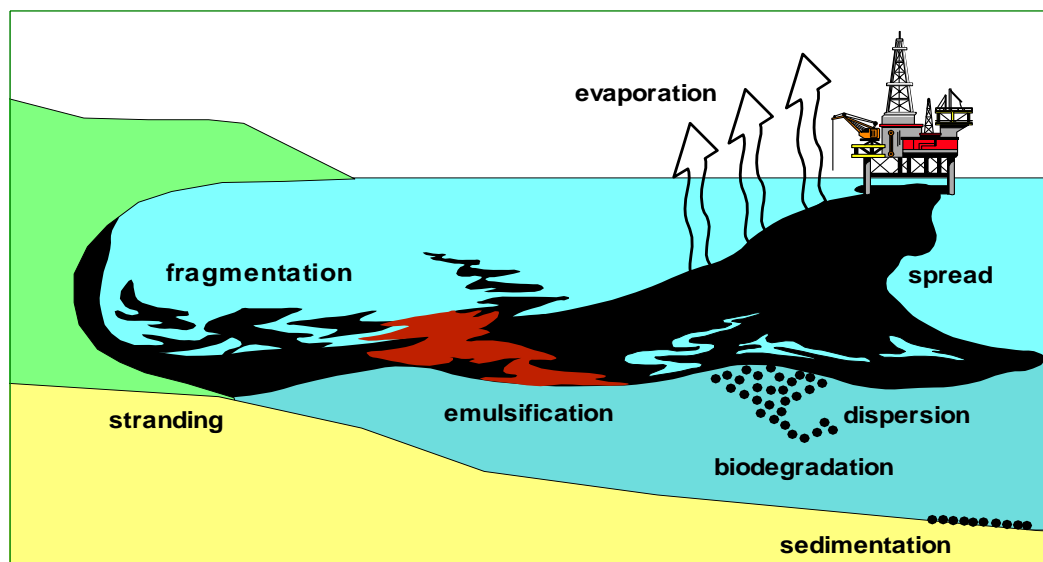
An approximate estimation of the quantity of oil in a slick, can be made by calculating the percentage surface area covered multiplied by the thickness of the oil based on its appearance. For further details refer to Section 3.5 - Surveillance and Quantification

1.4 FATE OF SPILLED OIL

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Solution - Solution of oil in water is slight and confined mainly to some of the lighter components. The rate and extent of solution depends on oil composition, physical properties, extent of spreading, water temperature, turbulence and amount dispersion.

1.4.2 Fate Processes / cont.

Dispersion - Under certain conditions part of the oil can be dispersed by the mechanical action of the sea. The rate of dispersion is a function of the sea state and of the nature of the oil. Dispersion begins soon after the oil is discharged and can be significant after a few hours.

Emulsification - Experience has highlighted the phenomenon of “chocolate mousse” formation when crude oils are spilled onto water surfaces. This mousse is a water-in-oil emulsion containing up to 80% water, so volume is increased. The manner by which oil is spilt on the sea and the sea state both affect the rate of emulsion formation. Even a gently rolling sea can generate emulsions which are extremely viscous and persistent thus impeding the rate of degradation and weathering by reducing the surface area exposed to water and air. Emulsification greatly increases the volume to be dealt with and also creates disposal problems. The emulsion stability is determined by the origin of the oil.

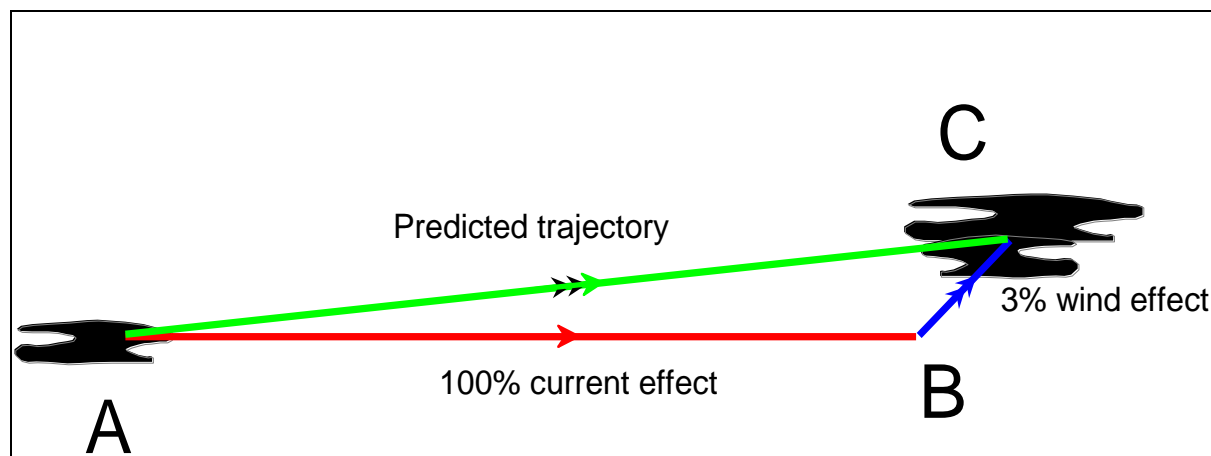
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1.5 Spill Response Strategy

1.5.1 Use of Section

This section provides an overall strategy (1.5.2) and guidelines for three oil types:

Strategy Figure	Oil Type	Specific Gravity	Genre	Characteristics	Examples
1.5.3	Light oils	< 0.8	White oils	Non-persistent, Volatile	Petroleum, Kerosene, Diesel
1.5.4	Heavy oil	> 0.95	Black oils	Persistent, Viscous, Emulsion	Fuel oils
1.5.5	Bitumen	~0.95 – 0.99		Highly viscous at ambient temperature	Bitumen

By selecting the appropriate strategy figure, the user can derive an indicative strategy path to mitigate the effects of an oil spill, consistent with safe practice and net environmental benefit. Reference is also given to Hydraulic and Lubricant oils which may be present on a vessel.

In developing a response strategy refer also to:

- 1.5.8 Sensitivity Index (Hayes *et al* 1980)
- 1.5.9 Shoreline Clean-up Matrix - White Oils
- 1.5.10 Shoreline Clean-up Matrix - Black Oils

Note: Dispersants cannot be used without the consent of the Department of Marine & Natural Resources and the use of dispersant is currently prohibited in Irish waters where depths are less than 50 metres, or on the shoreline.

1.5.2 Overall Strategy

For any spill at Galway the primary strategy must be to contain and recover. If the incident occurs within the inner harbour this strategy will be assisted by the natural containment created by the harbour walls.


One of the initial actions must be to ensure appropriate notification and reporting occurs so that additional assistance may be promptly mobilised.

The priority for oil spill clean up must always come second to that of ensuring the safety of people and property.

White oils are highly volatile and the initial strategy must be to shut down operations and ensure the safety of the site. Although a hindrance to pollution clean up it may be necessary to cover the area with foam to prevent fire or explosion.

A significant spill will require the area around the harbour to be cordoned off to prevent public access to hazardous areas to minimise ignition of an unignited spill.

Once the appropriate safety measures have been taken the relevant response guidelines flowchart should be used to assist the strategy decision making process.

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1.5.3. Oil Type Specific Strategy Advice

1.5.3.1 White Oils (Non-persistent)

The spillage of non-persistent oils is potentially the more problematic in so far as the response must keep pace with the spread. The generic impact of White Oils is toxicity.

This section covers the response strategy for the following products:

Gasoline

Gasoline is a very low viscosity liquid with high volatility, which is non- persistent. Gasoline will spread extremely fast assisting evaporation. Evaporation may remove up to 50% of the Gasoline from the sea surface within the first five hours.

Due to the high risk of explosion care should be taken when attempting to contain Gasoline. Safety must always come first and containment may not always be an appropriate strategy.

Diesel

Diesel is a very low viscosity distillate fuel, which is relatively non persistent. Diesel contains a high proportion of light ends and evaporates easily. Tests have shown that approximately 50% of the oil is removed from the sea surface within 24 hours of the spill. Diesel will spread rapidly into 'windrows' (fingers of oil aligned to the wind direction) and form a very thin slick. The only appreciable concentrations will be found at the down wind leading edge of the slick.

Gas Oil / Kerosene

Gas Oil and Kerosene can be considered very similar to Diesel. Refer to the description given above.

Strategy

Should a spill occur during an offloading operation it is essential that vessel owners are immediately made aware of the situation and made to keep clear of the area. Once on scene the harbour authorities will take the necessary actions to enforce an exclusion zone.

- Stop any operations as soon as possible
- Remove all sources of ignition.
- Isolate the source.
- **Do not** attempt any operations that may result in a spark occurring (outboard engines, electrical equipment, vacuum systems etc.)
- **Care must be taken if attempting Vacuum recovery** due to the high volatility of white oils.
- Initiate notification procedure.
- Begin 'Monitor and Evaluate'.
- Contain the spillage using boom and mop up any large concentrations with sorbents where possible.

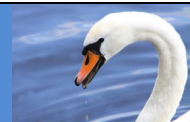
1.5.3.2 Black Oils (Persistent)

The spillage of a Persistent oil may be easier to deal with as the oil is heavier and may be easier to contain and recover. The generic impact of persistent oils is smothering.

This section covers the response strategy for the following oils.

Lubricating oil

Lubricating Oil is relatively viscous and prone to forming light water-in-oil emulsions, if the sea has sufficient mixing energy. Lubricating oil does not evaporate readily and will require an active response as natural weathering cannot be relied on.

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Hydraulic Oil

Hydraulic Oil is similar to Lubricating Oil, refer to the description given above.

Heavy Fuel Oil (HFO)

Heavy fuel oil is a very viscous oil (3,000 CSt +). The equipment stored at the terminal is only suitable for containment of such oils in calm conditions. Recovery may be effected within the harbour by vacuum trucks if the spill can be contained close to the harbour wall or jetty.

Strategy Advice:

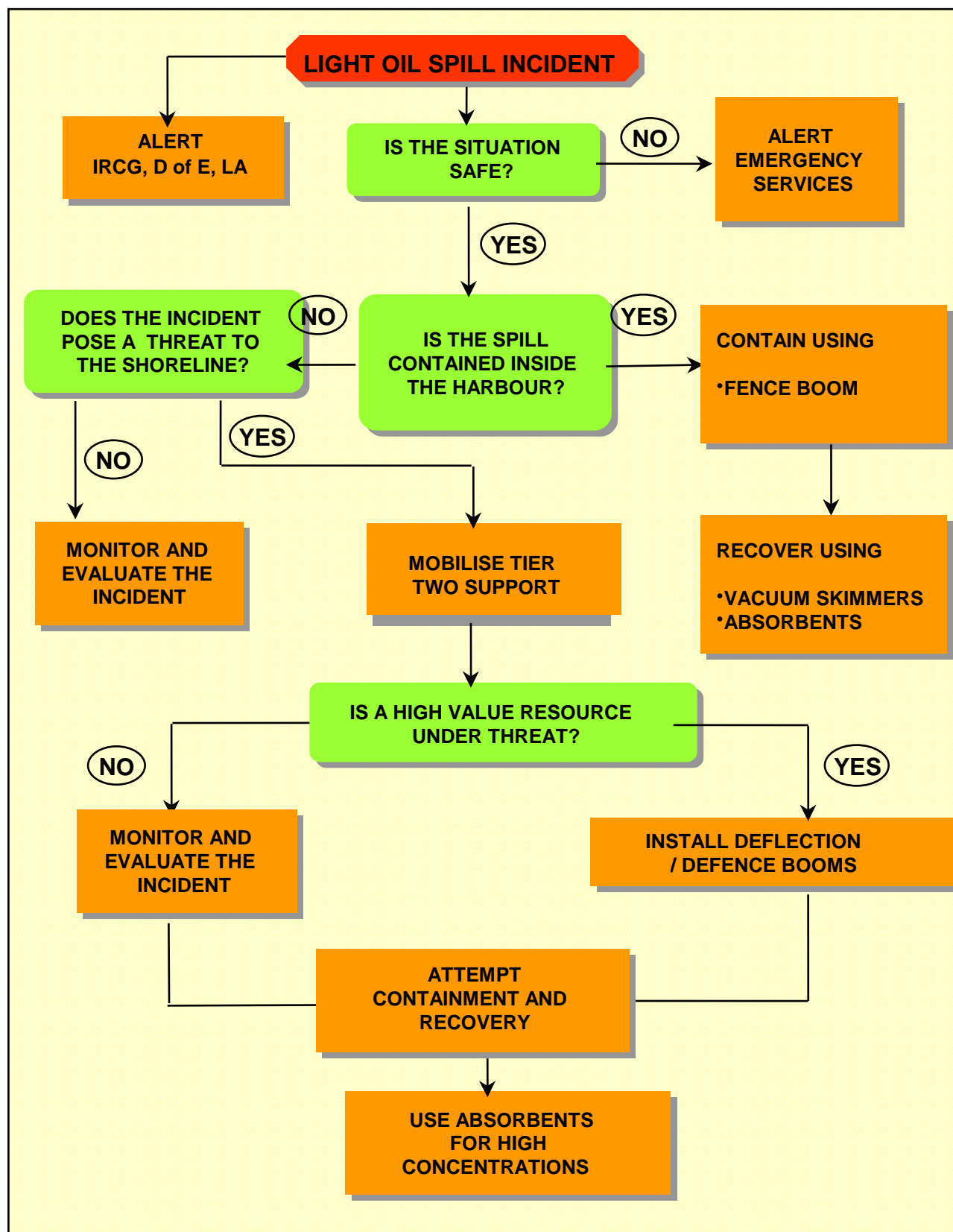
- Stop any operations as soon as possible
- Isolate the source.
- **Initiate notification procedure.**
- Begin 'Monitor and Evaluate'.
- Attempt to contain the spill on water by the use of booms.
- Thick concentrations of may be recovered using Skimmer systems / Vacuum trucks (when available).

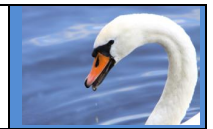
1.5.4 Un-attributable Spill

Un-attributable spills (mystery spills) will most likely be the result of a third party illegal discharge (overboard pumping of bilges/ slops). The strategy will obviously depend on the oil type.

- Report incident to the IRCG
- Attempt to identify third party source
- Begin 'Monitor and evaluate'
- Take samples (refer to the Sampling procedure Section 3.6)

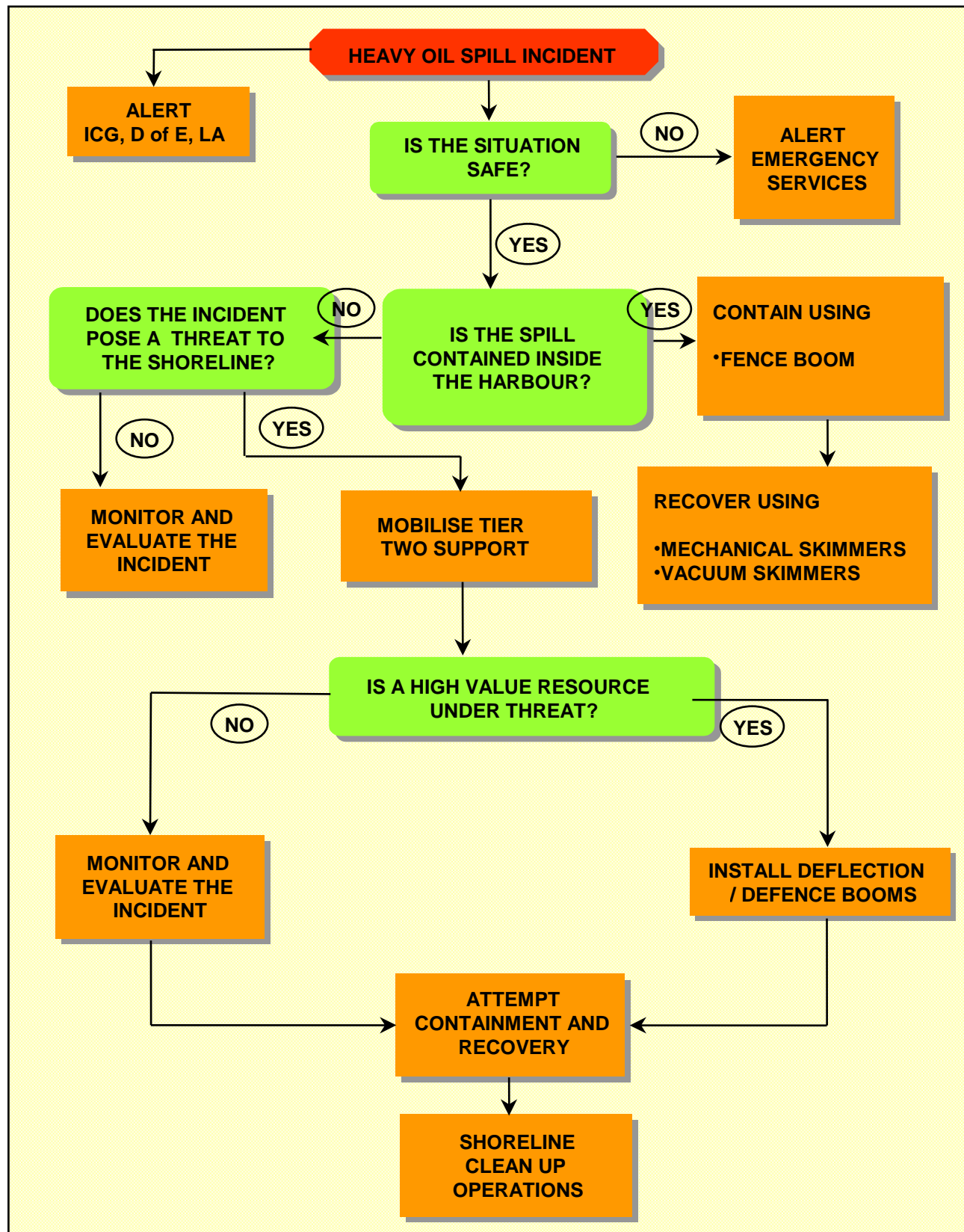
1.5.5 Light Oil Response Guidelines

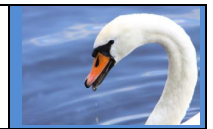




1.4 Fate of Spilled Oil

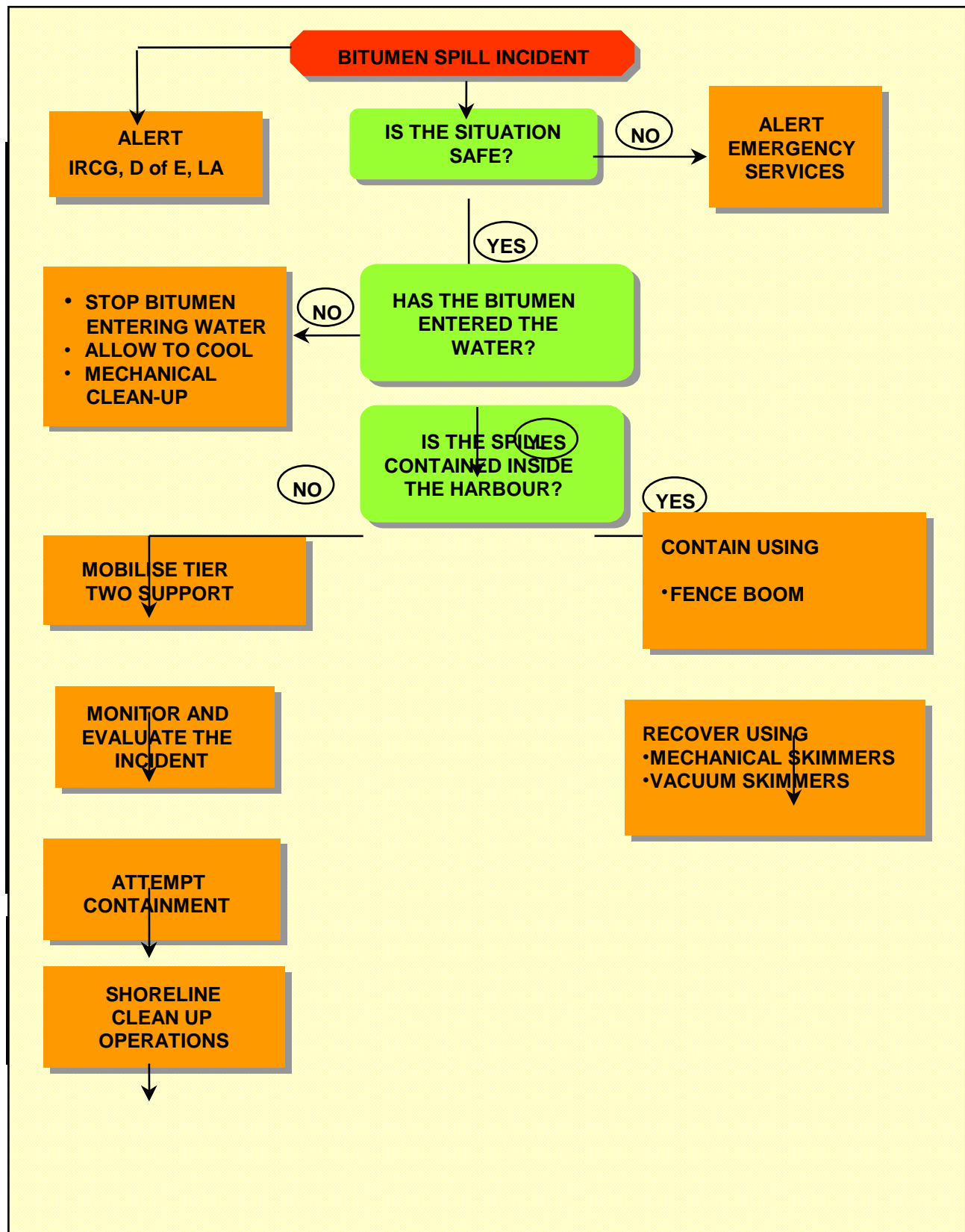
1.5.6 Heavy Oil Response Guidelines





1.4 Fate of Spilled Oil

1.5.7 Bitumen Response Guidelines



1.5.8 Shoreline clean-up matrix - white oils (petrol, diesel, heating oil)

Key to shoreline type codes

- A - Sea walls and piers
- B - Wave exposed rocky and boulder shores
- C - Exposed cobble shore
- D - Fine-grained sand beaches
- E - Coarse-grained sand beaches
- F - Wave sheltered mixed shingle shores
- G - Wave sheltered rocky and boulder shores
- H - Sheltered mud flats
- I - Saltmarshes

Key to matrix codes

- R - Recommended method (normally most effective)
- A - Alternative method (but often less effective)
- C - Conditional on expert advice/approval
- X - Do Not Use

Blank - not relevant or ineffective

Clean-up technique	Shoreline Type								
	A	B	C	D	E	F	G	H	I
1. No action	R	R	R					R	R
2. Manual removal of oil (rakes, shovels etc.)			A	A	A	A			
3. Passive collection (sorbents)	R	A	A	A	A	R	R	A	R
4. Oiled debris removal						A	A		
5. Trenching to remove subsurface oil				A	A	C			
6. Oiled sediment/substratum removal			A	A	A	C		X	X
7. Seawater deluge		R	R	R	R	R	R	X	X
8. Seawater flushing: low pressure (<50 psi)	R	R	R	A	A	R	R	C	C
9. Seawater flushing: moderate pressure (50-100 psi)	A	C				C	C		
10. Hot water/high pressure washing									
11. Vacuum suction		R	A	A	A	A	R	A	A
12. Sediment reworking (tilling etc.)				R	A	A		X	X
13. Excavation, cleansing and replacement		X	A	A	A	C	X		
14. Dispersant treatment	C	C	X	C	X	X	C	X	X

1.5.9 Shoreline clean-up matrix - black oils (heavy fuel oil)

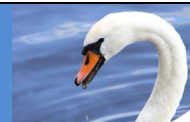
Key to shoreline type codes

- A - Sea walls and piers
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Key to matrix codes

- R - Recommended method (normally most effective)
- A - Alternative method (but often less effective)
- C - Conditional on expert advice/approval
- X - Do Not Use
- Blank - not relevant or ineffective

Clean-up technique	Shoreline Type								
	A	B	C	D	E	F	G	H	I
1. No action		R	R					R	R
2. Manual removal of oil (rakes, shovels etc.)			A	R	R	R			
3. Passive collection (sorbents)	A	A	A	A	A	R	R	A	R
4. Oiled debris removal		R	R	R	R	R	R	R	R
5. Trenching to remove subsurface oil			A	A	A	C		X	X
6. Oiled sediment/substratum removal		X	A	R	R	C	X	X	X
7. Seawater deluge		R	R	A	A	R	R	X	X
8. Seawater flushing: low pressure (<50 psi)		R	A	A	A	R	R	C	C
9. Seawater flushing: moderate pressure (50-100 psi)	R	C				C	C		
10. Hot water/high pressure washing	R	X				X	X		
11. Vacuum suction		R		A	A	A	R		
12. Sediment reworking (tilling etc.)				R	A	A		X	X
13. Excavation, cleansing and replacement		X	A	A	A	C	X		
14. Dispersant treatment	C	C	X	C	X	X	C	X	X

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1.6 TRAINING AND EXERCISE POLICY

1.6.1 Training

The importance of training for harbour personnel who may become involved in the response to oil spill incidents is recognised and acknowledged.

The Harbour Master has introduced a training program that will ensure his staff attends training sessions run by the Irish Coast Guard. Such staff will then be available to assist in a response at Galway and will also be available to assist The Irish Coast Guard at neighbouring harbours if required.

All members of the Management Team and Supervisors should undergo periodic training in line with the training matrix over the page.

1.6.2 Exercises

Regular deployment exercises will take place within the harbour. This will ensure that all staff is fully acquainted with the technique of deploying the boom.

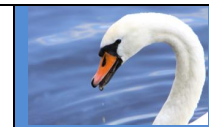
A notification exercise should also be carried out annually to exercise the communications procedure, check the contact directory and remind all parties of their roles and responsibilities.

In-house exercises will also be conducted at the approximate frequency noted in the exercise matrix.



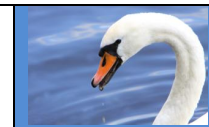
1.6.3 Training Matrix

	Duration	Management	Supervisors	Provider	Frequency	Notes
Course						
Ireland Oil Spill Training Standards	1~5 days	•	•	Irish Coast Guard		All members of the response team should undertake training from accredited training centre.
Oil Spill Clearance Course	5 days	•	•	Irish Coast Guard	Once 5 Yearly Refresher	For persons who may have either a role or responsibility within an oil spill response organisation.
Oil Spill Equipment Operators Course	2.5 days				Once	All staff that operates with Oil Spill Response Equipment must be fully conversant with correct and safe deployment techniques.
IMO Model Training Course: Level 1 <i>First Responder</i>	5 days	•	•	Irish Coast Guard	Once	Provides the basic response techniques for recovering spilled oil and cleaning polluted shorelines.
IMO Model Training Course: Level 2 <i>Supervisor/ On-Scene Commander</i>	5 days	•	•	Irish Coast Guard	Once	Provides the basic response strategies and tactics as well as the organisational planning skills required of operational supervisory staff to deal with major oil spills.
Oil Spill Management Course		•			Once	A training course providing in-depth knowledge of the main functions of an oil spill management team.



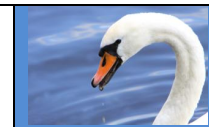
1.6.4 Exercise Matrix

	Duration	Management	Supervisors	Provider	Frequency	Notes
Exercise						
Notification Exercise	1-2 hours	•	•		Annual	Test communication systems, check availability of personnel, evaluate travel options and the speed at which travel arrangements can be made
Table Top Exercise SEA-PT	2-8 hours	•	•		Annual	Consist of interactive discussions of a simulated scenario among members of a response team but do not involve the mobilisation of personnel or equipment
Equipment Deployment Exercise SEA-PT	4-8 hours	•	•		Annual	Test the capability of a local team to respond to a Tier 1 or 2 type spill. Might be run in conjunction with a Tabletop or Incident management exercises.
Incident Management Exercise SEA-PT	10-14 hours	•			Annual (with Oil Terminal)	Demonstrate spill response management capabilities, integration of roles of different parties, focus on overall incident management aspects.




1.6.5 List of Trained Personnel

Name	Position	Training Attended		Exercises Attended	
		Title	Date	Title	Date
Captain Brian Sheridan	Harbour Master	Table Top Exercise - Waterford	18/04/00		
		IMO Level 3	14/11/00		
		IMO Level 3 – Response to Oil Pollution at Sea	06/10/01		
		IMDG Code – Irish Exporters	11/03/03		
Capt. Kevin Walsh	Asst Harbour Master	First Responder	2002		
		Oil Jetty Safety procedures	2003		
		IMO Level 2 -Beach Master	2005		
Capt. Bob Ellis	Asst Harbour Master				
Michael Swan	Pilot Boat Cox	Beach Master / Supervisor - ICG	06/06/99		
		IMO Level 2	12/11/99		
John McGrath	Dockgatemanager	Beach Master / Supervisor - ICG	06/06/99		
		IMO Level 1 – First Responder	12/11/99		
		IMO Level 1 – First Responder	10/11/00		
		IMO Level 1 – First Responder	17/09/10		
Paul Sheridan	General Operative	IMO level 2	05/10/98		
		Beach Master / Supervisor - ICG	06/06/99		
		IMO Level 2- Beach Master	17/10/08		
		IMDG Code	18/12/06		



Tom Folan	Dockgateman	IMO Level 1 – First Responder	06/09/05		
Darragh Ruddy	General Operative	IMO Level 1 – First Responder	26/02/07		
		IMDG Code	18/12/06		
		IMO Level 1 – First Responder	16/05/03		

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2.1 REPORTING AND INITIAL RESPONSE PROCEDURES

2.1.1 Use of this Section

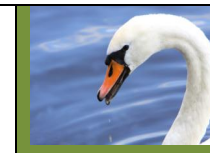
This section sets out the reporting procedures, which should be followed in the event that an oil spill occurs within the plan area.

The extent of notification of external organisations and authorities will be determined by the initial classification of the incident. Responsibility for external notification and the completion of the Pollution Report (POLREP) rests with the Harbour Master.

The statutory requirement, placed on the Harbour Master to report all actual or probable discharges of oil in the harbour is the Sea Pollution Amendment Bill, 1998

Incident reporting requirement by incident tier classification are given in the notification matrix in **2.1.2**

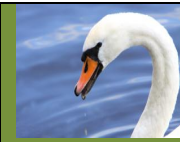
The POLREP and Spill Progress Report Form are reproduced in 2.1.3 & 2.1.4



2.1.2 Reporting Requirements - Notification Matrix

Contact	Office Telephone	Home Telephone	Mobile	Email	TIER 1	TIER 2	TIER 3
IRCG Duty Operator	999/ 01 6620922			coastguardnmoc@dtas.ie	3	3	3
Garda	999/112						
Health Safety Executive					as required		
Galway RNLI					as required		
Galway Harbour Company – B. Sheridan (On Scene Commander)					3	3	3
Galway Harbour Company Duty H Master – B. Ellis					3	3	3
Galway harbour Company Duty Harbour Master – K. Walsh					3	3	3
Press/Media Advisors C Dooley				carmel@prworks.ie	3	3	3
Department of Environment	01 6793377				3	3	3
Western Regional Fisheries Board					3	3	3
Galway City Council – Sharon Carroll	091 536564	091 536440		sharon.carroll@galwaycity.ie	*	3	3
Galway County Council – Tony McInerney	091 509000 x236		087 2310474	tmcinern@galwaycoco.ie	*	3	3
Clare County Council – Paul Moroney??	065 6821616		087 6868421	pmoroney@clarecoco.ie	*	3	3
					*	3	3
					*	3	3
					3	3	3
Oil Spill Response Limited	00 44 1703 331551						3
HNS – Braemer Howells (24hr)	00 44 1646 697041					3	3
HNS – Enva (24hr)	057 8678600				3	3	3
E.P.A. (involving dredging operations)	053 9160600				3	3	3
Marine Institute	091 387200				3	3	3

* Notify if spill is in the authority's area

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2.1.3 INITIAL POLREP

INITIAL POLREP	
To MRCC _____	
From Authority _____	
POLREP Number _____	Date _____
1	DATE AND TIME OF OBSERVATION
2	NAME AND ADDRESS OF OBSERVER
3	POSITION OF POLLUTION Give position relative to prominent or well known place. If ashore, give the name and nature of the beach or coast
4	EXTENT OF POLLTION Area covered or % of total area, and thickness. Number of tonnes of oil spilled, number of containers, drums etc.
5	WIND DIRECTION AND FORCE
6	STATE OF TIDE AND SEA (flood or ebb tide, rough, mod, or calm sea, any swell)
7	WEATHER CONDITIONS
8	TYPE OF POLLUTION If time allows oil samples to be taken in bottles before treatment. This may help to pinpoint the culprit. Dangerous goods should be identified from a distance.
9	SOURCE OF POLLUTION/ DANGEROUS GOODS If known, type of ship, installation etc. If unknown, give apparent direction of origin.
10	CAUSE OF POLLUTION/ DANGEROUS GOODS If a vessel, name of vessel, nationality etc.
11	DETAILS OF OTHER VESSELS IF POLLUTER UNKNOWN
12	REMEDIAL ACTION PROPOSED
13	Other information
<div style="text-align: right;"> SIGNED _____ TITLE _____ </div>	

2.1.4 Pollution Situation Report (SITREP)

Pollution Situation Report (SITREP)			
TO MRCC DUBLIN		Phone: 01 - 6620922. Fax 01 - 6620795	
POLREP NUMBER	_____	DATE	_____ REFERS
SITREP NUMBER _____			
AUTHORITY _____		DATE _____	
INCIDENT BEGAN _____		ENDED _____	
NEW POLLUTION/ DANGEROUS GOODS SINCE LAST SITREP _____			

ACTION TAKEN DURING PAST 24 HOURS _____			

PROPOSED ACTION FOR NEXT 24 HRS _____			

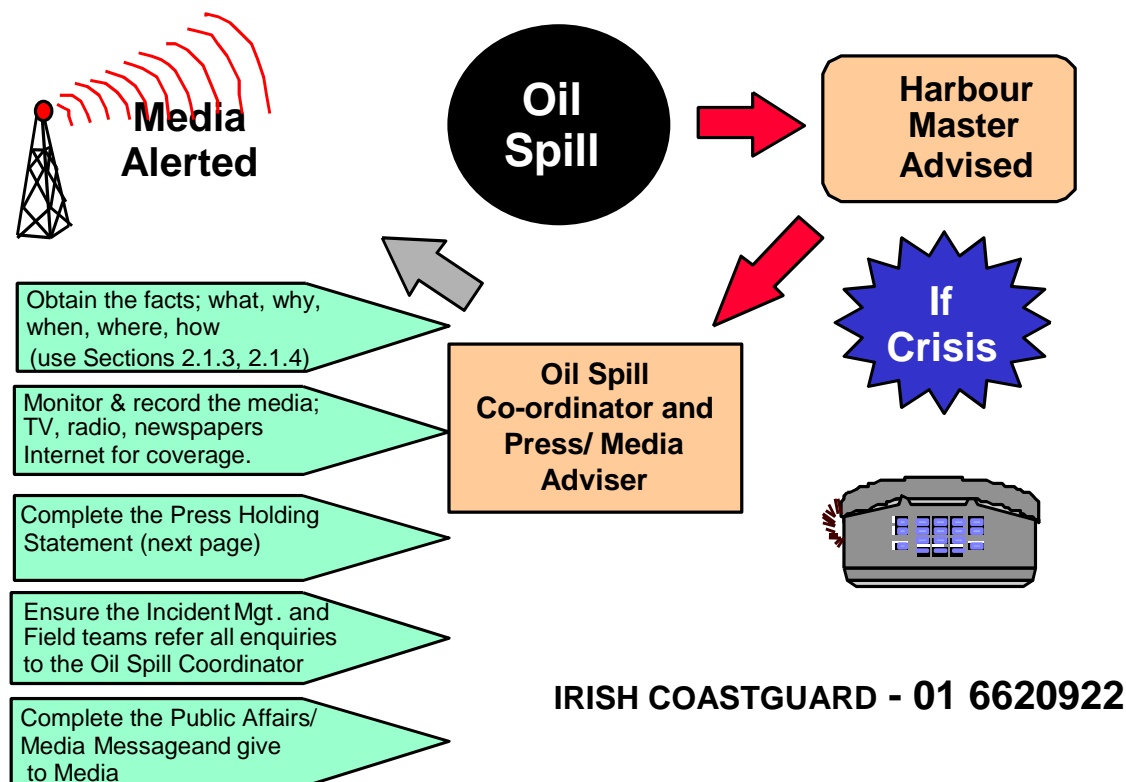
ANY REQUIREMENTS FROM IMES/ MRCC _____			

ADDITIONAL COMMENTS _____			

SIGNED _____			
TO BE NUMBERED AND RETURNED DAILY TO MRCC AT 1700 HRS			

2.2 COMMUNICATIONS PLAN

2.2.1 Press Release Procedure



2.2.2 Media Arrangements

Following an emergency, increased media interest and activity should be anticipated and it is imperative that all agencies engage in a shared, consistent media strategy.

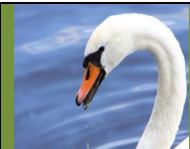
Agencies operating at the scene/onshore will most likely be exposed to intense media activity, with the media seeking immediate statements, information and access. As a general rule, media statements should be coordinated and issued jointly by agencies, maximising and prioritising available information.

Coordination of these activities will involve gathering and linking the available information from the Onsite and Local Coordination Centres, as appropriate, and the MRCC/SC.

It is likely that the architecture for such coordination will take some time to establish, therefore, for the first hour of activities, the Garda Síochána will take the lead on media matters; gather information and providing the media with any relevant or critical information.

The following should assist in the provision of consistent, co-ordinated messages:

- Each Response Agency will provide a Media Liaison Officer, or Media representative, at the site (where a "site" exists).
- The activities of these Media Liaison Officers/Media Representatives will be coordinated by the Media Liaison Officer of the lead agency.

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- The lead agency will establish a Media Centre at or near the site of the emergency for use by the Response Agencies.
- All Inter-Agency media statements will be issued from one agreed source and location. This arrangement should be made clear to the media at the earliest possible opportunity.
- All statements to the media, at or near the site, must be cleared by the On-Site Coordinator or his/her Media Liaison Officer.
- Once it is established, the Local Coordination Group should take the lead in terms of working with the media, away from the site.
- As with arrangements at the site, each Response Agency should provide a Media Liaison Officer / Media Representative at the Local Co-ordination Centre
- The activities of these Media Liaison Officers will also be co-ordinated by the Media Liaison Officer of the lead agency.
- The Media Liaison Officer of the lead agency should be involved in Local Coordination Group Meetings, so that s/he is fully briefed and can effectively plan the media response.
- All statements to the media at this level should be cleared with the Chair of the Local Co-ordinating Group.

Shared Information

It is crucial that all Response Agencies keep each other informed across the architecture of co-ordination. The effective sharing of information in such situations will decrease the chance that any one of the Response Agencies may be uninformed on a critical issue or development and their response requirements or commitments thus compromised. Information must be made readily available, and freely exchanged, among the responding emergency services, as well as the port, harbour, shipping or other companies involved.

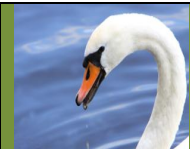
2.2.3 Lessons Learned Checklist

Message Preparation

- Did you **mobilize resources** and staff quickly?
- Did you recognize that **public perceptions** sometimes matter more than facts?
- Did you **coordinate efforts** with other responding organizations?
- Did you enlist support from **credible third parties**?
- Did you **monitor** and listen closely to what the **news media, public officials, and other important players** were saying and the questions they were asking?
- Did you **refrain from trying to control** the flow of information?
- Did you **withhold names of injured or deceased** until next-of-kin were properly notified?

Message Content

- Did you express and show **concern, empathy, and compassion** consistently for damages, injuries, and any inconvenience?
- Did you emphasise **dedication, commitment, and social responsibility**?
- Did you provide an early or immediate **apology**, where applicable?
- Did you provide a list of **facts and an action plan**?
- Were you **open and honest** about capabilities, needs, and problems?
- Did you **know exactly what you wanted to say** to the media and did you use two key messages each time?
- Did you **acknowledge responsibility**, where appropriate, but avoid placing blame?
- Did you indicate that **investigations** are under way to determine the cause?
- Did you **tell the truth** as best you knew it?

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- Did you use examples, human-interest stories, and concrete analogies to establish a **common understanding**?
- Did you use **simple visuals** and graphics as much as possible?
- Did you **test your message content** prior to delivery?
- Did you **refrain from going “off the record?”**
- Did you **avoid saying “no comment?”**
- Did you **avoid evasive statements** and shifting responsibility?
- Did you **avoid** statements that imply that **cost is more important** than public safety, health, or the environment?
- Did you **avoid** the use of technical **jargon**?
- Did you **avoid** providing too much technical **detail**?

Message Delivery

- Was top **management involved and visible**?
- Did you **go immediately** to the scene?
- Were you **easily accessible** to the media?
- Did you **stay calm**? (not lose your temper)
- Did you **practice** what you planned to say to the media aloud and did you test it?
- Did you indicate that you would **get back by a specific time** with an answer if you did not know an answer to a question?
- Did you **avoid conjecture** and speculation ("What if" questions)?

Nonverbal Communication

- Were you **sensitive to the non-verbal messages** you were communicating?
- Did you **sit up straight**, showing that you were paying attention and respecting your audience?
- Did you make **eye contact**? (Avoiding eye contact can make you look deceitful. If it is very difficult to make eye contact, focus on the back of the room, not on your notes or the floor.)
- Did you **avoid defensive, argumentative, and unreceptive body language** (e.g., arms crossed)?
- Did you **avoid fidgeting**, shuffling papers, or playing with your pen? (Keeping your feet planted on the ground, sitting or standing still, will make you look more controlled and confident.)

Typical Media Questions

Many of the questions that will be raised by the media during a Major Emergency are predictable, and Regional Communications Sub Groups should consider the following:

General

Who is in charge here?

Has the danger passed?

When is the situation likely to be back to some form of normality?

Casualty Information

In the aftermath of a Major Emergency, information on individual casualties will be provided to relatives only by An Garda Síochána. To assist them in this process, An Garda Síochána will establish a Casualty Bureau.

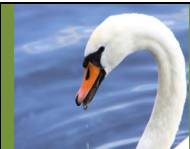
General Information on Casualties

As regards general information on casualties, this is a particularly sensitive issue and information on this area must be verified before being released to the media. The following are some of the obvious questions which may be raised in the aftermath of a Major Emergency:

- How many were killed or injured?
- Of those who were injured, how serious is their condition?
- Of the total involved, how many are uninjured?
- Were there any well-known or prominent persons involved?
- Where are casualties being treated?
- Where are the displaced being cared for?

Property Damage

- What is the estimated value of property loss?

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- What kinds of structures were involved?
- Was damage caused to any particularly important property (e.g. historical buildings, art treasures, homes of prominent figures)?
- Was other property threatened?
- What measures have been or are being taken to protect property?
- Has the area been damaged by emergencies before?

Response and Relief Activities

- Who discovered the incident?
- Who raised the alarm?
- How quickly were response units on the scene?
- What services responded?
- How many are engaged in the response?
- What acts of heroism occurred?
- How was the emergency prevented from spreading?

Other Characteristics of the Major Emergency

- Were there any blasts or explosions?
- Was there collapse of structures?
- Were there crimes or violence?
- Were there attempts at escape or self-rescue?
- What was the extent of the emergency?
- What was the duration?
- Were there any crowd problems?
- Were there other unusual happenings?
- What accompanying accidents have occurred?
- What were the resulting effects (e.g. anxiety, stress) on the families and survivors?
- Will these effect day to day services?

Causes of the Major Emergency

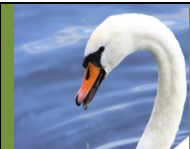
- Were there any previous indications of danger?
- How did the incident occur?
- Could the Major Emergency have been prevented?

The causes of a Major Emergency will generally be determined by lengthy and detailed civil and, possibly, criminal investigation, followed by court cases, Inquests and, possibly, a Tribunal of Inquiry. For this reason, speculation in this regard should be avoided. Speculation can also hinder witnesses coming forward and can influence their account of what happened.

It is important to note that details, which are widely reported in the media, may or may not be accurate. For this reason all spokespersons should avoid comment on media speculation, unless to specifically rebut incorrect reports.

Spokespersons who speak to the media on behalf of the three principal response agencies should confine their comments to issues which have been jointly agreed or are within their area of expertise and avoid speculation.

Individual agencies must be careful to ensure that they release only verified information and, as far as possible, should comment only in respect of their own areas of responsibility.

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2.2.4 Draft Press Statement upon Activation of the Plan

An incident (*briefly describe: explosion/fire/plane crash*) took place at (*location*) at (*time*) on (*day & date*). At (*time*) a Major Emergency was declared by (*name and title of person who declared the Major Emergency*). As a result the Major Emergency Plans of An Garda Síochána, the Health Service Executive and (*name*) City/County Council were activated and Garda, Fire and Ambulance units were dispatched to the scene of the incident.

Currently there are (*number of units*) present at the scene. (*Give specific numbers of how many units of each service are present*). Also in attendance are (*give names of primary officers from each service present*).

At this early stage all our energies are concentrated on bringing the situation under control. We are not yet in a position to comment on any possible casualties.

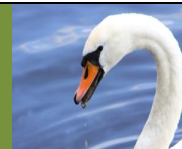
Major Emergency Plans are activated when an event takes place, usually with little or no warning, which causes or threatens death or injury, serious disruption of essential services or damage to property, the environment or infrastructure, beyond the normal capabilities of the principal emergency services in the area in which the event occurs.

When a Major Emergency is declared, the Garda Síochána, the Health Service Executive and the Local Authority are immediately notified and respond on the basis of Major Emergency Plans, which detail a co-ordinated response to such incidents, and outline areas of responsibility for each agency.

Concerned members of the public are asked not to attend the scene of the emergency. Access to the site is closed off. Large numbers of emergency vehicles are travelling to the scene and it is vital that the roads are kept clear.

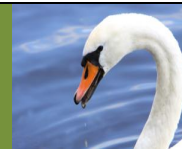
Additional Information to be provided as Necessary

1. Concerned members of the public who wish to make contact with the emergency services may contact the following number????
2. Residents and members of the public currently in the??? area are advised to stay indoors and close their windows and doors.
3. Residents and members of the public currently in the??? area, are asked to immediately leave the area for their own safety. A Reception Centre is being provided at???
4. Those living in the??? area is advised that there is no immediate danger to their health and safety, but, in the interests of ensuring a clear and swift access by emergency services to the site, they are asked to remain in their homes.

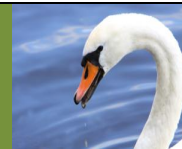
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2.3 ACTION SHEETS


SECTION	DESCRIPTION
2.3.1	Person Sighting the Spill
2.3.2	Pilot Station
2.3.3	(Duty) Harbour Master
2.3.4	Oil Spill Response Committee (headed by On Scene Commander)
2.3.5	Oil Spill On Scene Commander
2.3.6	On-Scene Commander
2.3.7	Oil Spill Observer
2.3.8	Offshore Clean-up Supervisor
2.3.9	Onshore Clean-up Supervisor
2.3.10	Representative of Spiller
2.3.11	G-HOST member not directly involved in the response

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2.3.1	Person Sighting the Spill	
Responsibilities	<ul style="list-style-type: none"> • Receive information / report of oil spill incident • Contain or reduce leak IF SAFE TO DO SO • Contact personnel in the vicinity to warn of potential hazard 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Harbour Authority <input type="checkbox"/> Local authority <input type="checkbox"/> Pilot Station	091-561874 091-536400 091-562329
Initial Actions	Provide the following information <input type="checkbox"/> Injuries to personnel <input type="checkbox"/> Location of pollution incident <input type="checkbox"/> Time of incident / sighting <input type="checkbox"/> Type of oil spilled <input type="checkbox"/> Description of spill <input type="checkbox"/> Extent of spill <input type="checkbox"/> Cause (if known) <input type="checkbox"/> Status of source <input type="checkbox"/> Potential hazards	

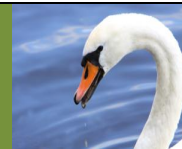
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2.3.2 Pilot Station		
Responsibilities	<ul style="list-style-type: none"> • Receive information / report of oil spill incident • Notify relevant external organisations • Maintain communication with all vessels in vicinity • Complete POLREP (2.1.3) and Fax to Harbour Master 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> (Duty) Harbour Master <input type="checkbox"/> Harbour vessel operators	087-6501803/087-6501824 VHF 12
Initial Actions	<input type="checkbox"/> Verify incident details <input type="checkbox"/> Fax POLREP to Harbour Master Do not delay FAX waiting for full information. FAX important information immediately. <input type="checkbox"/> Assign initial incident category <input type="checkbox"/> Notify external organisations according to oil spill classification <input type="checkbox"/> Initiate personal log <input type="checkbox"/> Issue general warning to all vessels in vicinity <input type="checkbox"/> Transfer information to SITREP boards <input type="checkbox"/> Monitor oil spill channel <input type="checkbox"/> Request update information	2.1.3 1.3.4 2.1.2 Use information board.
Further Actions	<input type="checkbox"/> Brief Duty Harbour Master <input type="checkbox"/> Maintain liaison with spilling company representative	
Final Actions	<input type="checkbox"/> Submit personal log to the Harbour Master <input type="checkbox"/> Attend debrief	

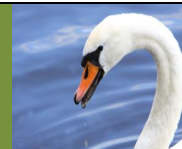
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2.3.3 (Duty) Harbour Master		
Responsibilities	<ul style="list-style-type: none"> • Overall control of the shipping in the estuary • Initial assessment of the situation • Verification of classification • Notifying IRCG (POLREP 2.1.3) • Provide accurate situation reports to On Scene Commander * & IRCG • Collect evidence and / or statements • Liaise with oil company or industry representative • Liaise with incident vessel regarding status of oil spill (if applicable) • After consultation with the Master and/or Owner's Agent decide what steps should be taken to safeguard the ship in question and the Port in general, and whether a full or partial emergency be declared • Contact On-Scene Commander (note : The (Duty) Harbour Master may be the nominated On-Scene Commander) <p>* The Harbour Master will normally have overall control of shipping in the estuary and co-ordinates oil spill response activities. In a major incident the roles may be split. In this event the Harbour Master would take overall control as per the Marine Emergency Plan and the Pollution Officer would act as the On Scene Commander. (see section 2.3.5)</p>	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> IRCG ,Fire Brigade, Garda, Health Board, Media, Other Harbour Masters	2.1.2
Initial Actions	<input type="checkbox"/> Visit vessel to establish incident details and current situation <input type="checkbox"/> Establish contact with emergency services <input type="checkbox"/> Advise fire fighting tugs to proceed to the scene of the emergency and take station under control of the Senior Fire Officer or take control personally depending on the nature of the incident <input type="checkbox"/> Fax POLREP (2.1.3) to IRCG Do not delay FAX waiting for full information. FAX important information immediately. <input type="checkbox"/> Send launches and rescue craft (with necessary equipment) as appropriate , controlled on VHF	

2.3.3	(Duty) Harbour Master (Continued)	
Initial actions cont.	<input type="checkbox"/> Advise Health Board of plan activation <input type="checkbox"/> Advise Oil Spill Coordinator (if applicable)	
Further Actions	<input type="checkbox"/> Disseminate situation reports and information updates using IRCG and the Media <input type="checkbox"/> Put Pilot Station on stand-by <input type="checkbox"/> Coordinate the movement of all working vessels engaged on the spill <input type="checkbox"/> Use correct channels for VHF/RT communication. <input type="checkbox"/> Liaise with Oil Spill Coordinator (if applicable)	2.1.4
Final Actions	<input type="checkbox"/> Conduct de-briefing <input type="checkbox"/> Publish Incident Report <input type="checkbox"/> Recommend changes to plan if appropriate	


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2.3.4 Oil Spill Response Command Centre		
Responsibilities	<ul style="list-style-type: none"> • Confirm / amend initial classification • Manage the Shannon Foynes Port Company response. • Authorise expenditure • Brief Management and Board • Liaise with Government / local authorities/ oil company / industry representatives • Approve press statements for release 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Management and Board and oil spill response resources <input type="checkbox"/> IRCG / LA / Dept. of Environment <input type="checkbox"/> Oil Spill Response Advisors and Advisory Bodies	2.1.2 3.1.6
Initial Actions	<input type="checkbox"/> Confirm/ amend spill classification <input type="checkbox"/> If on water work with Harbour Master as On-Scene Commander. In addition if onshore co-ordinate with Local Authorities. <input type="checkbox"/> In conjunction with Advisors and On-Scene Commander determine oil spill response strategy <input type="checkbox"/> Advise IRCG of action taken/ planned <input type="checkbox"/> In conjunction with Advisors and On-Scene Commander determine response team composition and resources required (including advisors) <input type="checkbox"/> Authorise expenditure <input type="checkbox"/> Authorise mobilisation of oil spill response resources	1.5 3.2
Further Actions	<input type="checkbox"/> In conjunction with Advisors constantly review the strategy being employed and advise of changes where necessary <input type="checkbox"/> Approve all expenditure commitments <input type="checkbox"/> Be represented at all press conferences. <input type="checkbox"/> Brief Management and Board	

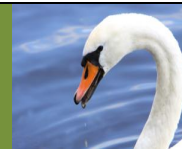
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2.3.4	Oil Spill Response Command Centre	
Final Actions	<input type="checkbox"/> Terminate the clean-up (subject to the agreement of all involved parties) <input type="checkbox"/> Collate personal logs. <input type="checkbox"/> Prepare the incident report. <input type="checkbox"/> Hold full debriefs involving all members. <input type="checkbox"/> Amend contingency plan(s) as required. <input type="checkbox"/> Prepare and forward final accounts to Polluter	

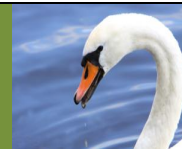
2.3.5 Oil Spill Coordinator (Galway Harbour H.M.)		
Responsibilities	<ul style="list-style-type: none"> • Head Oil Spill Response Command Centre • Keep On-Scene Commander fully briefed on all factors that can influence the management of the response operation • Liaise with Government and Local Authorities/ oil company / industry representatives as appropriate • Approve press statements for release • Participate in Shoreline Response Centre (SRC) with local authorities 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Oil Spill Response Committee	
Initial Actions	<input type="checkbox"/> Convene Oil Spill Response Committee <input type="checkbox"/> Prepare/authorise press statement in conjunction with Press/Media Advisor <input type="checkbox"/> Inform and brief IRCG, Department of Environment , local authorities and other bodies as appropriate <input type="checkbox"/> If required, and in consultation with local authorities and the On-Scene Commander, participate in the Shoreline Response Centre (SRC) , close to the shoreline clean-up sites	2.2.2 3.1
Further Actions	<input type="checkbox"/> Chair the Oil Spill Committee meetings <input type="checkbox"/> Constantly review the strategy being employed and advise of changes where necessary <input type="checkbox"/> Attend all press conferences as required <input type="checkbox"/> Liaise with On-Scene Commander <input type="checkbox"/> Liaise with Advisors and support services e.g. Watercraft and aircraft operators	1.5 3.1
Final Actions	<input type="checkbox"/> Terminate the clean-up (subject to the agreement of all involved parties) <input type="checkbox"/> Collate personal logs. <input type="checkbox"/> Prepare the incident report. <input type="checkbox"/> Hold full debriefs involving all members. <input type="checkbox"/> Initiate amendment of contingency plan(s) as required.	

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2.3.6 On Scene Commander		
Responsibilities	<ul style="list-style-type: none"> • Development of the response strategy with the Oil Spill Coordinator and Advisors • Responsible for the implementation, effectiveness and cost of the oil spill response operation • Has complete authority over clean-up personnel at on water clean-up sites (LA controls onshore operations) • Liaison with involved authorities and the Galway Harbour Oil Spill Team (G-HOST) • Is responsible for safety, medical care and security at the spill sites, on recommendations from Safety and Security Advisors • Participates in Shoreline Response Centre (SRC) 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Oil spill response resources	
Initial Actions	<input type="checkbox"/> With the Oil Spill Committee, Oil Spill Coordinator and Advisors, develops spill response strategy <input type="checkbox"/> Calls out team members, advisors and resources appropriate to the response required <input type="checkbox"/> Liaise with local authorities about anticipated shoreline impacts <input type="checkbox"/> In conjunction with advisors develops the overall containment, recovery and clean-up plan <input type="checkbox"/> If required, and in consultation with local authorities and the Oil Spill Coordinator, participate in Shoreline Response Centre (SRC), close to the shoreline clean-up sites <input type="checkbox"/> Establish a communication base to co-ordinate all radio traffic at the scene between watercraft, aircraft, shore radio and the command or control centre <input type="checkbox"/> If incident is in Shannon Estuary, designate responsible person to take control of waterborne response under his instructions <input type="checkbox"/> Provides information to the Oil Spill On Scene Commander for use in media releases.	<p>1.5</p> <p>1.5.3 -1.5.9</p> <p>2.2.2</p>

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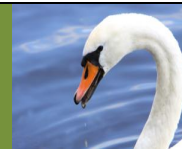
2.3.6	On Scene Commander (Continued)	
Further Actions	<input type="checkbox"/> Has continuous close contact with Oil Spill On Scene Commander and Advisors <input type="checkbox"/> Has continuous and close liaison with local authorities and advises of anticipated shoreline impacts <input type="checkbox"/> Has continuous close contact with supervisors, contract resources and logistic support services <input type="checkbox"/> Monitors spill clean-up activities and amends plans accordingly <input type="checkbox"/> Ensures that adequate records are kept and a personal diary is maintained	
Final Actions	<input type="checkbox"/> Collate personal logs. <input type="checkbox"/> Prepare the incident report. <input type="checkbox"/> Hold full debrief involving all members <input type="checkbox"/> Recommends changes to the plan if required	

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2.3.7 Oil Spill Observer		
Responsibilities		<ul style="list-style-type: none"> • Receive information / report of spill incident • Surveillance and tracking of the oil spill preferably from the air
Step	Actions	Additional Information
Initial Actions	<input type="checkbox"/> Obtain fullest information on the incident <input type="checkbox"/> Estimate probable position and movement of the slick <input type="checkbox"/> Request information from the oil spill prediction model <input type="checkbox"/> Brief pilot on objective of the flight <input type="checkbox"/> Locate the slick and carry out surveillance <input type="checkbox"/> Quantify and characterise floating oil <input type="checkbox"/> Complete surveillance report form	 3.5.1 3.5.2 3.5.3
Further Actions	<input type="checkbox"/> Log all events chronologically <input type="checkbox"/> Maintain liaison with Oil Spill Coordinator / On-Scene Commander	
Final Actions	<input type="checkbox"/> Collate personal logs and provide to Oil Spill Coordinator	

2.3.8 Offshore Clean-up Supervisor		
Responsibilities		<ul style="list-style-type: none"> • Receive information / report of incident • Control of individual clean-up operation (in liaison with vessel master)
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Contractors	
Initial Actions	<input type="checkbox"/> Obtain fullest information on the incident from On-Scene Commander <input type="checkbox"/> Arrange for the preparation of oil spill equipment and proceed to the location as directed by On-Scene Commander <input type="checkbox"/> Supervise local on water containment, recovery and clean-up operations <input type="checkbox"/> Advise On-Scene Commander of progress and request further assistance / backup if necessary <input type="checkbox"/> Liaise with Local Authority Shore Clean-up Supervisors and advise them of predicted shoreline impacts <input type="checkbox"/> Liaise with contractors on spill combating methods	
Further Actions	<input type="checkbox"/> Log all events chronologically <input type="checkbox"/> Maintain personal log	
Final Actions	<input type="checkbox"/> Arrange for return and cleaning/maintenance of oil spill equipment <input type="checkbox"/> Collate personal log and provide to On-Scene Commander	

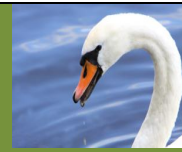
2.3.9 Onshore Clean-up Supervisor (Local Authority)		
Responsibilities	<ul style="list-style-type: none"> • Receive information / report of incident • Control and safety of individual onshore clean-up operations • Liaison with Local Authority • Liaison with On-Scene Commander and Offshore Clean-up Supervisor 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Contractors	
Initial Actions	<input type="checkbox"/> Obtain fullest information on the incident from On-Scene Commander <input type="checkbox"/> Arrange for the preparation of onshore clean-up equipment and supplies and proceed to the location as directed by On-Scene Commander <input type="checkbox"/> Hold safety briefings <input type="checkbox"/> Liaise with Offshore Clean-up Supervisors in respect of predicted shoreline impacts and nearshore recovery operations <input type="checkbox"/> Liaise with contractors on clean-up methods	
Further Actions	<input type="checkbox"/> Supervise shoreline clean-up operations <input type="checkbox"/> Advise On-Scene Commander of progress and request further assistance / backup if necessary <input type="checkbox"/> Log all events chronologically <input type="checkbox"/> Maintain contact with Local Authorities, On-Scene Commander, Offshore Supervisors and Contractors <input type="checkbox"/> Take samples of beach material as required <input type="checkbox"/> Maintain personal log	
Final Actions	<input type="checkbox"/> Agree work completion for cleaned areas with Local Authorities, On-Scene Commander IRCG & Department of Environment <input type="checkbox"/> Arrange for return and cleaning/maintenance of oil spill equipment <input type="checkbox"/> Collate personal log and provide to On-Scene Commander	

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2.3.10 Representative of Spiller		
Responsibilities	<ul style="list-style-type: none"> • Safety • Stopping the spill • Reporting • Liaison with Oil Spill Response Committee/Coordinator 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Company response team. <input type="checkbox"/> Tier 2 contractor	
Initial Actions	<input type="checkbox"/> Report spill to Duty Harbour Master and IRCG <input type="checkbox"/> Initiate Incident Log <input type="checkbox"/> Assess the situation <input type="checkbox"/> Complete a work plan to mitigate the effects <input type="checkbox"/> Provide On Scene Commander with press procedure and claims procedure <input type="checkbox"/> Co-operate with the On Scene Commander and Local Authorities	Include a safety assessment (2.4.2)
Further Actions	<input type="checkbox"/> Provide On Scene Commander with outstanding information required for the POLREP <input type="checkbox"/> Maintain liaison with the On Scene Commander <input type="checkbox"/> Source temporary storage <input type="checkbox"/> Activate waste disposal contractor(s) <input type="checkbox"/> Issue progress reports <input type="checkbox"/> Prepare for hand over if required <input type="checkbox"/> Record all resources used.	
Final Actions	<input type="checkbox"/> Submit incident log to the On Scene Commander <input type="checkbox"/> Return all hired equipment <input type="checkbox"/> Attend the debrief <input type="checkbox"/> Implement recommendations from the Oil Pollution Committee incident report. <input type="checkbox"/> Revise oil spill contingency plan <input type="checkbox"/> Pay bills	2.1.4

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2.3.11 G-HOST Member not actively Involved in the Response		
Responsibilities	<ul style="list-style-type: none"> • State of preparedness in the event that oil moves into its area of responsibility • If required providing resources to the G-HOST response team • Liaison with Oil Spill Response Committee/Coordinator • Involvement in post-incident reviews • Following post-incident review, if appropriate revise oil spill contingency plans 	
Step	Actions	Additional Information
Alert	<input type="checkbox"/> Alert oil spill response personnel within own organisation <input type="checkbox"/> Alert oil spill contractors	
Initial Actions	<input type="checkbox"/> Have ready oil spill documentation including own oil spill contingency plan, Galway Harbour Oil Spill Contingency Plan, contact lists etc. <input type="checkbox"/> Prepare oil spill equipment (if applicable) <input type="checkbox"/> Contact Coordinator and confirm state of preparedness	
Further Actions	<input type="checkbox"/> Maintain state of preparedness <input type="checkbox"/> Provide resources to the response team if required <input type="checkbox"/> Maintain liaison with Oil Spill Committee & Coordinator to follow the progress of the response	
Final Actions	<input type="checkbox"/> Attend the debrief <input type="checkbox"/> Implement recommendations from the incident report. <input type="checkbox"/> Revise oil spill contingency plan	

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2.4. HEALTH AND SAFETY ASSESSMENT

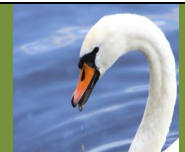
2.4.1 Introduction

Full account must be taken of the health and safety requirements for all personnel Involved in oil spill response activities. The Site Specific Health and Safety Assessment Form (Section 2.4.2.) lists site characteristics, site hazards and personal protective equipment and site facility needs. This assessment form is intended to act as an aide-mémoire to ensure that all applicable health and safety requirements are considered and appropriate actions are taken. All personnel must, before becoming involved in an incident, have completed appropriate training and exercises.

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2.4.2 Site Specific Health and Safety Assessment

Site Specific Health and Safety Assessment Form					
1. APPLIES TO SITE :					
2. DATE :		3. TIME :		4. INCIDENT :	
5. PRODUCT(S) :		(Attach MSDS)			
6. Site Characterisation					
6a. Area	<input type="checkbox"/> Open water	<input type="checkbox"/> Inshore water	<input type="checkbox"/> River	<input type="checkbox"/> Saltmarsh	<input type="checkbox"/> Mudflats
	<input type="checkbox"/> Shoreline	<input type="checkbox"/> Sand	<input type="checkbox"/> Shingle	<input type="checkbox"/> Docks	
6b. Use	<input type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	<input type="checkbox"/> Public	<input type="checkbox"/> Government	<input type="checkbox"/> Recreational
	<input type="checkbox"/> Residential	<input type="checkbox"/> Other			
7. Site Hazards					
<input type="checkbox"/>	Boat safety	<input type="checkbox"/>	Fire, explosion, in-situ burn	<input type="checkbox"/>	Slips, trips and falls
<input type="checkbox"/>	Chemical hazards	<input type="checkbox"/>	Heat stress	<input type="checkbox"/>	Steam and hot water
<input type="checkbox"/>	Cold stress	<input type="checkbox"/>	Helicopter operations	<input type="checkbox"/>	Tides
<input type="checkbox"/>	Drum handling	<input type="checkbox"/>	Lifting	<input type="checkbox"/>	Trenches, excavations
<input type="checkbox"/>	Equipment operations	<input type="checkbox"/>	Motor vehicles	<input type="checkbox"/>	Visibility
<input type="checkbox"/>	Electrical hazards	<input type="checkbox"/>	Noise	<input type="checkbox"/>	Weather
<input type="checkbox"/>	Fatigue	<input type="checkbox"/>	Overhead/buried utilities	<input type="checkbox"/>	Work near water
<input type="checkbox"/>	Others	<input type="checkbox"/>	Pumps and hoses		
8. Air Monitoring (Oil company incident)					
<input type="checkbox"/>	LEL	<input type="checkbox"/>	H ₂ S	<input type="checkbox"/>	Benzene
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	Other
9. Personal Protective Equipment					
<input type="checkbox"/>	Foot Protection		<input type="checkbox"/>	Coveralls	
<input type="checkbox"/>	Head Protection		<input type="checkbox"/>	Impervious suits	
<input type="checkbox"/>	Eye Protection		<input type="checkbox"/>	Personal Floatation	
<input type="checkbox"/>	Ear Protection		<input type="checkbox"/>	Respirators	
<input type="checkbox"/>	Hand Protection		<input type="checkbox"/>	Other	
10. Site Facilities					
<input type="checkbox"/>	Sanitation	<input type="checkbox"/>	First Aid	<input type="checkbox"/>	Decontamination
11. Contact details :					
<input type="checkbox"/>	Doctor	Phone			
<input type="checkbox"/>	Hospital	Phone			
<input type="checkbox"/>	Fire	Phone			
<input type="checkbox"/>	Police	Phone			
<input type="checkbox"/>	Other	Phone			
12. Date Plan Completed					
13. Plan Completed by					

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2.5 WASTE DISPOSAL

2.5.1 General

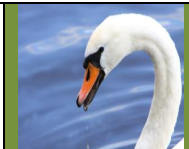
Wherever possible, spilled oil should be recovered for recycling and re-use. However any shoreline clean-up operation is likely to result in amounts of oily waste far in excess of the original oil on the shoreline.

Disposal sites for solid waste are very limited in Ireland and any disposal method will have to be agreed with the local authority and the Department of Environment. **Pipe & Drain Services Ltd.** is the Galway Harbour Company's preferred disposal company. If a disposal route is not immediately available it will be necessary to provide temporary storage from which there is no seepage. Note that Waste Transfer Forms must accompany all waste materials for disposal.

The following types of waste can arise:

- recovered crude oil (not heavily contaminated)
- water in oil emulsion - untreated
- water in oil emulsion - treated with dispersant
- thick weathered oil - lumps
- semi-solid bunker oil
- oil and sand mixtures
- dry waste
- oiled shingle
- heavily oiled seaweed and other debris

Any oil recovered will be transferred to an approved waste oil disposal / recycling contractor. Two potential outlets are the Pipe & Drain Services Ltd and ENVA Environmental Ltd.

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2.5.2 Temporary Storage

Clean-up activities may produce quantities of oil and oily debris at a faster rate than they can be properly disposed of. Therefore temporary storage will be necessary. Following is a summary of the methods that can be used:

Liquids	
Storage Facility	Comments
Flexible open topped tank	Suitable for initial storage - not movable when full. Primary use with low capacity skimmers up to 10 t/hr
Flexible pillow tank - no support	Suitable for initial storage. Danger of being unable to remove heavy mousse from tank. Suitable for initial storage
Flexible pillow tank - with support on pallets	Suitable for initial storage. Can be moved by suitable lifting equipment. Danger of being unable to remove heavy mousse from tank. Suitable for initial storage
Dracones	Suitable for initial storage at sea. Danger of being unable to remove heavy mousse from dracone. Suitable for skimming operations up to 50 t/hr depending on dracone capacity,
Barges	Suitable for initial storage. Stable working platform. Suitable for low and high capacity skimming operations
Mobile Road Tanks	Ideal for routing to final disposal site Well suited for operations close to shore especially when quays are available. Are used to recover oil from primary storage vessels, dracones, barges, pillow tanks etc.
Oil Tankers	Suitable for very large spills - normally best used to collect oil already in barges etc. If high capacity recovery systems (up to 500 t/hr) are used, small coastal tankers will be needed as primary storage
Ships Tanks	It is rare for masters to permit the use of spare tankage for reception of recovered. However, in a number of areas where boats have been previously identified as recovery vessels, some tankage is set aside for handling recovered oil.
Movable open top tanks	Suitable as first storage in separating heavily oiled solids from bulk of oil by use of coarse mesh sieves
Pits	Must be lined with sand to protect essential heavy duty plastic liner. Should be close to major clean-up sites.
Bunds	Cheaper than pits. Liners required

Liquid/Solid Mixtures	
Storage Facility	Comments
Pits	As above
Bunds	As above
Skips	Versatile, robust and cheap. Can be transported on supply boats/landing craft to remote sites. If possible line with plastic.
Open Top Oil Drums	Difficult to handle when full
Plastic Containers	Quick deployment. Useful for inaccessible areas
Heavy Duty Plastic Bags	Ideally suited when clearing beaches by hand. Can be moved above the high water line. Lead to problems at the disposal site.
Hard standing	Preferably sloping site with drainage
Lorries	Restricted to solid debris with low oil content. Good access required.

2.5.3 Disposal Methods

- **Recovery to Oil Processing Installations**

Reprocessing is the preferred option. In general only pure oil and possibly oil/water mixtures will be acceptable.

- **Landfill**

This is the principle disposal method but can only be used where there is little or no ground water abstraction. Future regulations are likely to be more restrictive.

- **Stabilisation**


This is an expensive method but is likely to be used increasingly as landfill becomes further restricted. Development work is in progress using silage mounds.

- **Land Farming**

This can only make a limited contribution to oil spill disposal and is becoming less acceptable. However it may be suitable for small quantities of oily waste such as contaminated seaweed.

- **Combustion**

Uncontrolled combustion is unsatisfactory because of air pollution. Commercial waste incinerators can dispose of limited quantities of oily waste.

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2.6 Response to HNS incident

2.6.1 Chemicals handled at all facilities in Galway Harbour

There are no chemicals currently handled at Galway Harbour either in dry bulk or liquid bulk. However, that is not to say that new trade may result in the movement of such goods. On that basis, the below procedures and risk assessments are to be followed.

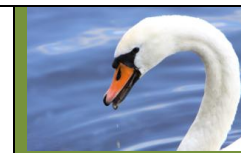
Caustic Soda and Sulphuric Acid are the most common chemical transported through ports. Both would come under the heading of chemicals that dissolve when treated in the water.

2.6.2 Action in the event of a HNS incident, other than an oil pollution incident.

Below is a table of incidents and response to that incident. In the main any incident would be notified to the Emergency services, Irish Coast Guard in the event of a marine incident, Fire Brigade, Garda and HSE.

In the event of a major incident beyond the normal capability of the above services then the On Scene Commander will contact the BRAEMER HOWELLS International 24 hr number at **00 44 1646 697041** and ask for assistance.

G-HOST have agreed to use the services of ENVA Environmental in the event of a HNS incident to remove all waste during and on completion of the incident. The On Scene Commander will contact ENVA's 24hr number **057 8678600** to initiate the callout. ENVA also have a HNS Response Trailer with all the necessary equipment.



2.6.3 HNS INCIDENT AND RESPONSE – Mock Scenarios as there are NO Chemicals handled at Galway Harbour

EVENT	RISK	Strategy in Place	History	RESPONSE
Ship/Shore line fractures when discharging Caustic Soda at North Dun Aengus Quay	<ol style="list-style-type: none"> 1. Dealing with escaped liquid. 2. Dealing with vapour cloud. 3. Controlling evacuation. 4. Dealing with deaths / injuries 5. Damage to environment. 6. Fire or explosion. 	Galway Harbour Marine Emergency Plan. Galway Harbour Oil Pollution/HNS Response Plan National Response Plan / Irish Coast Guard. Galway City Council Major Emergency Plan.		Stop all operations and close system. Evacuate all personnel awaiting the arrival of help. Contact Supervisor / Manager to report incident. Contact Duty Harbour Master at 087 6501803 / 091 561874, who will co-ordinate response as outlined in 2.6.9.
Escape of Sulphuric Acid at North Dun Aengus Quay.	<ol style="list-style-type: none"> 1. Dealing with escaped liquid. 2. Dealing with reaction of liquid with water and vapour cloud. 3. Damage to environment. 4. Fire or explosion. 5. Evacuation of jetty, and/or storage site at Chemifloc. 6. Deaths/Injuries. 	Emergency Plan. Galway Harbour Marine Emergency Plan. Galway Harbour Oil Pollution/HNS Response Plan National Response Plan / Irish Coast Guard. Galway City Council Major Emergency Plan.		Stop all pumping operations and shut down valves. Contact Supervisor / Manager to report incident. Contact Fire Brigade / Emergency Services/ HSE and Irish Coast Guard Airport as required Contact Duty Harbour Master at 087 6501803 / 091 561874, who will co-ordinate response as outlined in 2.6.9. Deploy available response equipment if possible and necessary If fire / explosion involved deal under relevant event.
To be continued				

2.6.4 What are Hazardous and Noxious Substances (HNS)?

A Hazardous and Noxious Substance is a term used to describe a substance other than oil which, if introduced into the marine environment is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

Whether a substance is classed as hazardous or noxious is largely determined by its inclusion in one or more lists found in a number of IMO Conventions and Codes (see Table 1) designed to ensure maritime safety and prevention of pollution. If the chemical transported has one or more of the following properties, it is likely to be considered as a 'hazardous and noxious substance'. (Radioactive and infectious substances are outside the scope of the HNS regime.)

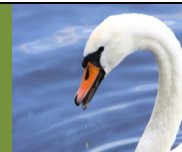
- Flammable
- Explosive
- Toxic
- Corrosive
- Reactive

2.6.5 Human Health Aspects

Manufacturers of Hazardous and Noxious Substances typically provide Material Safety Data Sheets (MSDS) which summarise the specific hazards associated with each substance. Over time these will be replaced by Safety Data Sheets (SDS) under the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*. GHS classifies chemicals by the types of hazard they represent and proposes harmonized hazard communication by consistent labelling and safety data sheets. It aims at ensuring that information on physical hazards and toxicity from chemicals is available to enhance the protection of human health and the environment during the handling, transport and use of these chemicals.

MSDS and SDS both follow the same format and provide the following information:

1. Identification	9. Physical & chemical properties
2. Hazard(s) identification	10. Stability & reactivity
3. Composition/ingredients	11. Toxicological information
4. First-aid measures	12. Ecological information
5. Fire-fighting measures	13. Disposal considerations
6. Accidental release measures	14. Transport information
7. Handling & storage	15. Regulatory information
8. Exposure controls/personal protection	16. Other information

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2.6.6 Effects on Marine Resources

The effects of a chemical lost into the marine environment depend on a number of factors such as the toxicity of the material, the quantities involved and resulting concentrations in the water column, the length of time biota are exposed to that concentration and the sensitivity of the organisms to the particular chemical. Dilution is brought about by water movement due to tidal flow, ocean currents and turbulent diffusion but even if the concentration is below what would be considered lethal, sub-lethal concentrations can still lead to longer term impacts. Chemically-induced stress can reduce the overall ability of the organism to reproduce, grow, feed or otherwise function normally. The characteristics of some chemicals, particularly metals and some organic compounds can result in the bio-accumulation of these materials. Sessile marine organisms that filter seawater for food, such as shellfish, are particularly vulnerable to this phenomenon. Bio-magnification may follow if the materials pass up the food chain. The properties of the chemicals have been evaluated in relation to a number of predefined effects should any of the listed chemicals be spilt at sea:

- Bioaccumulation
- Biodegradation
- Acute and chronic toxicity on marine organisms
- Long term health effects on humans
- Effects on marine wildlife, and on benthic habitats
- Effect on other marine resources

This easily accessible and simple guide provides an important first step in evaluating the severity of a spill.

2.6.7 MARPOL

The MARPOL Convention is the main international convention covering prevention of pollution from the shipping industry. Within MARPOL are two annexes that are directly relevant to HNS:

Annex II

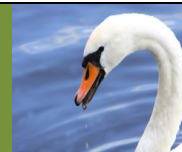
MARPOL Annex II contains regulations for bulk liquid cargos that may cause environmental pollution if lost at sea. Within the annex are four categories that are graded depending on the hazard the bulk liquid presents to marine resources, human health and amenities.


Category X – liquid substances which are deemed to present a major hazard to either marine resources or human health, and therefore justify the prohibition of the discharge into the marine environment.

Category Y – liquid substances which are deemed to present a *hazard* to either marine resources or human health or cause harm to amenities or other uses of the sea and therefore justify a limitation on the quality and quantity of the discharge into the marine environment.

Category Z – liquid substances which are deemed to present a *minor hazard* to either marine resources or human health and therefore justify less stringent restrictions on the quality and quantity of the discharge into the marine environment.

Category OS – these “other substances” are deemed to fall outside of categories X, Y, and Z and are deemed to present *no harm* to marine resources, human health, amenities or other uses of the marine environment.

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<p>Annex III</p> <p>Annex III deals with the provisions for the prevention of pollution by harmful substances carried by seas in packaged form. As part of these regulations, any compounds that are environmentally harmful (known as marine pollutants) must be clearly marked and labelled as a 'marine pollutant' (see Figure 1) to distinguish them from less harmful cargos.</p>	 <p><i>Figure 1: the "Marine Pollutant" symbol</i></p>
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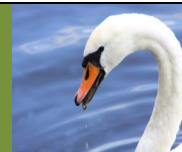
2.6.8 Fate of Chemicals in the Marine Environment

Physical Behaviour

When chemicals are spilt, they behave in a number of different ways. It is important to understand this behaviour, not only so that human health and safety implications are recognised but also to decide on the most effective response.

In simple terms, a substance behaves in one or more of five ways when spilt:

Dissolve
Evaporate
Float
Gas
Sink

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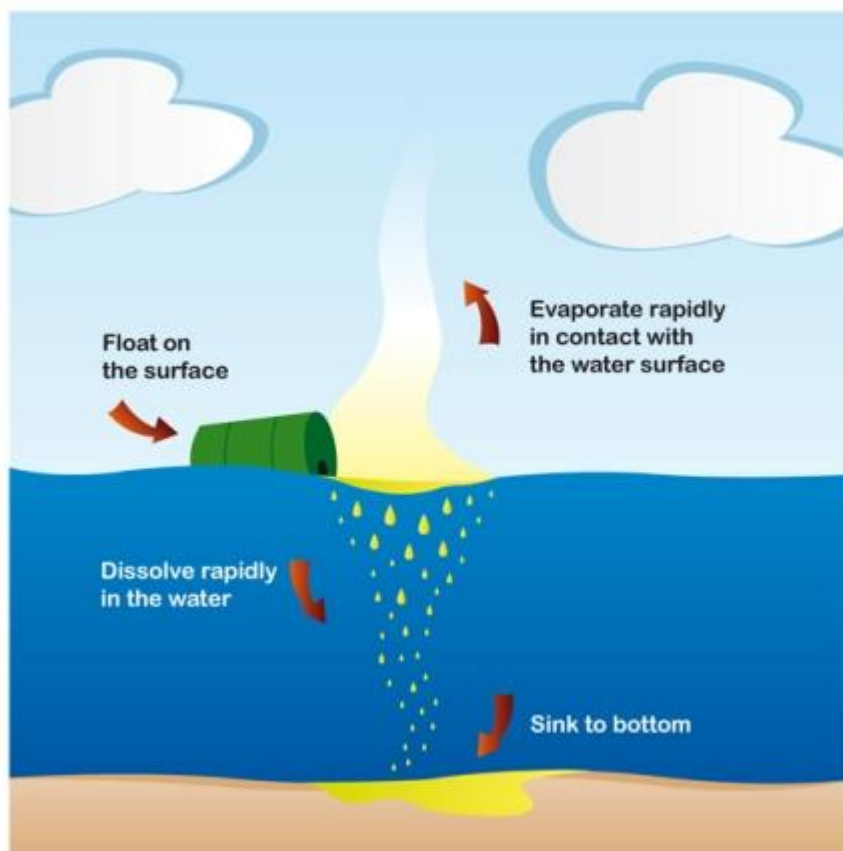


Figure 2: Processes that can act on a chemical spilt into the marine environment

Classifying the substances depending on the properties they exhibit when released into the marine environment is a useful response tool. The ‘fate’ of a substance is determined by the properties of volatility, solubility and density and in turn, the nature of the hazard presented by the substance (toxicity, flammability, reactivity, explosive, corrosive, etc). It also defines the most appropriate technique in dealing with it, e.g. it may be possible to contain and recover a chemical classed as a “floater” using a boom.

The classification system covers gases, liquids and solids. HNS showing similar behaviour in water can be grouped together and classified into the following 12 groups on the basis of the five behavioural characteristics – See Table 3. However, it is important to be aware that this system only classifies chemicals according to their major property/properties relevant to spill response and a chemical may also exhibit other properties e.g. Benzene is classed according to its major property (evaporator) but it is also soluble to a certain extent and so this too may need to be considered.

Table 3: the European Classification System for chemicals

Property Group		Properties
G	gas	evaporate immediately
GD	gas/dissolver	evaporate immediately
E	evaporator	float, evaporate rapidly
ED	evaporator/dissolver	evaporate rapidly, dissolve
FE	floaters/evaporator	float, evaporate
FED	floaters/evaporator/dissolver	float, evaporate, dissolve
F	floaters	float
FD	floaters/dissolver	float, dissolve
DE	dissolver/evaporator	dissolve rapidly, evaporate
D	dissolver	dissolve rapidly
SD	sinker/dissolver	sink, dissolve
S	sinker	sink

2.6.9 Chemical Response Strategies


Once the main physical and chemical properties, and hence the behaviour of a spilt substance are known and the likely impacts to human health and marine resources have been taken into account, a suitable response can be considered. A brief summary of potential response techniques for the different groups of chemicals is given below. However, the response strategy eventually implemented will also be largely dependant on the specific circumstances of the incident.

Gas & Evaporators-

the release of a gas or chemical substance evaporating under the weather conditions prevailing at the time have the potential to generate large vapour clouds that might be toxic or form an explosive mixture with air. As a result, there may be potential health and safety implications for the vessel crew, responders and population nearby.

In order to plan a response, it is important to know how the gas or vapour will behave and the likely trajectory of the hazardous cloud. Relevant computer modelling of the spreading of airborne contaminants is likely to help to forecast the movement and fate of the plume as it disperses. Appropriate safety zones can then be put into place as necessary and the public advised as appropriate.

Issuing advice to the public to remain indoors for a short period may be given by the authorities. If the chemical is of a flammable nature, then all ignition sources must be eliminated. Techniques such as trying to “knock down” a water-soluble vapour cloud or trying to stop or deflect it using water sprays are other measures that may be available to responders. In such incidents occurring near populations, the fire brigade are likely to have the commanding role in the response.

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In any case, responders must wear the appropriate Personal Protective Equipment (PPE) and response / monitoring crafts must be adequately designed should they need to enter the hazardous atmosphere.

Chemicals that dissolve –

A dissolving chemical will form a growing 'plume' of decreasing concentration in the water and eventually dilute. It is important to monitor the concentrations in the water to track the movement of the chemical and therefore to predict any hazard that may arise to the environment, fisheries, fresh water intakes, recreational areas, etc. Again, relevant computer models can give useful indications on the likely fate of the substance.

The ability to contain and recover dissolved chemicals is extremely limited. Providing means to accelerate the natural processes of dispersion and dilution may be the only way to respond to such chemicals. Some dissolved chemical plumes may, in theory, be neutralised, oxidised, flocculated or reduced by the application of other chemicals. However, careful assessment of feasibility and expected efficiency in an open environment as well as approval of the relevant authorities is usually required before this response method is employed.

Chemicals that float –

Chemicals that float will spread under the effect of gravity to form a slick in a similar way to oil. However, unlike oil they may not be visible on the water. Nevertheless, in some cases remote sensing techniques may be employed to detect and monitor floating materials. Floating chemicals can be low or high viscosity liquids, or may even be solid. If the spilt chemical has a high vapour pressure it may evaporate quickly and form a gas cloud above the slick. In such cases air quality monitoring is usually undertaken to assess fire, explosion and toxicity risks.

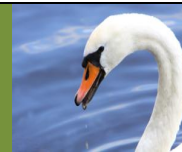
It may be possible to consider deploying booms to contain and control the movement of substances over the water surface. Skimmers and other oil spill response equipment may also be used to recover the material from the surface of the water. However, it is important to make sure, prior to use, that the spilt chemical will not react with the equipment by taking into account the chemical's reactivity. Alternatively, emergency responders may have fire-fighting or suppressant foams that can be applied to reduce the evaporation and the risk of fire/explosions.

Again, responders must wear the appropriate Personal Protective Equipment and response / monitoring crafts must be adequately designed should they need to enter a hazardous atmosphere.

Chemicals that sink –

Chemicals that sink have the potential to contaminate the seabed, and sometimes to persist in the sediment. The response to sunken chemicals may, therefore, need to consider the recovery of the chemical and any heavily contaminated sediment. Careful attention will also need to be paid to the removal and disposal of these contaminated sediments.

In shallow waters, mechanical dredgers and pump/vacuum devices may be used to recover sunken substances. The use of submersibles and remotely controlled underwater cameras may identify and recover chemicals on the seabed.

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2.6.10 Introduction to GHS:-

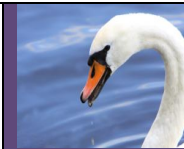
Bioaccumulation refers to the build up of a substance within a living organism, or certain tissues of a living organism, due to the rate of uptake of that substance being greater than the rate of elimination by metabolic transfer or excretion. The term tends to be associated with certain lipid-soluble organic chemicals that are not readily metabolised by living organisms such as pesticides (e.g. DDT) and organometallic compounds such as methylmercury and tetra-ethyl lead (TEL).

Biomagnification refers to the sequential build up of a bioaccumulative substance up the food chain through predation. Typically the highest concentrations of the substance are found within the tissues of the top predators within the food chain.

NB: Bioaccumulation occurs *within* a trophic (food chain) level. Biomagnification occurs *across* trophic (food chain) levels.

3.1 CHECKLISTS AND PROCEDURES

Section	Item
3.1.1	Oil Spill Response Management Checklist
3.1.2	Command Centre Checklist
3.1.3	Arrangements when Setting Up a Spill Control Base
3.1.4	Principal Equipment Needed for Coastal Spill Control
3.1.5	What to Order for Coastal Clean-up Operations
3.1.6	Establishing a Spill Control Team
3.1.7	Assessment of Oil on Shorelines

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3.1.1 Oil Spill Response Management Checklist

General

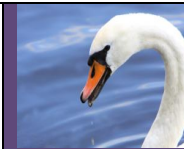
Carry out initial actions and notifications.
 Activate Response Team.
 Set-up Command Centre.
 Briefings - Ensure regular briefings to update relevant people, including Public Relations staff.
 Event log - keep a strict log of events, communications, personnel, equipment ordered.
 Liaise - get advice from relevant experts - environmental and technical.
 Prioritise areas for clean-up.
 Access - liaise with land owners for necessary clearances and keys.
 Locate and acquire necessary clean-up equipment and personnel.
 Storage and disposal of oil waste.
 Oiled birds clean-up.
 Keep head office informed of events.
 Media and public - press statements and conferences, guidelines to personnel.

Personnel Logistics

Safety	- all personnel must be fully briefed in safety matters and have necessary training and certification. - Safety and First Aid equipment. - Clothing - warm, dry, fully protective. - Hygiene facilities - toilets and cleaning areas.
Transportation	- method. - visas and immigration procedures.
Equipment	- On-site training (e.g. VHF radios, all-terrain vehicles).
Accommodation	- shelter from cold / heat / rain / snow. - overnight sleeping accommodation.
Food and drink	- maintain constant supply.

Equipment Logistics

Transportation	- Road - lorries with tail lifts, rough terrain vehicles. - Sea - refer to annexes - Air - large aperture doors. - Customs and Documentation.
Equipment Storage	- security.
Equipment	- workshop facilities.
Maintenance	- cleaning areas. - spare parts must accompany equipment.

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3.1.2 Command Centre Checklist

1. FORMS OF COMMUNICATION

Telephone Network (maintain some private lines for outgoing calls).
 Cellular (Mobile)
 VHF Base Station.
 Hand Sets.
 Spare Batteries.
 Battery Charger.
 Headsets.

Fax (at least two for outgoing and incoming faxes).
 Computer with internet broadband facilities.

Notes: Ensure suitable power sources. Preferably the Command Centre should be positioned near spill site and on elevated ground for good VHF communication.

2. INFORMATION

Oil Spill Computer from IRCG
 Response Log.
 Charts/Maps - Marine, Road, Sensitivity, etc.
 Call Signs.
 Situation Report Boards.
 Tide Tables.
 Contingency Plans.
 Contact Directories.

3. FACILITIES

Lots of space, desks and chairs.
 Kitchen.
 Toilets.
 Reception room for media.
 Meeting room(s).
 Security.

4. SUPPORT EQUIPMENT

Photocopier/ printer.
 Computer and software (equipment databases, word-processing, accounting, oil spill trajectory model).
 Overhead projector.
 Stationery, whiteboard.
 First Aid box

3.1.3 Arrangements when setting up a Spill Control base in Harbour Office

To be arranged by local contact/representative before team arrives:

- ☐ Hotel and catering facilities
- ☐ Office space with computers etc. and access to telex machine and telephones (2 lines minimum)
- ☐ Secretarial assistance
- ☐ Interpreters (if necessary)
- ☐ Supply of fuel for vehicles, helicopters and other aircraft
- ☐ Supply of chemicals

To be hired when team arrives:

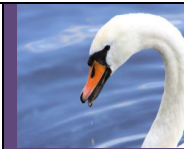
- ☐ Vehicles
- ☐ Helicopter
- ☐ Fixed wing aircraft if necessary
- ☐ Boats

Functions to be established as soon as possible:

- ☐ Government/local authority liaison
- ☐ Public relations
- ☐ Ecology advice
- ☐ Manpower recruiting
- ☐ Log Keeping

Control Bases can be set up in the following sites:

#	Control Base	Address	☎
1	Galway	Galway Harbour Company, New Docks, Galway.	091 561874

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3.1.4 Principal Equipment Needed for Coastal Spill Control

For ship lightening operations:

- ☐ Pumps
- ☐ Tankers and coastal barges
- ☐ Fenders
- ☐ Buoys
- ☐ Hoses
- ☐ Inert gas generators
- ☐ Heating equipment (if necessary)

For pumping oil ashore:

- ☐ Pumps
- ☐ Boats
- ☐ Fenders
- ☐ Hoses with flotation aids
- ☐ Heating equipment (if necessary)
- ☐ Shore reception facilities
- ☐ Radio transmitter/receivers

For containment:

- ☐ Booms
- ☐ Tugs
- ☐ Oil Spill Response vessels.

For the application of treatment chemicals:

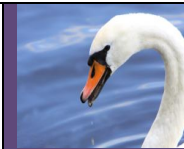
- ☐ Containers
- ☐ Spraying equipment
- ☐ Boats and/or aircraft
- ☐ Transfer pumps

For skimming operations:

- ☐ Seagoing and shoreline skimmers
- ☐ Boats
- ☐ Storage barges

For the supply of fuels:

- ☐ Tank trucks
- ☐ Intermediate storage tanks
- ☐ Pumps
- ☐ Filters (mandatory for all aircraft refuelling including helicopters).

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3.1.4 Principal Equipment Needed for Coastal Spill Control continued

For spill surveillance:

- ☐ A device to measure and record wind speed and direction (Anemometer)
- ☐ Explosimeters
- ☐ Sampling containers (glass, stainless steel, or Teflon)
- ☐ cameras
- ☐ Video and film equipment if available or camera with video capability.

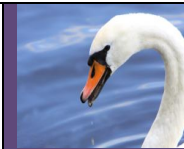
3.1.5 What to Order for Coastal Clean-up Operations

General provisions:

- ☐ Protective clothing for everybody (including boots and gloves) spare clothing
- ☐ Cleaning material, rags, soap, detergents, brushes
- ☐ Equipment to clean clothes, machinery, etc. with jets of hot water
- ☐ Plastic bags (heavy duty) for collecting oily debris
- ☐ Heavy duty plastic sheets and underfelt for storage areas especially for the lining of temporary storage pits
- ☐ Spades, shovels, scrapers, buckets, rakes
- ☐ Ropes and lines
- ☐ Anchors, buoys
- ☐ Lamps and portable generators
- ☐ Whistles
- ☐ First aid material

Special equipment which may be needed:

- ☐ Workboats
- ☐ Trucks/cars (four-wheel drive)
- ☐ Radio transmitter/receivers
- ☐ Workshop/repair facilities
- ☐ Bulldozers, mechanical scrapers and similar earthmoving equipment
- ☐ Vacuum trucks
- ☐ Tank trailers
- ☐ Life vests
- ☐ Explosimeters

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3.1.6 Establishing a Spill Control Team

After notification of an oil spill in a given location a decision to establish a spill response team must be reached. This decision should be based on the best possible information about the spill and, in some cases, it may be necessary to send an observer to the spill scene before the final size and composition of the response team can be determined. In the event of this not being possible but in any event to provide accurate information on an oil spill in Galway Harbour, the IRCG Oil Spill Tracking Software can give accurate information of how the oil is going to react and where the oil is going to impact the shore, giving details of where and how much. At this point the team may still be a “**paper team**” with the selected members ready to go into action as the situation at the spill site develops.

The size of the team will, to a limited degree, be determined by the actual or potential size of the spill and its impact on the affected coastline. However, certain key functions in the team have to be filled even if the spill is small and its impact limited.

The composition of the team will depend on a variety of factors such as the availability of experts at the site of the spill and its impact on the affected coastline. However, certain key functions in the team have to be filled even if the spill is small and its impact limited.

The organisation chart gives a rough indication of some of the necessary functions and channels of communication.

In order not to lose time in the confusing first hours of a major spill and to obtain a smoother operation, it is crucial that such an organisation is set up in advance, being part of a wider spill response plan. Such a plan should take into account all relevant local laws and regulations. A company or industry spill control team should only be established for a given spill incident and sent to the spill scene if there is a clear arrangement with, or request by, the local authorities for such a team.

The spill control team on-site will only work effectively if it is supplemented and supported by a strong back-up team at the head office. This back-up team will duplicate some of the functions of the on-site team such as public relations and ecological advising, but will mainly act as a communication centre, shipping agent, paymaster and in other similar functions. Appropriate manning of the emergency spill committee should ensure that assistance can be rendered whenever requested by the on-site team.

If all technical control and clean-up functions are firmly and adequately dealt with by local experts, there is of course no need for an outside spill response team. In that case the company most affected by the spill incident may still decide to establish certain specific services at the spill site including functions related to government liaison, public relations, legal advising, compensation claims, insurance, disposal of collected oil and debris, etc.

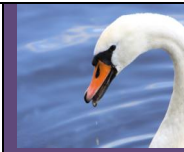
3.1.7 Assessment of Oil on Shoreline

Surveyor(s) Checklist

Site Name and Number	
Site Locality (District, County, etc.	
Date and Time of survey	
Map/Chart - mark location and extent of site at suitable intervals.	
Human Uses of site that could be disrupted by spill, may require some local research	
Dominant substratum – Identify whether sand, pebbles, boulders, rock, cliffs, marsh, mud, concrete, etc.	
Sub-dominant substrata - Identify secondary substrata.	
Size of shore (length and width at low tide)	
Oil on shore - consider:-	
<ul style="list-style-type: none"> • Characteristics of oil/oily material - tar balls, viscous oil, liquid oil, oiled weed, oiled sand. 	
<ul style="list-style-type: none"> • Extent of oiling - upper shore/lower shore, heavy, moderate, patchy, light staining. 	
<ul style="list-style-type: none"> • Extent of oiling - upper shore/lower shore, heavy, moderate, patchy, light staining. 	
<ul style="list-style-type: none"> • Sketch maps/profile of shore showing extent of oiling. 	
<ul style="list-style-type: none"> • Assess volumes of oily materials. 	

Surveyor(s) Checklist continued

Shoreline accessibility – consider:-	
• Ease of access by – personnel vehicles and equipment.	
• Access difficulties – determine distance to good roads/parking area, rough tracks, locked gates and who has keys? Private ownership of access roads, high/low cliff.	
• Mark access points on map and sketches	
Accessibility from sea – consider:-	
• Maximum draft of boat	
• Potential sea conditions	
Potential mobility on shore - consider:-	
• Mobility by heavy vehicles, light vehicles, all-terrain vehicles, men with light equipment	
• Load bearing capacity of substratum (upper shore/lower shore), roughness of terrain	
• Slope of shore (upper shore/lower shore) (cliff, very steep, steep, gradual, flat).	
Temporary storage and removal of oily waste - consider:-	
• Suitability for pre-fabricated tanks, skips, lined pits, piles of oily material/bin bags.	
• Suitability for pre-fabricated tanks, skips, lined pits, piles of oily material/bin bags.	
• Requirement for transfer pumps.	

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3.2 DISPERSANTS

Oil Spill chemical dispersant may not be used without the authorisation of the Irish Coast Guard unless it is deemed that the immediate situation requires its use to prevent or reduce substantial hazards to human life or limb and to reduce substantially explosion or fire hazard to property. Where any dispersant is used the Irish Coast Guard are to be informed immediately.

The decision to use dispersants will be on a case by case basis. The use of dispersants in shallow waters, bays, harbours, and inlets may not be authorised except in exceptional circumstances.

Dispersant spraying must be authorised by the Irish Coast Guard.

Irish coast Guard must consult with nominated State Bodies before authorising dispersant use in the following areas:

- Water depths less than 30m
- Inside the straight base lines and the mainland that is within one nautical mile of charted banks.

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3.3 SURVEILLANCE AND TRACKING

3.3.1 Spill Surveillance

During the time an operational base is being established with equipment and personnel arriving to commence the spill clean-up operations, a detailed assessment of the spill conditions (i.e. the movement of the oil, the size and formation of the area affected, etc.) becomes the main objective. For this purpose helicopters are better suited than fixed wing aircraft.

Under normal circumstances helicopters should be employed for the surveillance of coastal spills. The inherent manoeuvrability of such aircraft makes repeated observation of critical areas easy, and even prolonged observation from a helicopter stationary above a certain spot may be possible. In addition, helicopters may land on beaches to pick up personnel and equipment from sites inaccessible to fixed wing aircraft.

Surveillance from boats and ships has proved notoriously difficult and slow, due to the limited visibility and range of ships. However, observations from ships can provide useful information on the location of an oil slick. The use of driftbuoys or driftcards may be helpful under certain circumstances. Also computer models for the prediction of the movement of oil slicks can be used.

After the spill control team is in full operation, and especially during beach clean-up operations, aerial surveillance of the spill should be attempted as soon as possible after dawn in order to gain as clear a picture as possible on how the overall situation has developed during the night. Surveillance flights should then be repeated as often as necessary, particularly if the conditions of the source of the spill and the weather change. A final surveillance flight should be made shortly before dusk. The information gained should be brought to the knowledge of the work teams and their deployment reconsidered in light of the changed circumstances. Use of video or film cameras and equipment for surveillance is recommended.

In order to retain the services of helicopters it may be necessary to enter into a more or less formal agreement with an aviation company. The agreement should be extended to the operation of fixed wing aircraft if the requirements warrant it, especially if extensive and repeated aerial spraying of dispersants is necessary.

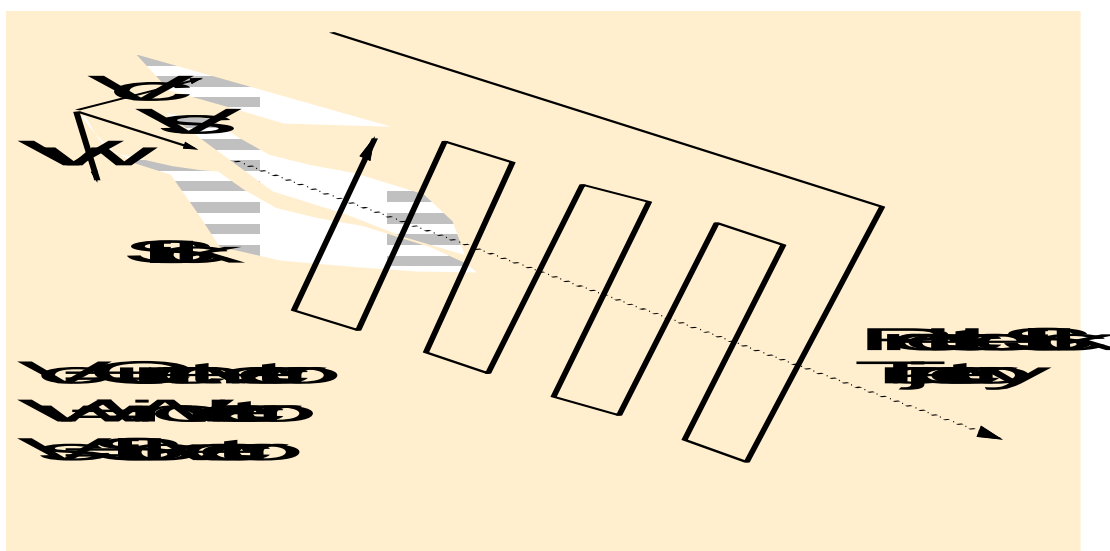
An aerial surveillance observer log should be kept of all over flights. A specimen form is provided in Section 3.5.3. This form should be read in conjunction with the section on Quantification (3.5.2).

A member of the Port Services staff will go with the surveillance helicopter to sight the oil. He/She will quantify the amount and report the movement of the oil.

3.3.2 Quantification

Estimating the initial release volume of an oil spill is notoriously difficult to establish unless the cause is accountable e.g. ruptured tank with known pre- and post-spill content. Oil does not spread uniformly. Oil thickness will vary dramatically. Once surface tension forces have been exceeded and the slick begins to break up it becomes even harder. Even if the initial volume is known with any confidence, arriving at the end result is also fraught with difficulties. The volume will change as the result of weathering so it must constantly be monitored. Short of using remote sensing devices such as infrared (reads thickness translated from heat radiation) and side looking airborne radar (reads area from sea clutter suppression); the only simple method is by appearance. The colour of the oil (best seen from the air) will indicate the thickness and type of oil. See 3.5.2.1 for the recommended over flight pattern and 3.5.2.2 for appearance of oil at sea.

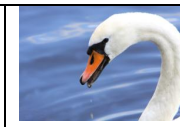
3.3.2.1 Recommended over flight Pattern



3.3.2.2 Appearance by Colour

UK Bonn Agreement Pollution Observation Table					
Code	Appearance /Colour	Quantity		Thickness	
		(m ³ /km ²)	US barrels/ km ²	(µm)*	Conversion to mm
1	Silvery	0.02	0.13	0.02	0.00002
2	Grey	0.1	0.63	0.1	0.0001
3	Rainbow	0.3	1.89	0.3	0.0003
4	Blue	1.0	6.29	1.0	0.001
5	Blue / Brown	5.0	31.45	5.0	0.005
6	Brown / Black	15.0	94.35	15.0	0.015
7	Dark Brown / Black	>25	157.25	>25	0.025

- $\mu\text{m} = 10^{-6}\text{m} = 0.000001\text{mm}$



3.3.3 Aerial Surveillance Observer Log

Sheet _____ of _____

Reporting Body:				Mission No:		Flight Type:		Navigator	
Day	Date	Month	Year	Time Over Sea hrs min		Aircraft Reg.		Observer	
Routing						Daylight		Darkness	

Oil Quantity Table		
	Colour Code	Quantity m ³ /km ²
1	Silvery	0.02
2	Grey	0.1
3	Rainbow	0.3
4	Blue	1.0
5	Blue/ Brown	5.0
6	Brown/ Black	15.0
7	Black/ Dark Brown	> 25

Time	Position		Dimensions		Cover		% Area Covered With Oil							Wind		Quant	Remarks
	Lat	Long	length/km	width/km	%	Km ²	1	2	3	4	5	6	7	Dir	Sp	M ³ /km ²	

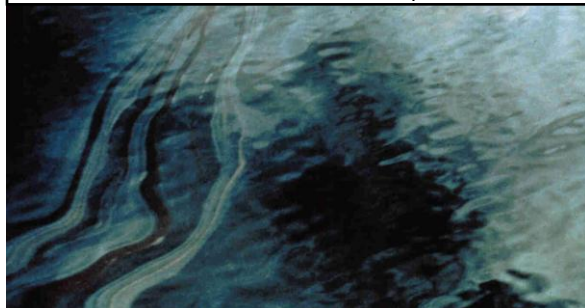
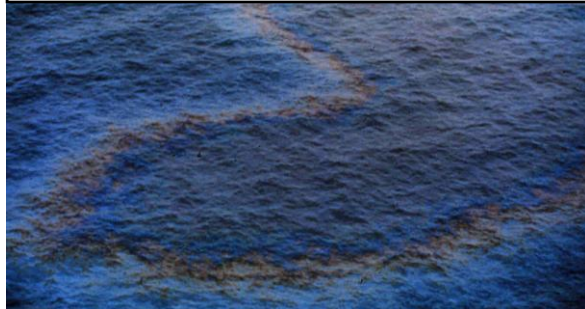
Remarks


Key

Reporting Body Mission No. Navigator Day Date/ Month/ Year Time over the sea Aircraft Reg. Observer Daylight/ Darkness	BHP, Gulf Offshore, OSRL or other #1,2,.....etc Name of navigator form Bond Helicopters Day count, where Day 1 = spill day Two number designation for Date/ Month/ Year of Flight Total time from coasting out to coasting in Aircraft registration letters/ numbers Name of Observer Total day/ night time from coasting out to coasting in	Route/ Area Time Position Dimension Cover % Cover area % area covered Wind Quantity m ³	Route/Area of flight Time of oil detection Latitude & Longitude of the oil Length and width of oil in kilometres Observers assessment of the % of the area (length x width) covered with oil Area covered with oil (length x width x cover %) Enter % of the cover area to the colour of the oil taken from the oil quantity table Direction and speed of surface wind at time of detection Quantity of pollution in m ³ , calculated as follows: [cover area] x [% of area covered by a particular colour] x [volume based on colour]
---	---	---	--



3.3 Surveillance and Tracking

#1 Silvery - up sun shot of silvery sheen (also contains some mousse streamers)**#2 Grey** - grey sheen (including some rainbow), heading in two separate directions**#3 Rainbow** - sheen from petrol**#4 Blue** - blue sheen (including rainbows) from a fresh diesel spill**#5 Blue/Brown** - light sheen approaching beach**#6 Brown/Black** - fresh crude**#7 Black/Dark Brown** - emulsified oil**NOT OIL** - this anomaly is a convergence line caused by the interface of 2 different water types**NOT OIL** - seen from the air natural organics can confuse the observer.

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3.4 EQUIPMENT RESOURCES

3.4.1 Inventory of Galway Harbour Response Equipment.

3.4.2 Regional Oil Spill Response Equipment

3.4.3 Irish Coast Guard.

3.4.4 Oil Spill Response Limited, Southampton

- Briefing Report for Tier 3 Equipment
- OSRL 1999 Scale of Fees

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3.4.1 Inventory of Galway Harbour Response Equipment.

Equipment Inventory List

Site Location: G-HOST Warehouse
Galway Harbour Office,
New Docks,
Galway.

Address: Galway Harbour Company,
New Docks,
Galway.



Oil Pollution Stores

Main Store

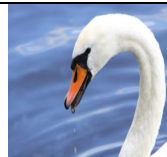
28	6 m Spaghetti Booms
50	3m Spaghetti Booms
5	Oil spill Roll Mat 46m
2	Oil spill pads
15	Spaghetti Pillows
3b	White Pig socks 3m
13	Absorbing Bags
1b	Sump Skimmers
2	Skimming Sweep 15m
3b	Skimming Pillows
2	Anchors 25m
2	Anchors 15m
2	Weights 10m
2	Goggles
1	Barrier Tape
6	Traffic Cones
-	Drums to hold DF2 + water
1b	Sample Cans
1	Extention Cable 110V
6	Helmets
20	Disposal Suits Large
4	Disposal Suits X Large
12	PVC Gloves
1box	Dust Masks
3	Rain Gear Large
2	Rain Gear X Large
6	Buoyancy Aid 50N jackets
5	Boiler Suits
2	Torches
2	Flood Lights

0	Coil of 16mm Rope
1	DF2 5litre containers
0	Watering Cans
0	Stanley Knives
1	Boat Hooks
0	Respirator Facemask
	Drain Blocker Cover

Store at Tanker Berth


5	Disposal Booms 25m	6	Gloves
1	Oil Spill Roll Mat 46m	6	Disposal Suits Large
2	Oil Spill Pads (100 in pack)		
6	Absorbing Bags "Lite-Dri"		
2	Weights with Rope		
2	Torches		

Stores checked on the 27th of Aug 2013.

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3.4.2 Regional Oil Spill Response Equipment

Irish Refining plc (IRC)		
Item Description	Location	Quantity
AEA Dispersant Spray Set	Tugs	1
Dispersant, Enersperse 1100	Tugs	6800 gallons
200m Troil Boom 1100	Jetty Head	2
Hathaway Portable Pump		2
Vacuum Truck		1
Spate Pump		2
SLURP Skimmer		2
Backpack Dispersant Sprayer		10
Port of Cork		
Item Description	Location	Quantity
20m Hoyle Boom	Cork	8
200m Ro-Boom	Cork	1
100m Flowseal Beach Guardian	Cork	1
Rotork: flat bottom work boat	Cork	1
Ro-Disk Skimmer + powerpack	Cork	1
2000 gallon Fastank	Cork	2
Sorbent Booms (12m)	Cork	76
Sorbent Rolls (44m x 48cm)	Cork	30
Backpack Dispersant Sprayer	Cork	1
Anchor Set	Cork	1
Dispersant, Seaquest	Cork	35 litres
Hydraulic reels + powerpacks	Cork	2
Work Boat: TF Doyle	Cork	1
Barge: suitable for storing waste oil	Cork	1
Semi-Rigid Rib 5m		1
Esso/ Texaco held at Port of Cork Base		
Item Description	Location	Quantity
Troilboom 1100 (Trailer Mounted)	Cork	1
Oil Mop Skimmer OM14D	Cork	1
Vacuum Skimmer Unit	Cork	1
Portable Steam Cleaner	Cork	1
SLURP Skimmer	Cork	1
Various Sorbent Materials	Cork	Phone for availability
Briggs Ireland, Cobh (BMES)		
Item Description	Location	Quantity
450m Ocean Boom	Cobh	1
Sea Skimmer 50	Cobh	1
450mtr Seapack	Cobh	1
Sorbents	Cobh	Phone for availability

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3.4.2 Regional Oil Spill Response Equipment/ cont.

Bantry Terminals Ltd (BTL)		
Item Description	Location	Quantity
400m Shore Guardian Boom	Fast Response Trailer	
2000 gallon Fastank	Fast Response Trailer	2
Matasorb Sorbent Booms and sheets	Fast Response Trailer	Phone for availability
200m Seaboom	Whiddy Island Jetty	2
Komara 12K Disc Skimmer	Pollution Centre, Whiddy	2
OPEC Rope Mop Skimmer	Pollution Centre, Whiddy	2
12.5 tonne oil storage bag, floating	Pollution Centre, Whiddy	4
Briggs Marine Emergency Service Ltd (BMES)		
Item Description	Location	Quantity
BMES maintain a stockpile of equipment at bases in BurntIsland, Dundee and Aberdeen. The equipment is subject to availability.	Scotland	Phone for availaibility
420m Ro-Skim System	Scotland	1
450m Vikoma Seapack	Scotland	2
250m Scotboom	Scotland	1
Harbour Booms, various	Scotland	600m
Sea Skimmer 50	Scotland	1
Komara 12K Skimmer	Scotland	1
Briggs Wall Springsweep System	Scotland	1
Manta Ray Skimmer	Scotland	1
Widespray Dispersant Spray System	Scotland	2
Rotech Helicopter Spray Pod	Scotland	3
500 gallon Portable Storage Tank	Scotland	25
2000 gallon Fastank	Scotland	1
2500 gallon Storage Tank	Scotland	2
Sorbent Materials	Scotland	Phone for availability
Irish Coast Guard (IRCG)		
Item Description	Location	Quantity
IRCG maintain a stockpile of equipment which may be made available for Tier 3 oil spills	See 3.4.3	Phone for availability

3.4.3 Irish Coast Guard

IRCG maintain 3 consignments of oil spill clean-up equipment:

Consignment #	Location
1	Dublin
2	Castletownbere
3	Killybegs

The inventory includes sea boom, harbour boom, skimmers, sorbents, fastanks etc. The bias is towards near shore operations. The most Updated List may be viewed on their government website. The IRCG chose these locations on the basis of a risk assessment. The risk assessment identified the need to guard against oil spills arising from Klondike and passing tankers vessel activities. IRCG have a contract with PWS to maintain and operate the equipment. IRCG would use this equipment if regional resources were insufficient. The trigger point would occur if there was a threat of significant pollution warranting category Tier 2 approaching Tier 3 status.

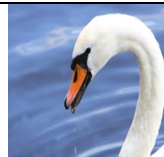
3.4.4 Oil Spill Response Limited, Southampton

Use of Sections:

This section contains:


- Briefing Report for Tier 3 Equipment - Refer 3.2.4.1
- OSRL 1999 Scale of Fees - Refer 3.2.4.2

At this issue date G-HOST has no guaranteed call on OSRL services. Any service requested would be offered under the terms of a 3rd Party Contract. Refer to 3.1 for contact number. However IRCG have a contract with OSRL and equipment may be supplied under this contract through IRCG.

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3.4.4.1 Briefing Report for Tier 3 Equipment

Briefing Report - Required by the Duty Manager before Mobilisation	
FAX TO:. Oil Spill Response Limited	FAX NO: + 44 01703 331 972
FROM (Sender's name):	
POSITION:	
COMPANY:	
CONTACT (e.g. phone / fax)	
<ol style="list-style-type: none"> 1. Designated callout authority 2. Location of spill 3. Time of spill (GMT and local time) 4. Source of spillage 5. Quantity (if known) 6. Oil type and characteristics 7. Weather conditions and forecast 8. Resources at risk 9. Cleanup resources available on site or others ordered with estimated time of arrival 10. Nearest airport and facilities if known; availability of onward transportation 11. Port of embarkation for equipment; location of secure storage for equipment 12. Vessel availability for equipment deployment, storage of recovered oil 13. Location of Command Centre 14. Name of On Scene Commander and designated contact(s) and/or deputies 15. Security, medical advice, visa requirements, immunizations required 16. General climate information 	

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3.4.4.2 Scale of Fees – Tier 3 Response




EQUIPMENT LIST AND SCALE OF FEES

Can be obtained at the following site

<http://www.oilspillresponse.com/activate-us/scale-of-fees>

Duty Manager can be contacted at


00 44 23 80 33 15 51

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4.0 ANNEXES AND BIBLIOGRAPHY OF OIL SPILL PUBLICATIONS

4.1 ANNEXES

4.2	The sampling, transport and storage of oil samples.
4.3	Contacts Directory
4.4	G-HOST Wildlife Procedure.
4.5	Completed training records.
4.6	Irish Coast guard – Place of Refuge Matrix

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4.2 THE SAMPLING, TRANSPORT AND STORAGE OF OIL SAMPLES

4.2.1 General

You are about to take samples in the investigation of an oil spillage. The results of the analyses of these samples may be used in legal proceedings. It is vitally important to take the greatest care in sampling, transport and storage of these samples prior to analyses.

- The samples must be kept in a person's custody or possession. The samples are in a person's possession if he/she can see them or if the samples are locked up. The person who takes the samples should be the one who takes possession of them. The possession/custody of the samples changes when the samples are given to another person. A **Chain of Custody Document** is enclosed. This must be filled in by the person who took the samples and all those who have subsequent custody of them.
- If taking samples from a suspect ship or shore station, take duplicate samples i.e. two samples from each point. Give one of these duplicates to the ship's master/manager of the shore station. Have them sign two copies of the Duplicate Sample Sheet. Give them one, keep one.
- Take a control sample of clean water or sand/mud at a good distance from the oil/spillage.
- A "blank" bottle has been included in the kit. This is for the laboratory to test the cleanliness of the sample bottles. Do **not** use this bottle to take a sample.
- When taking samples, always use disposable gloves. Discard gloves between each sample.
- Record all details of the spillage in the notebook provided. Make sketches of the vessel, spillage area, etc. Take still photos or video of the spillage.
- Deliver the samples to Evin McGovern, Marine Institute, Renville, Oranmore, Galway (Ph 091-387200). Always telephone in advance. Have them sign the Chain of Custody Document on receipt.


4.2.2 Safety

Think of safety first. When collecting samples from the spill, try to stay upwind of the spill.

It is important to wear clean gloves to protect your hands when collecting samples. This is true for both spill samples and suspect samples. This limits the exposure you will get to dangerous chemical compounds often found in petroleum oils (like benzene).

Collecting oil samples is often done at night or in cold weather. Staying alert is very important. If you are unsure if it is safe to collect a sample, it is probably best to wait until more information is known or until weather conditions improve.

When sampling any source, one should be accompanied by a member of the crew. It can be very dangerous taking samples from vessels and other sources, therefore persons sampling from sources should be experienced or acquainted with general construction of vessels and be aware of confined space entry regulations. Seek advice when in doubt. If taking samples from a ship, the sample collector should be accompanied by a member of the ship's crew at all times. The sample collector should be experienced with ships and the dangers associated with them, especially the dangers of entering confined spaces.

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4.2.3

Bottle Cleaning

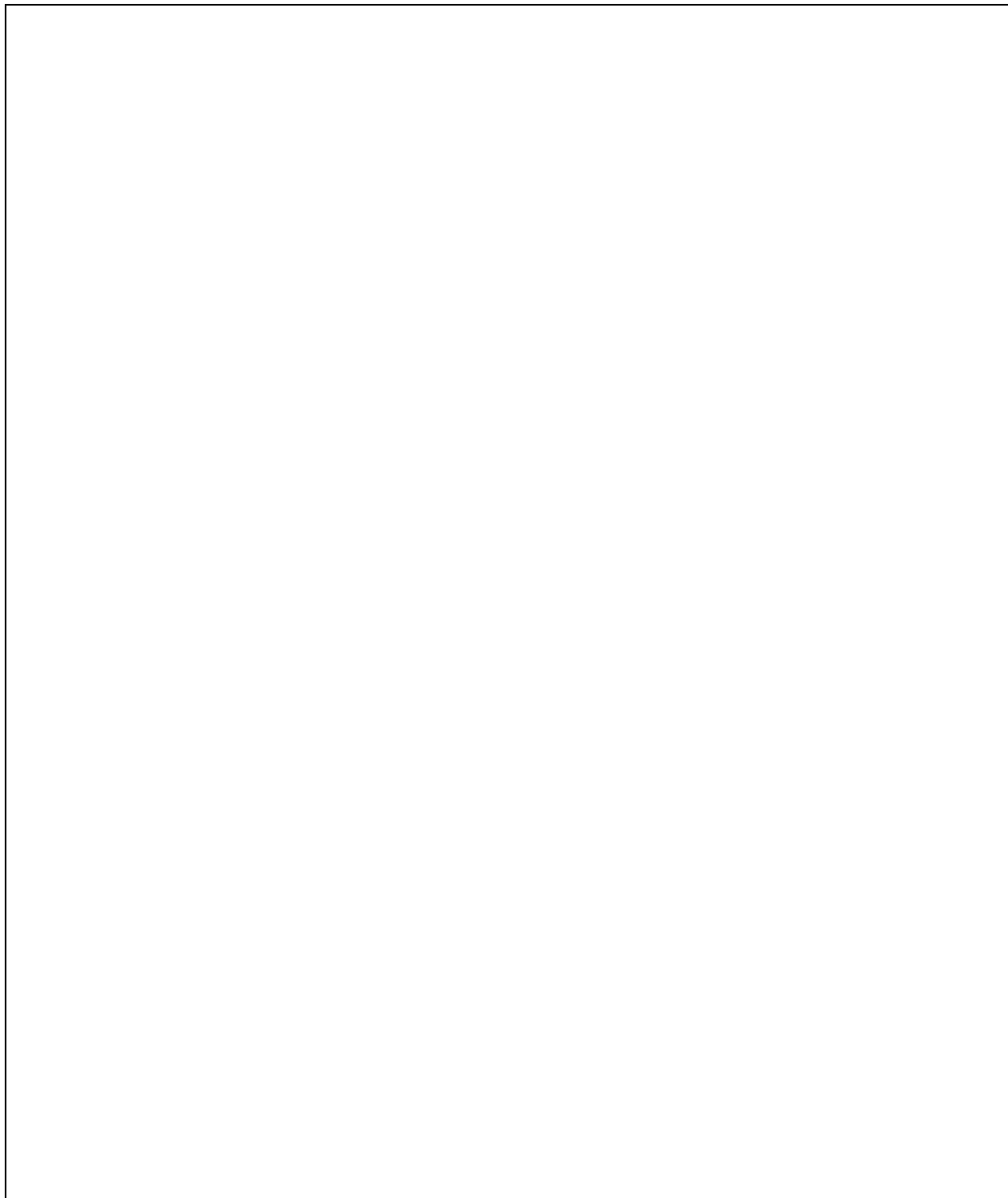
This is to certify than the bottles in this sampling kit have been detergent washed, rinsed with distilled water and rinsed with hexane prior to packaging.

Date: _____


Signed: _____

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4.2.4 **Figure 1: Flow Chart for Sampling Oil Spills.**



This chart presents recommended ways to collect oil sample using a minimum amount of supplies. There are other valid means of collecting samples which will produce similar results.

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4.2.5 Spill Sampling Techniques.

The following are several techniques for collecting samples. See the flow chart for help in determining the most appropriate technique. See Figure 1 for a flow chart of spill sampling.

(A) Skimming Technique

This technique will probably be the most common technique used.

- Unscrew the lid from the sample jar. Hold the jar up in one hand and the lid in the other hand of safe position. Gently lower the sample jar into the water and gently skim the oil layer from the water into the sample jar. Repeat this until the sample jar is about $\frac{3}{4}$ full.
- If a layer of oil on water is not visible in the sample jar, proceed to Section 7.5.2. If the necessary equipment is not available, try the following technique: Lift the sample jar from the water. Place the lid on the jar and tighten the lid. Turn the jar over and let it stand for 2 to 3 minutes. Gently unscrew the sample jar lid and let the water layer drain out of the sample jar. Seal the lid and return the jar to its upright position. Repeat if necessary.
- Another useful refinement of the skimming technique involves the use of a bucket. The bucket has small holes in the bottom or a stainless-steel sieve allowing much of the water to drain away from the oil. After drainage of water, repeat the skimming technique as necessary to increase the amount of oil in the bucket. Then transfer the oil to the sample jar by using a stainless-steel or TFE fluorocarbon polymer (Teflon®) scraper used to scrape the sides of the bucket. Clean the bucket prior to using again.
- Small pieces of wood floating on the water may help move oil into the jar.
- If sampling from a vessel, sample upwind, away from vessel exhaust.

(b) Oil on Beaches and Oil Coated Debris

- Open the sample jar and hold it in one hand. Hold the sample jar lid in the other hand. Lower the sample jar into the oil and sand (or other oil mixture) and fill the jar about $\frac{3}{4}$ full.
- If necessary use a wooden tongue depressor, a cleaned scoop or the lid of the jar, to put the oil mixture/debris into the jar.


(c) Oil on Animals

Bird feathers and animal fur have natural oils that complicate the analysis of petroleum oil. If the petroleum remains in contact with the feather or fur, the natural oil will dissolve in the petroleum oil. This contaminates the oil and makes the analysis more difficult. If at all possible, the oil should be physically removed with a scraper so that it is no longer in contact with the feathers or fur. If this is not possible, treat the samples in the following manner:

- Cut off feathers with oil on them and put them into a sample jar.
- Dead, oiled birds or other animals may be put in plastic bags. Label the bags and freeze before sending to a laboratory.
- Before sending any animals, contact the laboratory. Many laboratories do not have facilities for storing dead animals.
-

4.2.6 Obtaining Samples from Ships and Other Suspected Sources.

Consult the legal requirements or standards for your country to determine the number of samples required from each sampling point as well as authority required to take samples. Usually one to three sets of samples is required from each sampling point.

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When sampling any source, one should be accompanied by a member of the crew. It can be very dangerous taking samples from vessels and other sources, therefore persons sampling from sources should be experienced or acquainted with general construction of vessels and be aware of confined space entry regulations. Seek advice when in doubt.

Sampling Ships

Generally, samples should be taken from all waste tanks, sludge tanks, and bilges. Try to figure out the path of the oil from the ship to the water and sample accordingly.

For sampling on board ships, the following documents may give valuable information:

- Drawings such as the “tank plan”, “capacity plan” and “air, filling and sounding pipes”, are kept on board. They show the positions and capacities of the different tanks and normally also indicate what types of oil are carried therein.
- The oil record book, log book, deck log book and engine log book normally contain information about types (grades) of oils carried in different tanks as well as information about operations which could lead to an oil discharge. The log book may be based on a scrap or rough log book which also is of legal evidence. When it has been decided where samples should be taken, one of the following methods may be used:
- Draining directly from tanks located above the double bottom or from the various piping systems.
- Taking samples from bilge wells with a bucket.
- Taking samples through manholes or surrounding openings. All tanks are fitted with manholes. It is often difficult to open these holes, but this is sometimes the only way to obtain a sample from a tank.


A sampler for tanks may be a glass test-tube placed inside a heavy steel tube capable of sinking even in high-viscosity oils. The steel tube should be constructed with an asymmetric end that ensures that it lies horizontal when touching the tank bottom. This is particularly convenient when samples are taken in nearly empty tank where it is difficult to obtain a reasonable sample volume. When raising the sampler, the oil should be contained in the test-tube, which should afterwards be removed and sealed.

When samples of heavy oil residues are taken in sludge tanks at the bottom of bunker tanks, the viscosity of the oil may be so high that it will hardly enter the glass test-tube. In this case another sampler designed as a brush or equipped with lamellas may be used. The sampler and its outer cover should be sent for analysis.

Owing to the risk of electrostatic charges, sampling in the tanks containing flammable gases must be carried out by using only a sampler hanging on a string of natural material, not a synthetic one. Samples should be taken at the upper, middle and bottom levels of the oil in the tank.

When the oil in sludge tanks and bilges is sampled, particular attention would be paid to the fact that the oil may not be homogeneously distributed.

Two checklists, for sampling cargo oil systems and machinery spaces respectively, are shown in Appendix A. As the designs of ships vary considerably, the checklists are only to be regarded as guidance. The design of the actual ship must always be considered when determining appropriate positions for sampling.

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4.2.7

APPENDIX A

OIL SAMPLING AND SHIPPING CHECKLIST

References to Chapter/Section shown in parenthesis

A. SAMPLING GENERAL

1. Proper sampling supplies/equipment (4.0)
2. Sample no more than $\frac{3}{4}$ full (7.3)
3. Sample no less than 10mL if possible (7.3)
4. Sample jar properly labelled (8.2)
5. Lid taped to jar (8.1)
6. Sample taken by authorized personnel
7. Samples handled as if they were legal evidence

B. SPILL SAMPLING

1. Different Parts of Spill Sampled (6.1)
2. If needed, reference (Blind) samples taken (6.3)

C. SOURCE SAMPLING (See also source checklist below)

1. All suspected sources sampled (7.6)
2. If possible source not samples, document why (6.2)

D. CHAIN OF CUSTODY RECORD (SECTION 8.3)

1. All samples are on Chain of custody Record and descriptions match those on jar labels
2. Each sample identified as spill or suspect
3. Chain of Custody Record signed and dated
4. Samples handled by authorized personnel
5. If samples transferred chain of custody record signed transferring samples, then record and jars signed when received

E. STORAGE/SHIPMENT

1. Samples stored refrigerated at 4C under lock and key in darkness until shipped to authorized laboratory
2. Samples sent to laboratory without delay

F. PAPERWORK BEING FORWARDED TO LABORATORY


1. Original Chain of Custody Record (8.3)
2. Original request letter (10.0)

G. PAPERWORK BEING KEPT AT OFFICE

1. Copy of Chain of Custody Record
2. Copy of request letter

H. PACKING SAMPLES FOR SHIPMENT AND SHIPPING GUIDELINES


1. Samples in cardboard tubes
2. Box filled with sorbent material
3. Box properly labelled
4. Box shipped to authorized laboratory in accordance with national and international regulations.

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APPENDIX A / cont.

CHECKLIST FOR TAKING SAMPLES IN CARGO SYSTEMS OF OIL TANKERS


1. Identify the category of the tanker in relation to MARPOL requirements (i.e. COW, SBT, CBT, or a tanker with conventional ballasting (below 4000 tdw). Copy the IOPP Certificate, including Supplement B.
2. Identify the loading condition of the ship (loaded, part-loaded, or in ballast) and the quality of oil carried (last carried), and copy the bill of lading for the current (latest) voyage.
3. Study the oil record book and copy the pages dealing with the operations under investigation.
4. Obtain, if possible, a copy of the diagram of the cargo oil and ballast pumping and piping systems on the ship.
5. Study the printouts from the oil discharge monitoring and control systems and copy the parts covering the current (latest) ballast voyage.
6. Ascertain the current ballast or loading condition and identify tanks carrying ballast and tanks used for ballast during previous phases of the voyage.
7. Verify the status of the ship in the load-ballast handling cycle, i.e. whether it carries departure or arrival ballast, whether tank cleaning has been carried out during the voyage and whether water from the slop tanks has been discharged at sea.
8. Take oil samples representing the various qualities of cargo oil which the ship has carried during the current (latest) voyage, and mixtures which may have been generated. Take sample of oil remaining on board at locations where these are likely to collect, including (as applicable):
 - Reference samples carried on board.
 - All slop tanks (identify also the level of the oil/water interface, the quantity of slop oil and the quantity of water in each slop tank).
 - Tanks which carry or have carried dirty ballast.
 - Pump room bilges.
 - Stripping pumps.
 - Overboard cross-over line, both sides.
 - Cargo manifolds on deck.
9. All Samples taken must be clearly identified. See Chapter 7 for more information.
10. Take special care to obtain representative samples from slop tanks and bilges, where the composition of the oil may vary from place to place.
11. Note any additional observations, which may be of any value in determining the likelihood that a discharge has taken place.

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APPENDIX A / cont.

CHECKLIST FOR TAKING SAMPLES IN MACHINERY SPACES OF SHIPS

1. Verify that the ship carries a valid IOPP Certificate. Note whether the ship is certified as being equipped with 100 ppm or 15 ppm oily water separator /filtering equipment. Ascertain whether it has been granted a waiver for any equipment. Copy the certificate, including Supplement A.
2. Study the oil record book (machinery part) and copy the pages covering the period under investigation.
3. Check levels and contents. Take samples from the following tanks and spaces:
 - All bilge wells
 - Bilge water holding tank (note if no bilge water holding tank is installed)
 - Waste oil tanks (the ship may have several)
 - Overflow tank for bunker oil
 - Fuel and lube oil purifier sludge tanks
 - Empty bunker tanks which may have been used for water ballast
4. Also take samples from:
 - Service tanks (day tanks) for the engines
 - The bilge water separator outlet piping
 - The sludge pump outlet piping
5. Inspect the bilge water separating/filtering equipment (note the liquid content at the test cocks, request opening of the filtering unit if saturation may be expected).
6. Inspect the tank top for accumulation of oil and sludge.
7. Note the type of cleaning agent used in the engine room and the claimed rate of consumption.
8. If the ship is of 10,000 GRT or above and has a 100 ppm separator, inspect the oil content meter and its recorder. Copy the recorder printout for the period under investigation. Ship sizes that call to Galway are generally 4,500 GRT.

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Case # _____ Sample _____

Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____

Location _____

Sampler _____

Witness _____

Case # _____ Sample _____

Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____

Location _____

Sampler _____

Witness _____

Case # _____ Sample _____

Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____

Location _____

Sampler _____

Witness _____

Case # _____ Sample _____

Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____

Location _____

Sampler _____

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Case # _____ Sample _____

Time _____ Date _____ Spill _____

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Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____

Location _____

Sampler _____

Witness _____

Case # _____ Sample _____

Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____

Location _____

Sampler _____

Witness _____

Case # _____ Sample _____

Time _____ Date _____ Spill _____

Suspected Source _____

Sample Description _____


Location _____

Sampler _____

Witness _____

APPENDIX B

CHAIN OF CUSTODY RECORD					
Organizations Name: Address:					
SPILL	SOURCE	SAMPLE #	DESCRIPTION OF SAMPLES FOR CASE # _____		
PERSON ASSUMING RESPONSIBILITY FOR SAMPLES:				TIME/DATE:	
SAMPLE NUMBER	RELINQUISHED BY:	TIME/ DATE	RECEIVED BY:	TIME/ DATE	REASON FOR CHANGE OF CUSTODY
SAMPLE NUMBER	RELINQUISHED BY:	TIME/ DATE	RECEIVED BY:	TIME/ DATE	REASON FOR CHANGE OF CUSTODY
SAMPLE NUMBER	RELINQUISHED BY:	TIME/ DATE	RECEIVED BY:	TIME/ DATE	REASON FOR CHANGE OF CUSTODY
PAGE __ OF __					

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APPENDIX C

EXAMPLE CHAIN OF CUSTODY RECORD					
Organization Name:					
Address:					
SPILL	SOURCE	SAMPLE #	DESCRIPTION OF SAMPLES FOR CASE # _____		
X		1	From water Galway Harbour Pier 12		
X		2	From water by Mutton Island Sewer Outfall #2		
	X	3	From underground Fuel Tank #1		
	X	4	From Bunker Tank Any vessel moored to Pier 12		
	X	5	From engine room bilge Any vessel moored to Pier 12		
	X	6	From Port side Fuel Tank Any vessel moored to Pier 12		
	X	7	From Starboard side Fuel Tank Any vessel moored to Pier 12		
	X	8	From 5 gallon bucket next to Any vessel moored to Pier 12		
X		9	From Galway Harbour, 200 yard outside spill area (Background)		
PERSON ASSUMING RESPONSIBILITY FOR SAMPLES:				DATE/TIME:	
Bob KeepKun				1400 06Nov96	
SAMPLE NUMBER:	RELINQUISHED BY:	TIME/DATE	RECEIVED BY:	TIME/DATE	REASON FOR CHANGE OF CUSTODY
1 to 8	Bob KeepKun	1635 06Nov 96	Frank Whodunit	1635 06Nov 96	Sample storage
1 to 8	Frank Whodunit	0930 07Nov 96			Ship to Lab for Analysis
SAMPLE NUMBER	RELINQUISHED BY:	TIME/DATE	RECEIVED BY:	TIME/DATE	REASON FOR CHANGE OF CUSTODY

APPENDIX D

Duplicate Sample Acknowledgement

I, _____ (Master of Vessel _____
or Manager of shore installation _____*),
acknowledge receipt of duplicate samples taken on my vessel/shore installation by
_____ (Name of sampler).

	Master/Manager	Sampler	Witness
Signed:	_____	_____	_____
Print Name:	_____	_____	_____
Date:	_____	_____	_____

* Delete as appropriate

4.3 CONTACTS DIRECTORY

4.3.1	Emergency Services	
4.3.2	Galway Harbour Company Management Team	
4.3.3	Galway Harbour Anti - Pollution Team (G-HOST)	
4.3.4	Directory of Advisors/Advisory Bodies	
4.3.5	Media Directory	
4.3.6	Logistics	
4.3.6.1	Directory of Watercraft	
4.3.6.2	Directory of Aircraft Operators	
4.3.6.3	Directory of Heavy Plant	
4.3.6.4	Directory of Pollution Equipment Supplies	

4.3.1	EMERGENCY SERVICES	☎
IRCG Duty Operator		999/112 01 6620922
Western Regional Communication Centre – Fire Services.		999/112
An Garda Síochána Divisional HQ		999/112
Ambulance Control Centre		999/112

4.3.2	Galway Harbour Company Management Team	☎
Brian Sheridan	brian@galwayharbour.com	091 561874 087 664 6633
Kevin Walsh	marineops@galwayharbour.com	091 562329 087 650 1824
Bob Ellis	marineops@galwayharbour.com	091 561874 087 650 1803
Eamon Bradshaw	ebradshaw@galwayharbour.com	087 252 0368

4.3.3	Galway Harbour Anti-Pollution Team G-HOST	☎
GALWAY HARBOUR COMPANY	Capt. Brian Sheridan	091 561874 (o) 087 664 6633(m)
	Capt. Kevin Walsh	091 562329 (o) 087 650 1824(m)
		091 794651 (h)
GALWAY CITY COUNCIL	Mr. Paul O'Grady	061 496000 (o) 087 9115000
CLARE COUNTY COUNCIL	Mr. Paul Moroney	065 6846425 (o) 087 6868421 (m)
GALWAY COUNTY COUNCIL	Mr. Tony McInerney	091 476484 087 2262709
TOPAZ	Denis Taylor	01 2028817 087 2599284
VALERO	Tom Kennedy	01 6136124 0872252895

4.3.4	Directory of Advisors/Advisory Bodies	☎
Mr. Brian McGonagle PWS	Clean-up Operations Advisor to the Plan	01 8391000 087 2561869
Asst Chief Fire Officer, Galway County Council	Health, Safety & Hazard Control Advisor to the Plan	091 588342 087 298 1409
Carmel Dooley	Advisor and contact between Oil Pollution Committee Coordinator and Press/Media	087 234 9903
Irish Coast Guard	Officer in Charge Valentia Malin Head	01 6620922 066 9476109 074 9370103

National Parks and Wildlife	Duty Manager	091 704200/704206 091 704201 091 870340
Galway Swan Rescue	Mary Joyce Glynn	086 382 6471
Bird Watch Ireland		01 281 9878
ISPCA	Geraldine Mescall	061 415618
SWDG	Simon Berrow	087 8545450
Western Fisheries Board	David Harrington Pat Gorman	087 237 9906/091 563118 087 255 7056
Department of the Environment	Duty Manager	01 6793377
Environmental Protection Agency (EPA)	Dredging Incident Only	053 9160600
Marine Institute	Dredging Incident Only	091 387200

4.3.5 Media Directory			
	FAX		☎
RTE Galway	galway@rte.ie	Newsdesk	091 563009
Galway Bay FM	keith@galwaybayfm.ie	Newsdesk	087 254 6951
RTE tv/radio	newsdesk@rte.ie	Newsdesk	01 2082193 01 2082232
TV3	news@tv3.ie	Newsdesk	01 4193333
Today FM	news@todayfm.com	Newsdesk	01 8049064 01 8049049
TG4	www.tg4.ie	Headquarters	091 505050 01 4763030
Clare FM	news@clarefm.ie	Reception	065 6828888
Radio na Gaeltachta	nuachtbnag@rte.ie	Newsroom	066 9155114

4.3.6	Logistics
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4.3.6.1 Directory of Watercraft		☎
Purcell Marine	2 RIB's	087 279 3821
Lasta Mara Teo	Bláth na Mara	091 562 900 087 238 6825
Galway Sub Aqua Club Search & Rescue	3 fast rescue craft RIB's	086 241 6199
Galway Harbour Company	Loc Lurgain II	091 561874

4.3.6.2 Directory of Aircraft Operators		☎
Bond Helicopters	Contact through IRCG	01 6620922
Irish Helicopters		061 472605
Heli Base Shannon		061 472333
Irish Helicopters Cork		021 4961500
Irish Helicopters Cork	Peter O'Connell	021 4342386
Westair Helicopters		061 475166

		087 2560504
Executive Helicopters	Chris	087 797 6126
Celtic Helicopters		01 8445084

4.3.6.3	Directory of Heavy Plant	☎
Greenstar.	24 hr quick response	061 228855 (o) 061 227067 (o)
ENVA Environmental – Anthony Mulhall	onsiteservices@enva.ie	1850 505 504
Pipe & Drain - PWS	24 hr quick response	1890 930933
Sam Hire (Ray Reilly)	24 hr response	091 753746 086 256 5527

4.3.6.4	Directory of Pollution Equipment Supplies	☎
PWS	Brian McGonagle	01 8391000 087 2561869
Oil Spill Response Limited	Duty Officer	00 44 1703 331551
Bercar Environmental	Ollie O'Connor Dick Manning	061 310259 087 6494536 086 8344316
Braemer Howells Ltd.	0	00 44 1646 697041
SSI	Martin Sheridan	01 4568611 0879677512

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4.4 Wildlife Response Procedures		ANNEXES Page 132 of 171	

G-HOST Wildlife Response Procedure

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Procedure for dealing with Oiled Birds

Catching and transporting live oiled birds

This is usually best left to the experts, or to volunteers who have had some training. It is easy to put the birds under a lot more stress by chasing and man-handling them. If you see an oiled bird it is often best to notify the clean-up organisation who may respond themselves or give you advice.

Equipment -

- Gloves (able to withstand pecking)
- Overalls or coat that can get oily.
- Suitable footwear for clambering after bird on wet and oily shoreline.
- Cardboard Box with Lid - suitable size to give bird some room for movement.
- Padding for box - old newspaper or fabric.
- Optional goggles to protect eyes.
- Optional long-handled net to help catch bird.

- Do not let the bird get close to your head, as it may try to peck your eyes.
- Catch the birds by hand or with the aid of a long-handled net. Do not put the birds under any more stress than necessary. Only attempt capture if it can be done quickly and efficiently.
- Hold the bird with both hands to hold the wings in.
- Put the bird in a cardboard box lined with absorbent material (e.g. newspaper), with a lid.
- Do not wrap the bird up in anything - it may get too hot and too stressed.
- Take the bird to a cleaning station as soon as possible. Let them know where and when the bird was caught.
- Keep a not of all birds caught and sent to cleaning station. Make a not of species if possible.

Cleaning and rehabilitating oiled birds

The organisation of bird cleaning centers should always be left to trained and experienced experts. Volunteers may be trained by them to carry out certain tasks.

Dealing with dead oiled birds

- Collect dead birds in plastic sacks and keep in cold storage (preferably freezer).
- Keep records of numbers, locations and species.
- Only dispose of after agreement with relevant authorities.

The following will provide advice:

Bird Watch Ireland
Telephone 01 2819878.

Irish Society for the Prevention of Cruelty to Animals
Contact Geraldine Mescall: Telephone 061 415618

Annex 1: Call list

Wildlife Access Group

Name organisation	Contact person	Telephone nr	Email
SAF representative	Pauline Beades	0872222289	pauline.beades@gmail.com
	Steve Newton	0863214162	snewton@birdwatchireland.ie
	Sonia Mooney		
ISPCA	Geraldine Mescall	061 415618	info@galwayscpa.com

Wildlife authorities

Topic	Name department	Contact person	Telephone nr	Email
Wildlife issues	Department of Arts, Heritage and Gaeltacht	David Lyons	0876602159 091532431	david.lyons@ahg.gov.ie

Aligned Irish NGOs supporting the First Responders team

Topic	Name organisation	Contact person	Telephone nr	Email
Wildlife conservation issues - Birds	Birdwatch Ireland	Steve Newton	0863214162	snewton@birdwatchireland.ie
Conservation issues – environment	Coastwatch	Karin Dubsky	0868111684	coastwatch@eircom.net
Wildlife conservation issues-general	Irish Wildlife Trust	Con Flynn	0878142343	enquiries@iwt.ie
Wildlife Conservation issues-cetaceans	Irish Whale and Dolphin Group	Simon Berrow	0868545450	Simon.berrow@iwdg.ie
Wildlife Conservation issues-otters	ISPCA			
Wildlife conservation issues-seals	Irish Seal Sanctuary	Brendan Price	018354487	info@irishsealsanctuary.ie

Wildlife veterinarians (knowing local veterinary directives)

Topic	Name organisation	Contact person	Telephone nr	Email
Animal welfare Humane euthanasia,	Independent	Frances Harvey	0872392432	Frances.harvey2011@gmail.com

Sea Alarm

Name organisation	Contact person	Telephone nr	Email
Sea Alarm	Office (office hours)	+32.2.2788744	incidents@sea-alarm.org
	Hugo Nijkamp	+32.494900012	nijkamp@sea-alarm.org
	Saskia Sessions	+32.499624772	saskia@sea-alarm.org
	Claude Velter	+32.499359065	claudio@sea-alarm.org

Local scientists (knowing species, habitats, seasonal/migration patterns)

Topic	Name organisation	Contact person	Telephone nr	Email
Birds	Birdwatch Irl	Steve Newton	0863214162	snewton@birdwatchireland.ie
Cetaceans	Irish Whale/dolphin group	Simon Berrow	0868545450	simon.berrow@iwdg.ie
Seals	GMIT	Joanne O'Brien	086 8657633	Joanne.obrian@gmit.ie
Impact monitoring	Birdwatch	Steve Newton	As above	As above

First responder team

Affiliation	Name	Telephone nr	email	Background/skills
Independent	Sharon Sheehan	0863128100	Sheehan-sharon@gmail.com	Marine mammal observer
Independent	Sonia Mooney	0851472225	soniamooney@gmail.com	Zoologist
Independent	Stella Maris Albarenque	0857777610	a_stellamaris@yahoo.com	Veterinary Surgeon
Independent	Paul Holland	0868242883	p-holland@hotmail.com	management
Independent	Emma Sheehan	0861735559	molbeckystan@gmail.com	Engineer
Independent	Eithne Tynan	0877565944	eithna@iol.ie	Journalist
Independent	Caryn Elmes	0877976972	Caryn.elmes@gmail.com	

First responder team (continued)

Irish Seal Sanctuary	Helen Silke	0877868229	helensilke@eircom.net	Marine mammal handling
Irish Whale & Dolphin Group (IWDG)	Deirdre Slevin	0871319001	deirdreslevin@gmail.com	Powerboat Level 2
Shannon Dolphin & Wildlife Foundation.	Joanne O'Brien	0868657633	Objoanne05@hotmail.com	Educator
IWDG	Willie Muehlhausen	0866789985	wmuehlhausen@web.de	Veterinary Surgeon
Birdwatch Ireland	Steve Newton	0863214162	snewton@birdwatchireland.ie	Wildlife Conservation
Birdwatch Ireland	Jamie Durrant	0879243583	jdurrant@birdwatchireland.ie	Membership development
Birdwatch Ireland	Samantha Morrissey	0863719248	igiveinok@gmail.com	First aid.
Birdwatch Ireland	Julia Baer	0863714150	Juliabaer1@googlemail.com	Marine ecologist
Department of Arts, Heritage and Gaeltacht	Catherine Seale	0872285650	Catherine.m.seale@gmail.com	Education officer
Department of Arts, Heritage and Gaeltacht	David Lyons	0872867079	davidA.lyons@ahg.gov.ie	Wildlife ranger
Department of Arts, Heritage and Gaeltacht	Emma Glanville	0879888188	Emma.glanville@ahg.gov.ie	Wildlife ranger
Department of Arts, Heritage and Gaeltacht	Seamus Hassett	0872473526	Seamus.hassett@ahg.gov.ie	District Conservation officer

Annex 2 Operational guidance

2.1 Hazing and deterrence

When?	When oil moves towards a sensitive area
By whom?	Local experts who know the area and the (behaviour of the) species involved and who can apply one or a series of techniques and monitor their effects on the animals
How?	Basically providing disturbances that make animals leave the area.
Further guidance	Annex 7 provides suggestions for hazing techniques. Techniques may or may not be effective. Effectiveness will be species specific and sometimes only temporary. Animals easily become accustomed to the technique that is used; therefore techniques need to be changed regularly. At all times one should make sure that hazing/deterrence does not result in animals escaping towards or into the oil.

2.2 Protect seabird nests from oil disturbance

When?	When oil moves towards a sensitive area
By whom?	Local experts who know the area and the (behaviour of the) species involved
How?	<ol style="list-style-type: none"> 1. Protecting the areas from oiling by preventing the oil entering 2. Protect individual nests/areas from disturbance by clean-up crews
Further guidance	Protection in this case can be achieved by advanced planning of spill response and shoreline clean-up activities

2.3 Pre-emptive capture

When?	When oil moves towards a sensitive area
By whom?	Local experts who know the area and the (behaviour of the) species involved
How?	Advanced capture techniques need to be applied to avoid unnecessary stress with to targeted animals and avoid disturbance of other animals in the area
Further guidance	Pre-emptive capture of uniled animals needs to be assessed carefully and if feasible, it must be well planned. Captured animals must be kept in captivity for a while and stress from this captivity minimised. Husbandry must be professional and the time of captivity must be kept to a minimum. Ideally animals are transported and released into a clean area of their natural habitat, immediately after capture.

2.4 Keep carcasses for scientific analysis

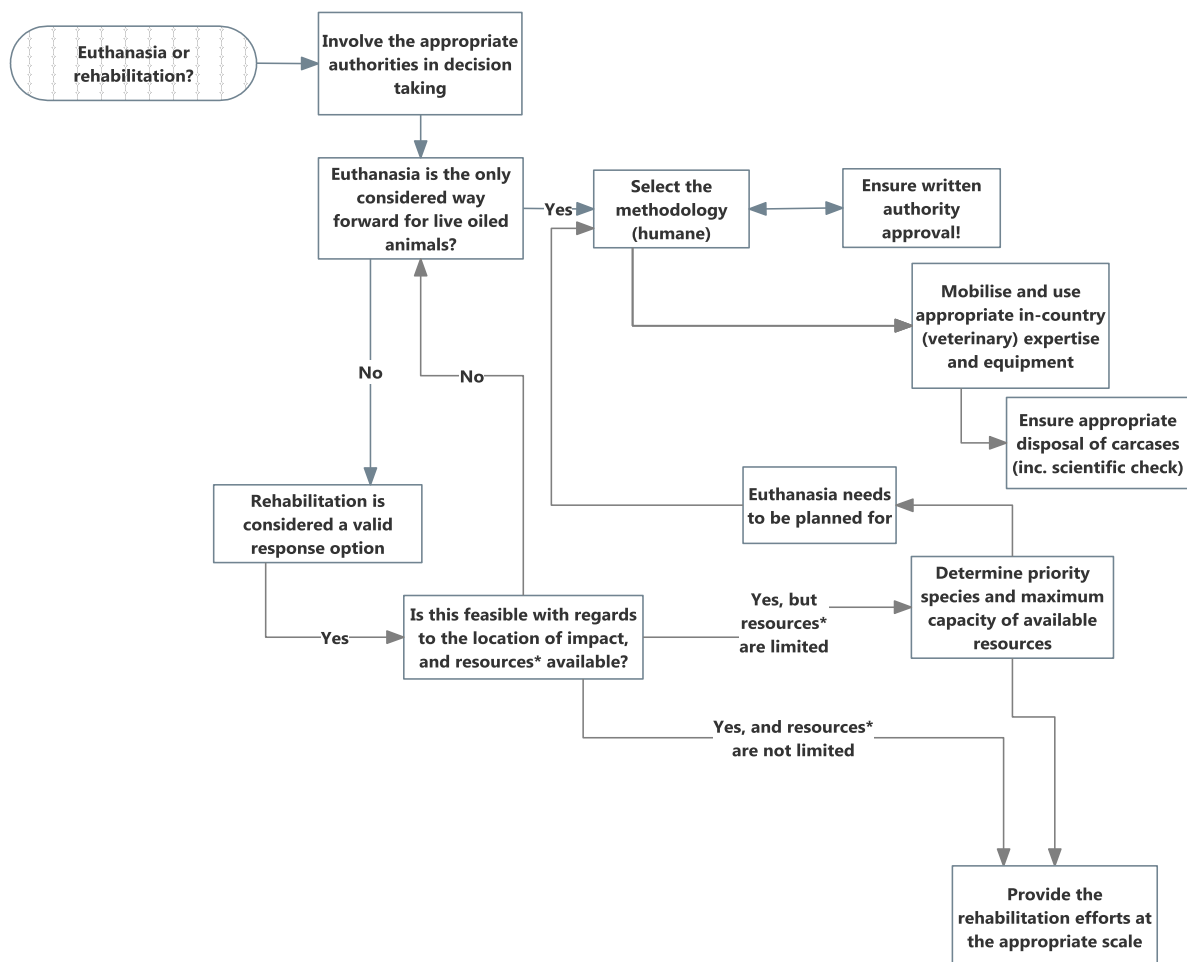
When?	When carcasses are reported to wash ashore
By whom?	Volunteers supervised by (local) experts who have experience with scientific beach surveys, especially under oiled conditions
How?	Planning and execution of systematic beach surveys in areas where beaching of carcasses is expected.
Further guidance	<p>Systematic collection of carcasses is recommended to avoid scavenging and the secondary pollution of uniled animals that are attracted to the carcasses. Collecting the carcasses systematically, labelling them with references to location, date and time, will allow a scientifically reliable estimate of animals impacted by the spill. This needs to go hand-in-hand ideally with drift experiments (see section 5.5) to account for affected animals that remain at sea.</p> <p>Beaching of carcasses may follow other patterns than oil beaching. Carcasses may arrive ashore in other areas than shorelines where impacts from oil are monitored or expected.</p>

	Carcasses that have been collected from beaches must be kept in freezers until seabird experts can inspect them, normally in a (temporary) necropsy facility. Only in this way reliable data can be produced on the origin (population, breeding colonies) of the species affected
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2.5 Drift experiments

When?	When oil at sea is moving through areas that are known for high seabird abundance.
By whom?	Local seabird experts, if needed under supervision of international experts
How?	Objects that mimic the behaviour of an animal carcass drifting on the sea surface are released in the same offshore area where oil is reported. Each object is labelled with reporting instructions for a potential finder.
Further guidance	Objects may be wooden blocks or un-oiled carcasses of birds Released objects will drift with currents and winds. The relation between objects released offshore and those that are reported back from findings ashore will help to make a more reliable estimate of the multiplier that can be used to calculate total population impact on the basis of animals that have washed ashore.

Annex 3 Euthanasia or rehabilitation?



Annex 4 Hazing and Deterrence

Hazing and deterrence techniques can be applied to try scare away animals from oil threatened or impacted areas. A variety of techniques have been described, but their effect is strongly dependent on circumstances and species.

The tables below¹ provide a rough guidance to techniques that could be considered for the defined species groups. Techniques are best applied after expert assessment. Most of the materials can be obtained relatively easy, and do not need to be stockpiled.

¹ **Gorenzel, W.P and T.P Salmon (2008).** Bird Hazing Manual – Techniques and Strategies for Dispersing Birds from Spill Sites. Pp 102. Regents of the University of California.

Table 1. Hazing techniques that may be effective for selected groups of birds

Technique	Diving birds	Gulls and terns	Waterfowl	Wading birds	Shorebirds	Marine birds
pyrotechnics	X	X	XX	XX	X	X
cannons	?	X	X	X	?	?
biosonics	?	XX*	?	?	?	?
wailer	X	?	X	?	?	X
mylar tape	NA	X	X	X	X	?
scarecrow	NA	X	X	X	X	X [†]
flags	NA	X	XX [‡]	X	X	?
balloons	NA	X	X	X	X	?
lasers	XX [§]	XX*	XX*	X	X	X
lights	?	?	?	?	?	?
ATV	?	X	X	X	X	?
aircraft	X	?	X	?	?	X
boats	X	?	X	?	?	X
model airplanes	NA	X	X	X	X	?
overhead lines	NA	XX*	X	X	?	?
netting	X	X	X	X	NA	NA
plastic balls	X	X	X	X	NA	NA
spikes, coils	XX**	XX**	X	?	NA	NA

Key:

NA = not advised, not effective

X = may or may not be effective

XX = known to be effective

? = effect unknown

Notes:

*Effective on gulls.

[†]Possible at seabird colonies.

[‡]Best on Canada geese, snow geese, and dabbling ducks on land.

[§]Effective on double-crested cormorants.

*Effective on Canada geese and probably other waterfowl as well.

**To deter perching on structures by gulls, cormorants, and brown pelicans.

Table 2. Effectiveness of selected hazing techniques for spills at inland marshes and coastal bays

Technique	Marsh		Coastal bay	
	Day	Night	Day	Night
bird bombs, screamers	good	good	fair	fair
shell crackers	good	good	good	good
CAPA rockets	very good	untried	very good	untried
propane cannons	good	good	good	good
biosonics	good, species dependent	unknown	good, species dependent	unknown
Phoenix Wailer	fair	fair	fair	fair
mylar tape	fair	none	fair	none
scarecrows	fair to poor	none	fair to poor	none
flags, balloons	fair	none	fair	none
lasers	none	good to very good	none	good to very good
lights	none	poor to fair	none	poor to fair
ATV	good	unsafe	good along shorelines	unsafe
fixed-wing aircraft	fair	unsafe	good	unsafe
helicopter	good	unsafe	very good	unsafe
boats	good	good	good, weather dependent	fair, weather dependent
model airplane	good	none	fair	none
overhead lines	impractical	impractical	impractical	impractical
netting	impractical	impractical	impractical	impractical
plastic balls	possible	possible	none	none
spikes, coils	good on perches	good on perches	good on perches	good on perches

Table 3. Effectiveness of selected hazing techniques for spills in offshore waters and seabird colonies

Technique	Offshore waters		Seabird colonies	
	Day	Night	Day	Night
bird bombs, screamers	fair, limited range	fair, limited range	fair	fair
shell crackers	good	good	fair	fair
CAPA rockets	good, long range	untried	untried	untried
propane cannons	unlikely, hard to deploy	unlikely, hard to deploy	good	good
biosonics	impractical	impractical	untried	untried
Phoenix Wailer	not seaworthy	not seaworthy	possible on land	possible on land
mylar tape	none	none	poor to fair	none
scarecrows	none	none	poor to fair	none
flags, balloons	none	none	poor to fair	none
lasers	none	unknown, but possibly very good	none	unknown, but possibly very good
lights	none	poor to fair	none	poor to fair
ATV	none	none	possible	unsafe
fixed-wing aircraft	weather dependent	unsafe	unlikely	unsafe
helicopter	good, weather dependent	unsafe	possible	unsafe
boats	good, weather dependent	fair, weather dependent	good, weather dependent	fair, weather dependent
model airplane	none	none	possible	none
overhead lines	none	none	possible	untried
netting	none	none	possible	possible
plastic balls	none	none	none	none
spikes, coils	none	none	possible	possible

Annex 5 Managing the early days of a response

When an oil spill is reported, animals may already have started arriving on shorelines. This sheet provides guidance as to how to start up an effective response : ensuring that animals are picked up safely and transported to facilities where they receive care for several days before being washed.

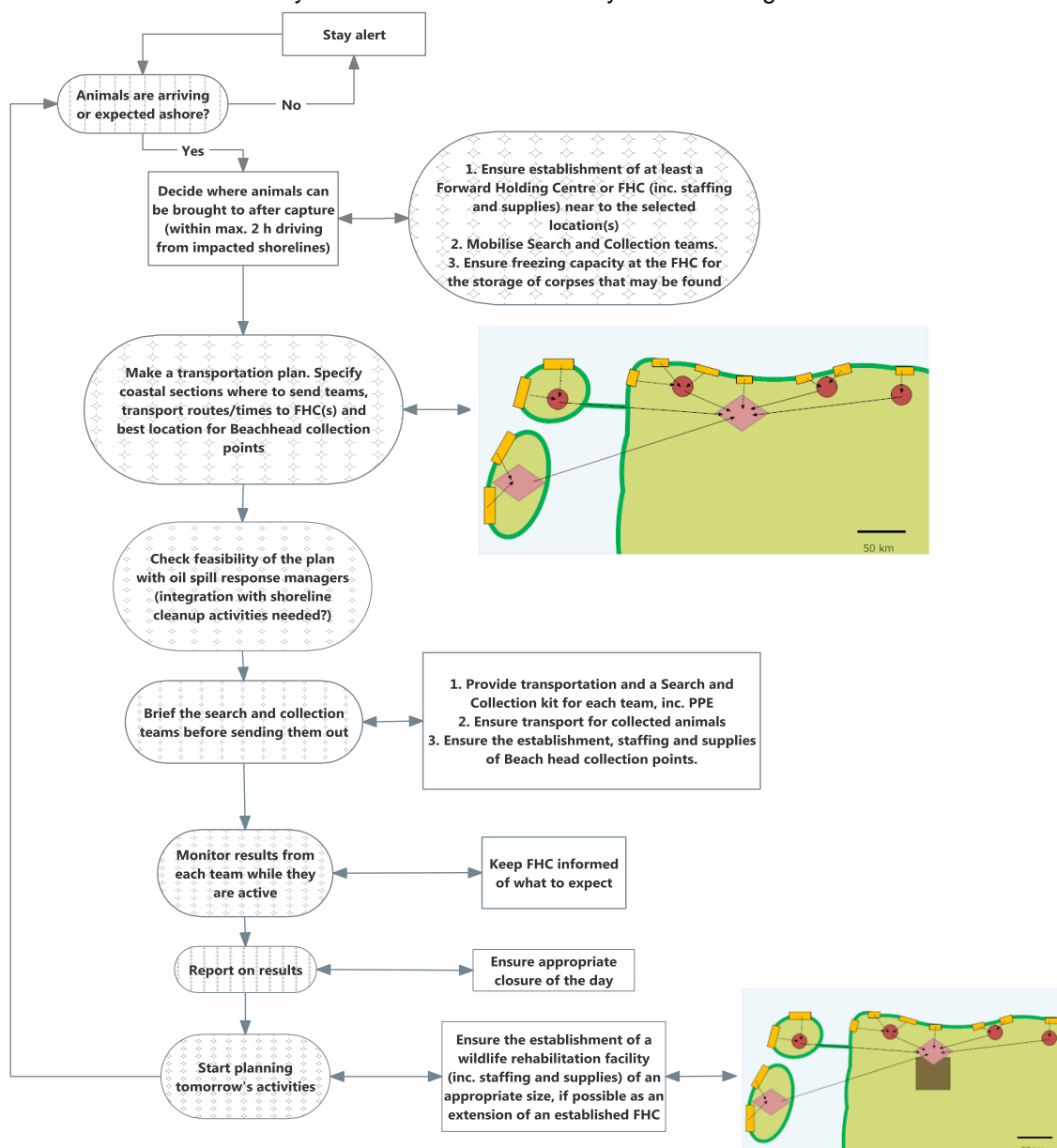


Table: Types of facilities (explaining symbols in figures)

Beachhead collection point (BCP) (circles)	A warm and ventilated place where live animals can spend a few hours before they can be transported. No animal stays here overnight!
Forward Holding Centre (FHC) (diamonds)	A facility where animals can be provided with pre-wash care (see technical sheets for set up, lay-out and procedures). Animals can stay here for many days, but are not released from here.
Wildlife Rehabilitation Centre (WRF) (square)	A facility that is in fact a Forward Holding Centre extended with adequate washing and post-wash care capabilities. Setting up and running a Wildlife Rehabilitation Facility needs the involvement of qualified experts!

Annex 6: Description of tier-3 equipment available from OSRL

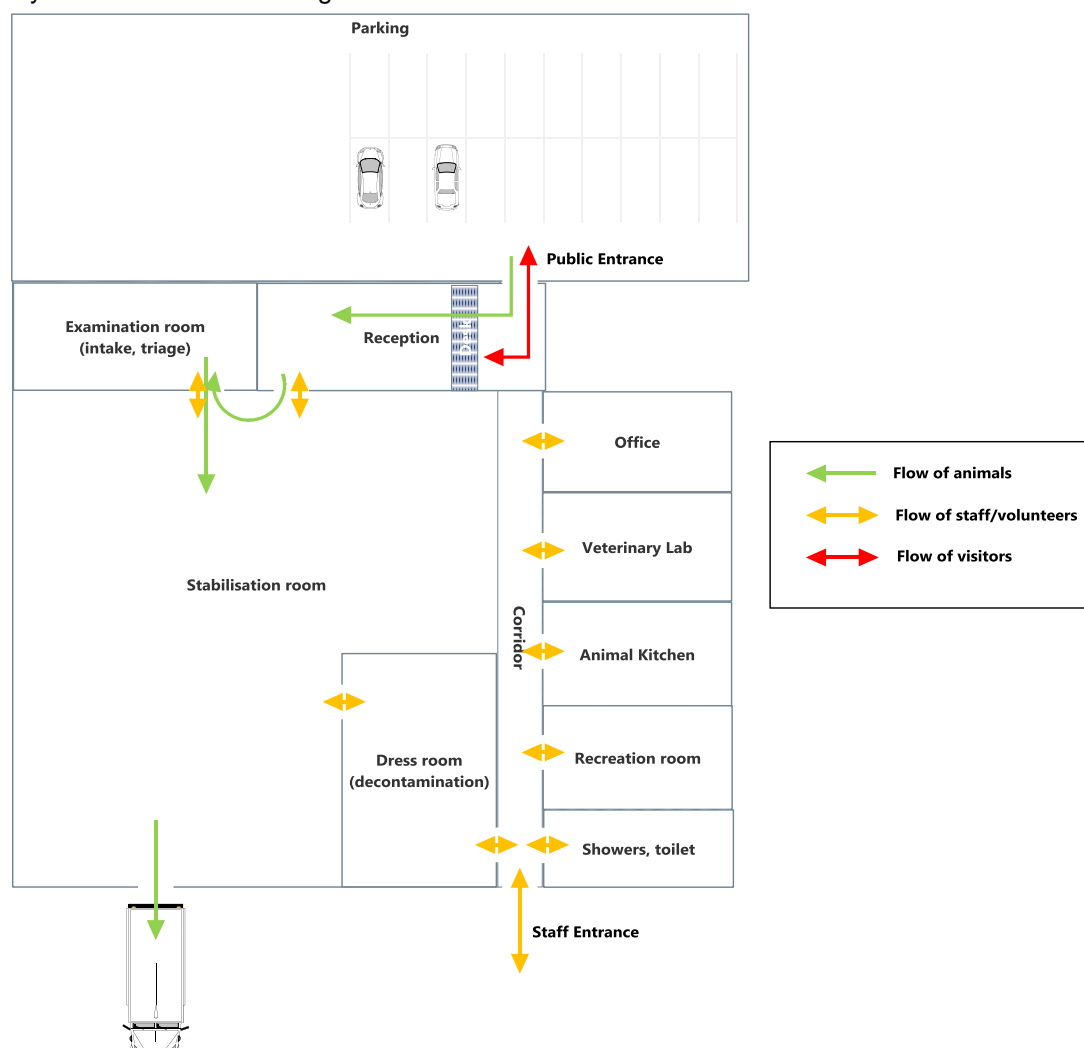
Oil Spill Response Limited (OSRL) is the oil industry owned company that has stockpiles of wildlife equipment in Southampton, Singapore and Bahrain. G-HOST can arrange with OSRL to mobilise these stocks. OSRL's wildlife equipment is stored and will be mobilised in flight containers, each of which has a fixed and invariable contents. Three sets of equipment are available as follows:

		Search and rescue	Veterinary	Rehabilitation
				
	Total	Nets, PPE, carton board boxes, plastic bags	Scales, blood centrifuge, various consumables such as syringes, tubes, gloves, etc.	Pools, pet dryers, tubs, detergent, PPE, washing gear, tools
Southampton (Tier-3)	4 containers	1x	2x	1x
Singapore (Tier-3)	2 containers		1x	1x
Bahrain (Tier-2)	2 containers		1x	1x

A detailed pack list of each container can be obtained from OSRL.

Annex 7: Set up and layout of a forward holding centre

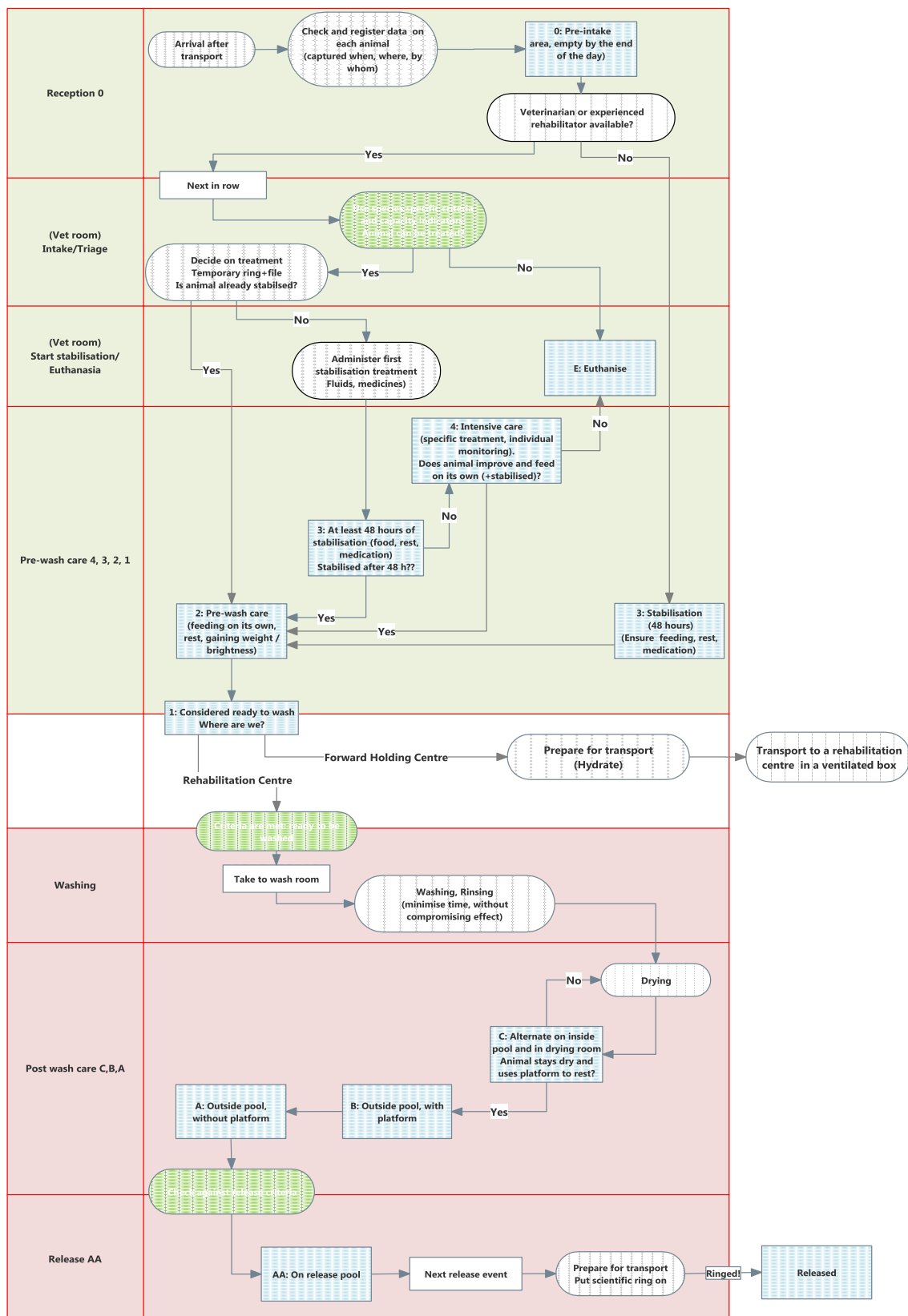
Example layout of a Forward Holding Centre



Checklist of most important characteristics and equipment		
Reception <ul style="list-style-type: none"> ✓ Desk ✓ Space to put bird boxes ✓ White board 	Corridor <ul style="list-style-type: none"> ✓ Connecting all indicated rooms ✓ Signposts 	Showers, toilet <ul style="list-style-type: none"> ✓ For women ✓ For men ✓ Hot/cold running water ✓ Benches/chairs ✓ Coat hooks
Examination room (if vet available) <ul style="list-style-type: none"> ✓ Water, electricity ✓ Table ✓ Cupboard with medical equipment, medicine ✓ Balance 	Office <ul style="list-style-type: none"> ✓ Desk, chair ✓ Computer, internet, telephone, fax/copier/printer ✓ Meeting table ✓ White board 	Recreation room <ul style="list-style-type: none"> ✓ Table(s), chairs ✓ White board ✓ Mugs, plates, cutlery ✓ Fridge with snacks ✓ Microwave
Stabilisation room <ul style="list-style-type: none"> ✓ Clean working environment ✓ Good ventilation ✓ Net bottom cages and pens 	Veterinary lab (if vet available) <ul style="list-style-type: none"> ✓ Desk, chair ✓ Computer ✓ Centrifuge ✓ Freezer (to put dead animals) 	Parking <ul style="list-style-type: none"> ✓ Parking space ✓ Security checkpoint ✓ Signposted ✓ Waste storage containers
Dressing Room <ul style="list-style-type: none"> ✓ Benches and hooks ✓ Lockers for personal belongings ✓ Signs with instructions 	Animal kitchen <ul style="list-style-type: none"> ✓ Hot/cold water ✓ Work tables ✓ Fridge, freezer ✓ Microwave, mixers 	Facility as a whole <ul style="list-style-type: none"> ✓ Existing building or party tents ✓ Hot & cold water, electricity ✓ Climate control (+ventilation) ✓ Space & flexibility

	✓ Near city/ main roads
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Annex 8: Operations in a FHC and WRC



Annex 9: Setting up and running a control room

The control room is an important place in the wildlife operations. It must be set up as an integrated part of the overall spill management, so that decisions can be made overseeing all the relevant information on both sides. An example of the physical set-up of the control room is illustrated in Figure 1, with a checklist of its equipment in Table 1. Table 2 provides suggestions for organising the information on display in the meeting room.

Figure 1: Physical set-up

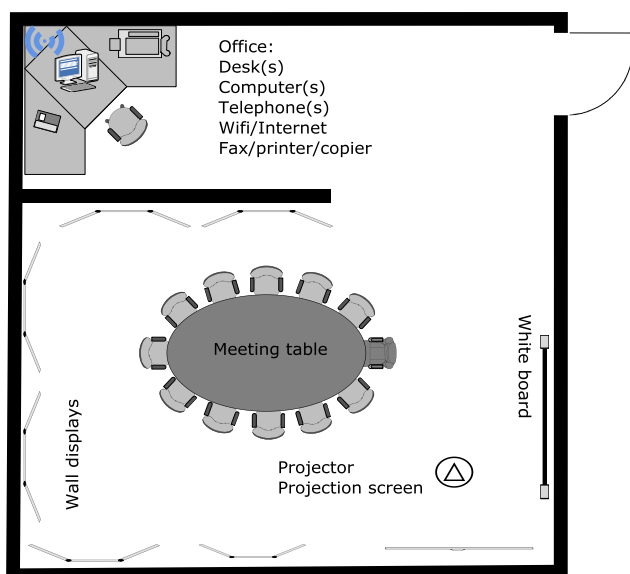


Table 1: Checklist equipment

Office:


- ✓ Desk (s) and chairs
- ✓ Office tools (paper, pens, tape, stapler, hole punch, etc.)
- ✓ Computer
- ✓ Internet connection (Wi-Fi)
- ✓ Telephone land line(s)
- ✓ Fax/printer/copier

Meeting room:

- ✓ Meeting table and chairs
- ✓ Wall displays (or empty walls)
- ✓ Flip chart with paper and pens
- ✓ Whiteboard with pens and cleaner
- ✓ Projector
- ✓ Projector screen (or white wall)

Table 2: Contents of wall displays


Heading	Information presented (printed files or hand written on flip chart sheets)
Spill History	The source of oil, date of spill, exact location, oil type, amount and properties, future issues and contact information for the spill advisor
Species information	Information on species affected, habitat, distribution, identification photos, life history, previous oil spill knowledge (post release survival data) and care/washing information if available
Rehabilitation Process	Description of process (with photos), triage policy and euthanasia policy
Key Facts (Media)	Media lines, bird numbers (overview), news articles
Training Program	List of roles and trainers (with photo) for allocation of trainees
Maps	Showing oil spill area, sensitive areas, collection points and rescue facilities
Facility layout	Room plan and copy of health and safety protocols
Team information	Name, organization, role and contact number with coordinators highlighted (can be arranged by organization or by role)
Facility Operations	Lists the number of birds in each part of the facility, updated twice daily. It helps to include a list of daily tasks, which can be ticked off when complete.
Field Operations	Shows who is in the field, their role and contact information, updated twice daily
Equipment requests	Central point for gathering requests, highlight if urgent, to be checked daily

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Annex 10: Agenda for tactical meetings

Chair: (Deputy) Wildlife Response Director

1. Welcome
2. Agree on the agenda: priorities
3. Update on current developments with regards to
 - a. Source of oil spill (contained?)
 - b. Spread of oil and forecast modelling
 - c. Oil combat at sea (activities and success)
 - d. Shoreline protection (where?)
 - e. Shoreline cleanup (where?)
4. Assessed wildlife threats
 - a. Sensitivities in the track of the oil
 - b. Which species in the area, which species expected, how many?
5. Casualties observed or found?
6. Field operations: Protection, pre-emptive capture, search & collection
 - a. Results so far
 - b. Bottlenecks
 - c. Plan next operational period
7. Facilities operations
 - a. Results so far
 - b. Bottlenecks
 - c. Plan next operational period
8. Overview animals in care and released
 - a. Results so far
 - b. Bottlenecks
 - c. Plan next operational period
9. Personnel, volunteers and logistics
 - a. Results so far
 - b. Bottlenecks
 - c. Plan next operational period
10. Documentation and communication
 - a. Results so far
 - b. Bottlenecks
 - c. Plan next operational period
11. Conclusions on actions to be taken
12. Time and location of next meeting


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Places of Refuge

Decision Matrix

Irish Coast Guard

April 2011

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Places of Refuge Decision Matrix

Purpose

The purpose of the Places of Refuge Decision Matrix (PORDM) is to establish a national framework and approach which, with associated regional measures, will provide for an effective and efficient response to requests from ships in need of assistance seeking a place of refuge.

The PORDM will help to ensure that a consistent approach is taken to put in place an effective response plan that will meet both Ireland's national and international responsibilities.

The PORDM provides a decision-making risk assessment tool for Coast Guard staff which will help to ensure that a thorough and balanced assessment of the risks are made and the best risk control strategy can be decided on and implemented in a timely and safe manner.

The PORDM takes into account International Maritime Organization (IMO) Resolution A.949(23) "Guidelines on Places of Refuge for Ships in Need of Assistance."

Background

There have been a number of places of refuge type incidents that have taken place in Ireland such as: Capo Emma – 1986; Toledo – 1987; Tribulus – 1989; Atlantis Sky 1991; Frank Bonafass – 2003. In the absence of a formal approach, such incidents were handled successfully, although more recently the National Marine Environmental Team (NMET), port authorities and the Local Authorities have also been engaged in the process.


In recent years, there have been high profile international incidents that have resulted in either a ship pollution disaster, or a near miss of one, involving ships that were refused a place of refuge (e.g., Erika in 1999, Castor in 2000, and Prestige 2002). Consequently, the issue of the provision of a place of refuge to a ship in need of assistance has become a priority for governments worldwide.

On December 5, 2003, the International Maritime Organization (IMO) adopted Guidelines on Places of Refuge for Ships in Need of Assistance (resolution A.949(23)).

The purpose of the IMO Guidelines is "to provide Member Governments, shipmasters, companies and salvors with a framework enabling them to respond effectively and in such a way that, in any given situation, the efforts of the ship master and the shipping company concerned and the efforts of the government authorities involved are complementary. In particular, an attempt has been made to arrive at a common framework for assessing the situation of ships in need of assistance" (A.949(23) p 1.12.).

The IMO Guidelines recommend that "coastal States endeavour to establish procedures consistent with these Guidelines by which to receive and act on requests for assistance with a view to authorizing, where appropriate, the use of a suitable place of refuge" (A.949(23) p.3.4).

Furthermore, the IMO Guidelines recognize that there are no international obligations for coastal States to provide a place of refuge; however, the Guidelines state that "the coastal State should weigh all the factors and risks in a balanced manner and give shelter whenever reasonably possible" (A.949(23) p 3.12).

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The Irish Coast Guard, which is a part of the Department of Transport is the lead agency for decisions related to a ship in need of assistance and requesting a place of refuge. As such, the Irish Coast Guard is responsible for ensuring the IMO Guidelines are taken into account and implemented to the extent possible.

Application and Scope

The PORDM applies to all situations where a ship is in need of assistance and requests a place of refuge within Irish waters. This includes Ireland's internal waters, territorial sea and the Exclusive Economic Zone (EEZ).

The PORDM also applies in the case where a ship is destined for Ireland and has reported a problem (a defect, deficiency or a casualty).

The PORDM does not apply to distress situations where the safety of life is involved. In such cases, established search and rescue procedures shall be followed. Any request that includes a requirement to rescue or to immediately evacuate the crew or other persons on board will take priority. Once the rescue has been concluded and there is no longer any risk to the safety of life, the PORDM can be activated.

In cases where ship damage has resulted in the discharge of a pollutant or there is an imminent threat of a discharge of a pollutant, the PORDM would be implemented in conjunction with current response procedures and contingency plans. Decisions concerning a place of refuge fall under the responsibility of the Irish Coast Guard along with the responsibility for responding to ship-source pollution spills and Coast Guard will also fulfill the monitoring and on-scene command role for the Minister of Transport.

In urgent situations, the PORDM will be followed to the extent possible given the time available for decision making.

In applying the PORDM, every effort should be made by all involved to cooperate, work closely together, allow for an open exchange of information and build consensus in the decision-making process. Where consensus cannot be reached, the decision will be made by the Director, Irish Coast Guard.

The PORDM is to be applied within the framework of existing laws (local, national and international law).


Definitions

Maritime Casualty

means a collision of ships, stranding or other incident of navigation, or other occurrence on board a ship or external to it resulting in material damage or imminent threat of material damage to a ship or cargo; Sea Pollution Act 1991

Owner

In relation to a ship, means the person registered as the owner of the ship, the person who owns the ship, and, in the case of a ship which is owned by a state (including the State) and is operated by a person who in that state is registered as the ship's operator, "owner" means the person registered as such operator; Sea Pollution Act 1991

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Pollution

when used without qualification, includes pollution by oil, by an oily mixture, by a noxious liquid substance, by a harmful substance, by sewage or by garbage; Sea Pollution Act 1991

Noxious liquid substance

means any liquid substance which, if introduced into the sea, is liable to—

- (a) create hazards to human health,
 - (b) harm living marine resources,
 - (c) harm flora and fauna,
 - (d) damage amenities, or
 - (e) interfere with legitimate uses of the sea,
- and any liquid substance prescribed under *section 10* as a noxious liquid substance; Sea Pollution Act 1991

Hazard:

Following upon a maritime casualty or acts related to such a casualty, there is grave and imminent danger of major harmful consequences through pollution to the coastline or to related interests.

- (b) In this subsection "related interests" means the interests of the State and the health and well-being of its citizens and, without prejudice to the foregoing, includes—
 - (i) the health of the coastal population and the well-being of any area concerned;
 - (ii) marine resources, flora and fauna, and the habitats of such flora and fauna;
 - (iii) maritime coastal, port or estuarine activities, including fisheries activities, which constitute means of livelihood for persons concerned;
 - (iv) the tourist attractions of any area concerned.
- SPA '91 sect 26

Note: General types of hazards are natural, technical/operational, economic and human. In the case of a place of refuge, some potential hazards could include; poor ship condition and maintenance, damage to the ship's structure or systems, pollution caused by the ship, an explosion, a collision, grounding, human factors, security risk (i.e., is ship properly certified as per the "International Ship and Port Facility Security (ISPS) Code"?). Additional hazards that may contribute to the potential consequences include; weather and sea conditions, current, tide, navigational hazards and seasonal affects (i.e., ice). A hazard may also generate new hazards.


MAS

- Means a maritime assistance service (MAS), as described in IMO Resolution A.950(23), responsible for receiving reports in the event of incidents and serving as the point of contact between the shipmaster and the authorities of the coastal State in the event of an incident (A.949(23) p. 1.20).

Note: The Irish Coast Guard (IRCG), through MRCC Dublin and MRSCs, provides the Maritime Assistance Service (MAS) function in Ireland.

Place of Refuge:

Means a place where a ship in need of assistance can take action to enable it to stabilize its condition and reduce the hazards to navigation, and to protect human life and the environment (A.949(23) p. 1.19).

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Risk:

- Means the chance of injury or loss as a measure of the probability and severity of an adverse effect to health, property, the environment, or something else of value.

Note: Types of risks in place of refuge incidences could include: pollution, collision, grounding, stranding, sinking, fire, explosion, toxic risk, bio-hazards and security. Depending on the type of risk, the possible adverse effect or consequences could include: fatalities, injuries, damage to the environment, property loss, and economic repercussions (see **Annex 4** for areas that could be put at risk).

Risk Scenario:

- Means a defined sequence of events with associated frequency and consequences.

Ship in need of assistance:

- Means a ship in a situation, apart from one requiring rescue of persons on board, that could give rise to loss of the ship or an environmental or navigational hazard (A.949(23)p. 1.18).

Stakeholders:

- Means any individual, group, or organization able to affect, be affected by, or believe it might be affected by, a decision or activity.

Authority for Directing Ships

Legal Powers

Statutory Instrument No. 573 of 2010

The Director of the Irish Coast Guard is designated as the competent authority with powers, for the purposes of the Directive (2009/17/EC) to take independent decisions on his or her initiative concerning the accommodation of ships in need of assistance

The Sea Pollution Act 1991 provides the Minister for Transport, following on a maritime casualty, with powers to intervene and direct shipping and those in charge of vessels, harbour master and harbour authorities to take, or refrain from taking, any action of any kind whatsoever.


The Minister can take such action as appears necessary or expedient for the purpose of preventing, mitigating or eliminating the effects of pollution arising from a maritime casualty.

The Director, Asst. Director Irish Coast Guard and Regional Managers are warranted or authorised for the purpose of sections of the said Act to exercise the powers stated in subsections 3.1 and 3.2.

Power to establish Temporary Exclusion Zones, Maritime Safety Act 2005

The Salvage and Wreck Act 1993 allows authorised officers to require assistance from relevant people, masters of vessels at hand and any vehicle, vessel or aircraft.

The Director and Asst. Director Operations Irish Coast Guard, and other operational Coast Guard Officers have Warrants of Appointment as authorised officers for the purposes of the said Act.

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The Act excludes the Defence Forces and RNLI.

Pollution Response

Marine Pollution : As a result of a Government decision (S.15675D, 3 May 1988), the Minister of Transport has responsibility for supervising the planning and implementation by Local and Harbour Authorities of arrangements for the protection of coastal amenity/fishery/wildlife areas. The Minister is responsible for the removal of oil from the coastline and in the event of major pollution incidents, the direction of co-ordination of the onshore response. This role is assigned to the Irish Coast Guard.

Under the Sea Pollution (amendment) Act 1999 the Irish Coast Guard is the Irish national response agency for oil pollution preparedness, response and co-operation in the Irish EEZ, including Local and Harbour Authority areas, oil jetties and offshore oil installations. The IRCG through Government Decision has the responsibility for responding to ship-source pollution spills and will fulfill the national monitoring or on-scene command role for the Government of Ireland. In the case of a ship that has discharged or is likely to discharge a pollutant, the Minister of Transport has authority under section 26 Sea Pollution Act 1991, to take such measures as necessary to repair, remedy, minimize or prevent pollution damage. In addition, with respect to discharges or threats of discharges, Warranted officers within the Coast Guard may direct a vessel pursuant to subsection 26 SPA '91.

Port Authorities:

It should be noted that section 23 of the SPA '91, provides port authorities with the power to refuse entry of ships into a harbour.

Considering the authorities and jurisdictions of the SPA '91, there is a potential for conflicting directions being given to a ship concerning a specific port. In such situations, every effort must be made for the responsible authorities to agree on a required course of action. The Director, Irish Coast Guard has the authority to override the port authorities.

Responsibility for Decisions


The Director, Irish Coast Guard is responsible for the decision to grant or deny access to a place of refuge, the selection of the place of refuge and any operational instructions and conditions given to the master or salvors related to the decision.

Responsibility for the PORDM

The Director, IRCG is responsible for the updating and maintenance of the PORDM.

Notification and Reporting

The IRCG provides the Maritime Assistance Service (MAS) function in Ireland (as per Maritime Assistance Service (MAS), IMO resolution A.950 (23)). This service is intended to act as the point of contact between the ship in need of assistance and the coastal State. All communications with the ship shall go through the appropriate MRCC/MRSC. If considered necessary to facilitate the exchange of information, temporary direct communications may be established between the ship and the risk assessment team, provided both parties agree and the MRCC/MRSC is informed. However, all formal reporting notifications and any other communications required by national and international instruments shall continue to be made through the MRCC/MRSC.

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Notification within IRCG will follow established notification procedures as per *IRCG Notification Matrix for a Major Marine Incident*. IRCG Marine Emergency Room (MER) shall be activated in accordance with Coast Guard procedures and should be considered in all cases when either: 1) the overall risk level is considered high; 2) extraordinary measures and resources are needed to mitigate the risk; or 3) when coordinated action of several authorities is required. Where it is impractical to use the MER, alternative arrangements may be made.

The Director, IRCG shall be notified of all places of refuge incidents.

As soon as a decision is made, the IRCG should notify and inform all stakeholders as soon as practicable.

International Liaison

Close collaboration with other countries will be needed when responding to incidents in waters adjacent to neighboring countries. MRCC Dublin shall make arrangements for notifying and consulting applicable UK and French authorities when dealing with incidents in boundary waters.

Regional Procedures, Arrangements and Contingency Plans

IRCG Pollution & Salvage Manager to ensure procedures and arrangements for places of refuge should be implemented in accordance with the PORDM. Procedures and arrangements should take into account and, where appropriate, build upon existing procedures and plans. Consideration should be given to identifying any specific needs, issues and concerns of stakeholders that would need to be taken into account in decisions related to a place of refuge.


IRCG Pollution & Salvage section should bring the PORDM to the attention of the various port, local, regional authorities so that existing contingency plans and emergency procedures can be reviewed and updated as needed.

Contingency plans should take into account foreseeable accident scenarios that might result from the granting of a place of refuge and what measures might be taken to reduce the consequences. Foreseeable accident scenarios would include, pollution (oil, chemical, toxic), fire, explosion, radiation and biological accidents. Arrangements should be made to have the plans readily available to the risk assessment team (see Decision-Making Process) for consultation in an incident.

Advance Planning and Assessments for Places of Refuge

The most suitable place of refuge can only be determined after the details of the specific incident are known and thoroughly considered. To pre-designate places of refuge may be of limited value, as the limitations, operational considerations, hazards and associated risks will vary greatly with each incident. Experience in Ireland has shown that because no two incidents, and the circumstance surrounding the incident, are very similar, the value of pre-planning lies primarily in ensuring information will be readily available (i.e., nautical charts and publications, port information, environmental and sensitivity data), along with the relevant specialists.

Therefore, to expedite the case specific analysis and decision-making process during an incident, MRCC should regularly review the coastal areas and assemble the information that would be needed to identify and compare suitable places of refuge and have this information readily available in the event of an incident. **Annex 3** contains a list of criteria that could be helpful in identifying the most suitable places of refuge for a particular incident, taking into account the characteristics and facilities needed to address the problem.

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In addition, information that will help to facilitate the process of evaluating the risks associated with a casualty at sea, along the coastline or in a place of refuge should also be compiled and measures taken to ensure this information is also readily available in the event of an incident.

Annex 4 contains a list of areas (e.g., environmental sensitivity mapping prioritizing areas for protection at different times of the year along with a shoreline protection strategy, socio-economic and safety) that could be put at risk in the event of a casualty.

The above advance planning and assessments for places of refuge will require the involvement and expertise of Department of the Environment and Department of Agriculture Fisheries and Food and other stakeholders as necessary.

Decision-Making Process

In general terms, the following risk assessment decision-making process has three main elements; 1) the ship request (owner,/charterer/master/salvor), 2) the risk assessment of the situation and options and 3) the action plan and monitoring its implementation.

An integral part of the decision-making process is continuous consideration to communicate and consult with stakeholders. It is also essential that the process is well documented throughout. The use of a risk assessment team in the process provides for a joint assessment of the situation involving the necessary authorities, experts and advisers in the evaluation of the situation and the weighing of the risks of the different options where time allows.


The decision-making process should be followed to the extent possible under the circumstances. However, it is recognized that each incident will have unique characteristics, dynamics, challenges and circumstances. The decision-making process is intended to be flexible to allow for a case-by-case assessment and to accommodate incidents of all levels of complexities and risk. Therefore, in completing each step in the process, and in the selection of the risk assessment team, those involved in the process should be guided by the importance of the decision to be made and the level of concern regarding the situation.

Recognizing that the situation at sea could deteriorate rapidly with time, a decision should be made as quickly as possible and the situation closely monitored until it is adequately resolved. However, a place of refuge incident will not transpire at such rate that a collaborative decision making process of some kind cannot be followed.

The decision-making process will determine if access is to be allowed or not. Where access is granted, the most suitable place must be identified and appropriate risk control measures implemented. Where the risk is considered too great and access to a place of refuge cannot be granted, then the nature and degree of assistance to the ship offshore must be decided upon, along with any operational recommendations. The risk assessment team and all involved stakeholders are to work towards the best operational decision possible fully aware that; (A) it is unlikely that one single option will be acceptable to everyone, and (B), not all the required information may be available or be completely reliable. Documentation of the process is critical.

The following process will facilitate effective and objective decision-making to determine the most suitable course of action:

<u>Places of Refuge Decision-Making Process</u>		
Element	Step and Description	Ongoing
Ship Request	1- Obtain the necessary ship information 2- Describe the problem and associated issues 3- Identify the risk assessment team and the stakeholders that may need to be consulted or kept informed	Document
Risk Assessment	4 – Preliminary analysis of current situation 4.1 Describe what can happen (risk scenarios, hazards, risks, consequences, probability, urgency) 4.2 Decide if any immediate action is necessary 4.3 Decide if an inspection team should be deployed 5- Identify the Options 5.1 Identify feasible places of refuge 5.2 Consider if anyone should be added to the risk assessment team or the stakeholder list 6- Estimate the risk for each option 6.1 Describe what can happen (risk scenarios, hazards, risks, consequences, probability) 6.2 Estimate the risk level (risk matrix) 6.3 Identify risk control measures and evaluate their impact on the risk level 7) – Evaluate and compare the options	
Action and Monitor	8) – Decide: <ul style="list-style-type: none"> ▪ Grant access to a place of refuge and specify what control measures need to be taken. or ▪ Deny access to a place of refuge specifying the reasons why and indicate what assistance can be provided to the ship and what if any control measures are to be taken. 9) - Review and agree on the ship's proposed action plan and monitor the implementation until the situation has been resolved. 10) - Obtain feedback on the effectiveness of the process.	Communicate

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Places of Refuge Decision-Making Process

The Ship Request

1- Obtain the necessary ship information

The MRCC/On call no 2, through the MRCC/MRSC, ensures the ship and/or the owner/charterer/salvor/cargo owner(s) has provided all the initial information needed to assess the initial request and that is required under the IMO Guidelines. **Annex 1, Part 1** sets out the information that should be provided. For example, masters and salvors are to;

- 1) identify the assistance required;
- 2) identify the reasons for assistance; and
- 3) estimate the consequences of the potential casualty if the ship;
 - a) remains in the same position,
 - b) continues on its voyage,
 - c) reaches a place of refuge
 - d) is taken out to sea

In addition to the information provided by the ship in the initial request for a place of refuge, other information will be needed to support the decision-making process. Ship contact information, ship particulars and current status information will be needed, including information on the condition and capabilities of the ship and details of its cargo. **Annex 1, Part 2** contains a list of additional information that may be useful and should be obtained from the ship where relevant.


On Call No 2/Regional Managers, should be prepared to validate any information using whatever means available using the resources of other Government departments, Ports, Local Authorities. For example: Department of Defence (DoD) aircraft and ships, IRCG helicopters, Customs, Gardai. With the involvement of the above, it would be expected that IRCG could call upon their equipment and infrastructure.

Much of this information may have already been provided by the ship because of mandatory reporting requirements of a number of international and national instruments. The international requirements are listed in **Annex 1** of the MAS Guidelines (A.950 (23)). Particularly relevant are the mandatory reporting requirements of the following;

- Article 8 and Protocol I of MARPOL sets out the requirements for a coastal State to be informed in the event of an incident involving actual or probable pollution,
- Assembly Resolution A.851(20) provides guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants,
- *SPA '91 as amended* requires the master of a ship to report any discharge of a pollutant from the ship that occurs or the probability that such a discharge will occur and to provide additional information as requested. This Act incorporates Resolution A.851(20) "Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants,".

2- Describe the problem and associated issues

Based on the ship request and information provided, and taking into account Ireland's perspective as the coastal/port State, briefly summarize the problem or main concerns and other associated issues. This information becomes the key statement that will be used in the following steps and will help in identifying those people who can assist and who could be affected. **Annex 1, Part 1**, could be used to state the problem, issues and comments.

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3 - Identify the risk assessment team and the stakeholders that may need to be consulted or kept informed

Risk Assessment Team

A IRCG risk assessment team should be established where possible to assess requests for places of refuge. Members are responsible for providing the technical expertise, guidance and research to the team so that the team can complete the necessary analysis and evaluations to advise the IRCG Director and to resolve the situation.

Members of the risk assessment team will be selected, as needed, depending on the particular incident. In all cases, the Director, IRCG shall be notified, who in turn will assign a IRCG member in charge of the risk assessment team as required. For potentially serious incidents, a ship inspection team of marine surveyors from the Marine Pollution Response Team will be mobilized to correlate and evaluate shipboard data and plans to provide rapid technical guidance with respect to ship's residual damaged stability and longitudinal strength. For environmental assessment the National Marine Environmental Team (*NMET*) can provide environmental information and expertise and advise on the environmental impacts of different courses of action. Additional members can be added as the analysis and decision-making process progresses. These may include experts and advisors from; other government departments, Local Authorities, other authorities with responsibility for areas likely to be affected and industry.

Each MRCC/MRSC shall make arrangements for a risk assessment team to be notified and assembled in the event of receiving a request for a place of refuge. The analysis, evaluations and decisions shall be documented.

Stakeholders

Stakeholders who could be affected by the decision and that may have to be consulted or kept informed should be identified.

List of Potential Risk Assessment Team Members and Stakeholders

Annex 2 contains a list of potential members to the risk assessment team or stakeholders that could affect or be affected by a place of refuge request. To facilitate identifying and contacting risk assessment team members and stakeholders, each MRCC/MRSC shall maintain a contact list of government experts and authorities, organizations, experts and stakeholders that may need to be contacted and participate in a place of refuge incident.

Risk Assessment

4 - Preliminary analysis of current situation


Based on the information provided, the Risk Assessment Team conducts a preliminary analysis of the ship's current situation.

The preliminary analysis is a cursory look at the situation, scoping out the risk problem and getting an indication of the potential risks at sea. The preliminary analysis should briefly cover the following:

4.1 - Describe what can happen

Consideration is given to what could happen at sea given the current situation. Risk scenarios can be used to help identify the hazards and the potential risks. From this, the possible adverse consequences of what could happen, and the likelihood of it happening are estimated. The urgency and time frame for decision-making should also be estimated. Examples of hazards and risks are given in the Definitions section.

4.2 - Decide if any immediate action is necessary

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Depending on the preliminary analysis, immediate action may be necessary to start addressing the risk even though all the critical information and analysis may not yet be available. This might involve taking emergency measures as per existing contingency plans, notifying shipping, providing immediate instructions to the ship to address urgent risks or taking action to complement efforts already underway by the ship.

4.3 - Decide if an inspection team should be deployed

An inspection team should board the ship, when appropriate and if time allows, to gather additional evaluation data for further assessment and decision-making. Deploying an inspection team will depend on safety and the situation. Based on the team's evaluation, the information previously recorded on the ship and its current status (**Annex 1, Part 1**) is revised accordingly. The input and the analysis of the risks by the inspection team are integral to each of the remaining steps in the decision-making process. Team members may have to remain on board to provide advice, report on actions being taken by the ship or salvor, and to help monitor the condition of the ship.

Each MRCC/MRSC shall have arrangements in place for assembling an inspection team and placing them on the ship. A list of qualified personnel should be maintained that could be called upon to provide this expert shipboard inspection function bearing in mind the expertise required will depend on the situation.

5- Identify the Options

5.1 - Identify feasible places of refuge

Possible places of refuge are considered that could provide the ship with what it needs to address the problem and to minimize the threat of further damage. The most suitable ones are selected as options for further assessment. Depending on the circumstances, a suitable place of refuge could be a port, an anchorage or a sheltered location near the coast.

A place of refuge may be needed to;

- lighter or transfer the ship's cargo and bunkers,
- repair damage,
- provide shelter while the ship stabilizes or evaluates its condition, or
- limit the extent of damage or pollution.

The suitability of a place of refuge will also depend on a number of operational requirements specific to the situation such as, depth, distance, approaches, docking facilities and anchoring ground.


Annex 3 provides a list of criteria for identifying places of refuge suitable to the ship.

5.2 - Consider if anyone should be added to the risk assessment team or the stakeholder list

Once the feasible options have been identified, the composition of the risk assessment team and list of stakeholders should be reviewed.

6- Estimate the risk for each option

Annex 6 contains a table that could be used to record the risk assessment details from steps 6 and 7 for each option considered.

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6.1 - Describe what can happen (risk scenarios, hazards, risks, consequences, probability)

As was done previously with the ship's current situation, for each place of refuge option, risk scenarios are developed by describing what accidents could happen, or what could go wrong. The risk scenarios should identify the underlying hazards and associated risks that may generate or contribute to the potential consequences of bringing the ship into the place of refuge. The voyage from the ship's current position to the place of refuge should be included in the scenarios. Examples of hazards and risks are given in the Definitions section.

Similarly, risk scenarios for the options associated with the ship remaining at sea are also to be prepared. Consideration should be given to the following options;

- 1) if the ship remains in the same position,
- 2) if the ship continues its voyage, and
- 3) if the ship is taken out to sea.

In some cases, more than one risk scenario may need to be identified for a particular option. This would be the case where very different accidents could happen or where a different sequence of events would lead to different risks. For example, one accident scenario may describe the worst foreseeable accident with a certain probability, while another accident scenario would describe an accident with less severe consequences but with a much higher likelihood of occurring. Depending on the severity and likelihood of the different scenarios for a particular option, the assessment team may select the ones for further risk estimation.

The potential consequences are then estimated for each option (i.e., each place of refuge and the 3 options at sea). The level of exposure to the hazard(s) will affect the potential consequence. For example, to understand the risk to the environment and the potential consequences from a pollutant (hazard), consideration needs to be given to; the type and quantity of the pollutant, the affect of weather, sea, current, and tide, and the waters and coastlines that will be exposed to the pollutant.

Annex 4 provides a list of some areas that could be put at risk and suffer adverse consequences in the event of a casualty. Three broad categories have been identified:

- 1) health, safety and security 2) environmental, and 3) socio-economic.

Consideration is given to the probability of the risk scenario happening and estimated. The probability will be a function of such things as; the condition of the ship, exposure to hazards such as weather and sea conditions, and distance and time to a suitable place of refuge.


6.2 - Estimate the risk level (risk matrix)

The overall risk associated with each option is estimated by considering the severity of the adverse consequences and the probability of the relevant risk scenario.

Annex 5 provides a method of categorizing the potential consequences and probability. A risk matrix can then be used to assign an overall level of risk for each option. Having an estimate of the level of risk will help in determining appropriate risk control measures and in comparing the risk associated with different options.

6.3 - Identify risk control measures and evaluate their impact on the risk level

Once the overall risk has been estimated for each scenario, control measures that could be implemented to reduce the risks to acceptable levels should be considered.

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Examples of control measures are:

- use of tugs,
- pilots,
- alternate routes,
- temporary repairs,
- cargo transfer/lightering
- use of pollution response equipment,
- restrictions on access and sea areas,
- contingency plans,
- special conditions,
- operational procedures.

Control options may introduce new risks and costs that will also need to be factored in. Any other costs associated with implementing the options should be included with the consequences.

Control measures will serve to either help prevent the risk (reduce the probability), mitigate the risk (lessen the impact) or both. The control measures available and their effectiveness will also vary with the different options. The probability and the consequences should therefore be reassessed for each option to take into account the affect of the risk control measures and the overall level of risk re-evaluated.

Insurance and Financial Safeguards

The impact of the consequences and the costs may be offset by insurance or other financial safeguards (i.e., financial bond, bank guarantee, indemnity fund, P&I Club). The limits of liability or financial guarantee should be considered and factored in.

The Irish Coast Guard will not refuse to accommodate a ship in a place of refuge on the sole basis that a certificate of insurance has not been produced (S.I. 573 p 24(2)),

7 - Evaluate and compare the options


The overall risk levels of the various scenarios are then evaluated and compared and the advantages and disadvantages of each option carefully weighed. In weighing the advantages and disadvantages the following should be considered:

- The effectiveness of each option at addressing the ship emergency;
- The avoidance of the risks associated with the other options;
- The degree of difficulty in implementation of each option;
- The acceptability by the stakeholders of the residual risks and the proposed actions to be taken, including the proposed control measures;
- International and bilateral impacts;
- Legal issues (liability considerations);
- Security

Action and Monitor

8 - Decide:

- **Grant access to a place of refuge and specify what control measures need to be taken.**
- or
- **Deny access to a place of refuge specifying the reasons why and indicate what assistance can be provided to the ship and what if any control measures are to be taken.**

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Based on the evaluation, a decision is required of the risk assessment team on whether to grant or deny access. Where access is granted, the place of refuge and control measures must be specified. Where access to a place of refuge is refused, then the reasons should be specified to the ship. The ship should also be told what assistance is available to the ship and what, if any, control measures are to be taken.

Access should be provided whenever reasonably possible, depending on the risk. Access should be granted where, with appropriate risk control measures, the estimated level of risk is considered low (i.e., risk level 1-3), or the risk is reduced as much as possible and the risk would clearly be lower than if the ship were to remain at sea.

In the case where the risk is considered too great and access to a place of refuge must be denied, then all possible assistance must be offered to the ship offshore so as to prevent and control any environmental damage that may or will occur.

9 - Review and agree on the ship's proposed action plan and monitor the implementation until the situation has been resolved.

The ship shall prepare an action plan, taking into account the decision reached, together with any control measures that have been decided-on.

Once an action plan is agreed on, all authorities and other stakeholders should be notified as soon as possible.

The implementation and the situation should be monitored closely to address changes in the situation that would increase the risks and possibly requiring new decisions and additional control measures. Monitoring should continue until the situation has been resolved.

10 Obtain feedback on the effectiveness of the process.


Once the plan is completed, those involved in the incident should be asked to comment on the event. The feedback can then be recorded and used to make recommendations to the Director, IRCG for changes in these guidelines.

Annex 1 Part 1 (Steps 2, 3, and 4)

Information on the Ship and Its Current Status

Information on the Request

INFORMATION ON THE SHIP REQUEST (AS PER A.949(23))	
Information Provided by the Ship	IRCG Comments
What assistance is required from Ireland? (for example; lightering, pollution combating, towage, stowage, salvage, storage, repairs...)	
State the reasons for the ship's need for assistance. Cause and extent of damage or problem (for example; fire, explosion, damage to ship, including mechanical or structural failure, collision, pollution, impaired stability, grounding...)	
What are the hazards and associated risk and estimated consequences of potential casualty if the ship: <ul style="list-style-type: none"> remains in the same position, continues on its voyage, reaches a place of refuge, is taken out to sea. 	
Describe the Problem and Associated Issues: (Briefly summarize the problem and issues, from Ireland's perspective)	
Empty space for description	

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Annex 1 Part 2 (Step 1)


Information on the Ship and Its Current Status **Additional Ship Information**

Ship Contact Information

- Ship Identity – name, flag, identity/IMO/MMSI number
- Master's name and nationality – Still on board?
- Name of person on the ship making the request, date and time
- Last port of call
- Working language on board
- Security (certificate, level)
- Local representative of the company (name, address, telephone number, email address)
- Registered owner (name, address, telephone number, email address)
- Registered company (name, address, telephone number, email address)
- If bare-boat charterer (name, address, telephone number, email address)
- Classification society local representative (name, address, telephone number, email address)
- Is the ship insured? Ship's insurers and limits of liability available (name, address, telephone number, email address)
- Local P&I Club representative (name, address, telephone number, email address)

Ship Particulars

- Type of ship
- Size (tonnage), length, beam and draft of ship, air draft
- Year constructed
- Propulsion, thrusters
- Anchoring gear
- Towing Gear
- Fuel (type, quantity)
- Nature and condition of cargo, stores, bunkers, in particular hazardous goods, (type, quantity, condition)
- Ballast

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Annex 1 Part 2 – (continued)
Information on the Ship and Its Current Status
Additional Ship Information

Current Status


- Position of ship (and how determined)
- Course and speed (making way, adrift or at anchor) and route information
- Weather, sea conditions, and forecast weather conditions
- Status of crew/salvors/other (number on board and assessment of human factors, including fatigue)
- Details of any casualties on board or in the vicinity of the ship
- Actual pollution or potential for pollution
- What is the urgency of the situation and the likelihood of the potential casualty
- Sea room (depth, drift, traffic density)
- Has the Classification Emergency Response Unit been contacted and supplied with information?

Ship Condition (damage/defects/deficiencies)

- Seaworthiness of the ship (buoyancy, stability, list, trim)
- Status of propulsion and power generation, and steering
- Status of essential shipborne navigational aids
- Details of changes in ship condition since initial event

Assistance Information

- Master's/Salvor's intentions
- Names of vessels in vicinity or assisting in situation
- Response actions taken by a ship (i.e., salvors contacted, engaged, at scene)
- Distance and time to a place of refuge
- Details of what is required from a place of refuge
- Docking ability
- Is anchoring possible
- Can the ship be accessed by helicopter

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Annex 2 Part 1 (Step 3)

List of Potential Risk Assessment Team Members and Stakeholders

- IRCG (Ship Inspection Team, ship technical and operational expertise, routing)
- IRCG Pol/Salvage (response, spill and clean-up expertise)
- DAFF/MI (scientific and operational expertise on fisheries, ocean, habitat)
- Environment Team (National Marine Environmental Team input, weather forecast)
- IRCG Legal Services
- IRCG Security
- IRCG Communications
- Local authorities
- Municipal authorities
- Port authorities/Harbour Master
- Classification society
- Emergency services (police, fire)
- Response organization
- Pilots
- Salvage companies
- Shipyards
- Surveyors
- Cargo handling facilities
- Health officials
- Chemical industry
- Customs
- Seafarer associations
- Search and Rescue (SAR)
- Department of Defense (DoD)
- Foreign Affairs (DFA)
- UK/French/ authorities
- Flag State
- NPWS (marine parks)
- Fishing industry
- Recreational Boating industry

Annex 3 (Step 5.1): Criteria for Selecting a Suitable Place of Refuge

What is needed by the ship to address the problem?		Suitability of Options		
Potential Requirements	Details	Refuge A	Refuge B	Refuge C
- Shelter (weather, sea, swell,)				
Safe anchorage (holding ground, depth)				
- Facilities/Equipment - reception facilities, transfer facilities i.e., pumps, hoses, barges, lightering				
- Repair facilities – shipyard, cranes, cargo gear, personnel				
- Salvage and Towage				
- Emergency facilities - fire fighting				
Docking requirements (draught, length, availability)				
- Sea room to manoeuvre				
- Other				
Other Place of Refuge Considerations				
- Navigation (traffic, unobstructed approach, pilots, tides, currents, ice, anchorage)				
- Assistance nearby, if needed (Oil and chemical response, salvage, towage)				
- Distance to refuge versus urgency				
- Accessibility by land, sea, and air				
- Ability of refuge to contain or limit the spread of pollution				
- Characteristics of refuge that would reduce the impact of pollution or facilitate clean-up				
- Emergency Response Capabilities (i.e., SAR, evacuation, medical, HAZMAT)				
- Is there a site suitable for beaching the problem ship if necessary.				
- Security, ability to restrict area, access				
- Weather and Sea Conditions (prevailing wind, tide, current, ice, weather, sea)				

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Annex 4 (Step 6.1) : Areas that could be put at risk in the event of a casualty

Health, Safety and Security <ul style="list-style-type: none"> • Public safety/security – consider distance to populated areas, size • Persons on board • Responders • Salvors • Persons in vicinity of ship • Other ships – collision • Air quality, contamination
Environmental <ul style="list-style-type: none"> • Sensitive areas (habitat, species), ecological reserve or protected area, • Wildlife (marine, terrestrial, avian) • Waters in vicinity of ship • Adjacent coastlines • Neighboring countries (UK, France)
Socio-Economic <ul style="list-style-type: none"> • Communities and business interests – consider distance to communities and industrial area • Impact on fisheries – offshore, approaches, shellfish • Tourism – coastline, beaches, sightseeing, hotels, waterfront activities • Public and private property • Infrastructure – bridges, channels, blockage, dock facilities, other installations • Port delays/disruption • Costs – i.e., salvage, environmental clean up, transport, cargo handling/lightering, surveying, pilotage, towage, moorage, harbour dues, specialists, special measures, waste disposal, material damage, personal damage, repatriation of crew/passengers, emergency services, repair and shipyard, removal of wreck • Marine transportation system • Offshore oil and gas activities • The ship and its cargo

Annex 5 (Step 6.2):

Probability and Severity of Adverse Consequences and the Overall Risk Level

Estimate Severity of Adverse Consequences:

The severity of the overall consequences associated with a risk scenario can be categorized as follows:

- Catastrophic:* multiple deaths, multiple major injuries, extreme property or environmental damage, extreme negative impact on the economy, major national or long term impact.
- Severe:* death, major injuries, severe property or environmental damage, loss of the ship, major risk to safety or restriction to shipping, regional impact.
- Significant:* many injuries, significant property or environmental damage, short-term consequences, local impact
- Minor:* some minor injuries, some property or environmental damage, minor short-term consequences.

Estimate Probability of Adverse Consequence:

The overall probability associated with a risk scenario can be categorized as follows:

- Highly probable:* almost certain the accident will occur.
- Probable:* accident likely to occur.
- Unlikely:* accident could occur.
- Improbable:* accident not likely to occur.

Estimate the Overall Risk Level

The following risk matrix can be used to help determine and categorize the overall risk level for each option. This estimate can then be used to help compare one option with another.

Severity of Adverse Consequence	Probability of Adverse Consequences Over Time			
	HIGHLY PROBABLE	PROBABLE	UNLIKELY	IMPROBABLE
CATASTROPHIC	9	8	7	5
SEVERE	8	7	6	3
SIGNIFICANT	7	6	4	2
MINOR	5	3	2	1

Risk Level: Low (1-3) Medium (4-6) High (7-9)

Annex 6 (Step 5 and 6)

Assessment Details

What is the problem and associated issues: (Step 2)			
Option (i.e., port / place / at sea in position / continues voyage / taken out to sea): (Step 5)			
Describe what could happen (risk scenarios, hazards, risks): (Step 6)			
Potential Consequences: (Step 6, Annex 4):			
Risk Estimation: (Step 6, Annex 5)	Consequence category: Specify:	Probability category: Specify:	Risk Level:
Control Measures: (Step 6)			
Risk Evaluation: (Step 7)	Advantages:	Disadvantages:	