A GUIDE TO GOOD PRACTICE ON PORT MARINE OPERATIONS

PREPARED IN CONJUNCTION WITH
THE PORT MARINE SAFETY CODE

AMENDMENT RECORD

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1/2007	10/2007	DfT	Replaced section 8.4 – pilot exemption certificates and inserted the PEC criteria table. Replaced 9.4.2. First published Oct 2007 by the MCA under MIN 307(M)
1/2009	*08/2009*	DfT	Various changes to update the GTGP following the Refresh project.
2/2009	*09/2009*	DfT	Correction to contents page

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GLOSSARY

Term or acronym:	Description:
AIS	Automatic Identification System
ACOP	Approved Codes of Practice
AtoN	Aid to Navigation
CHA	Competent Harbour Authority
CHIRP	Confidential Hazardous Incident Reporting Programme
“the Code”	refers to “The Port Marine Safety Code”
COMAH	Control of Major Accident Hazard Regulations
DfT	Department for Transport
DRA	Dynamic Risk Assessment
DSHAR	Dangerous Substances in Harbour Area Regulations
EU	European Union
FEPA	Food and Environment Protection Act 1985(FEPA)
GLA	General Lighthouse Association
GPS	Global Positioning System
“the Guide”	refers to “The Guide to Good Practice on Port Marine Operations”
HSE	Health & Safety Executive
IMO	International Maritime Organisation
incident	Refers to an accident or a near miss
IALA	International Association of Lighthouse Authorities
LLA	Local Lighthouse Authority
LPS	Local Port Service
MCA	Maritime & Coastguard Agency
MAIB	Marine Accident Investigation Branch
MAPD	Major Accident Prevention Document
Marine operations	For the purposes of this guide, marine operations have been taken to mean the moving, berthing and unberthing of ships and other marine craft within the limits and approaches of a harbour authority.
MBES	Multi Beam Echo Sounder
OPRC	The Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations 1998
PEC	Pilotage Exemption Certificate
PMSC	Port Marine Safety Code
SBES	Single Beam Echo Sounders
SMCP	Standard Marine Communication Phrases
SMS	Safety Management System
SOSREP	Secretary of State’s REPresentative

STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
SWL	Safe Working Load
UKHO	United Kingdom Hydrographic Office
UKMPA	United Kingdom Maritime Pilots' Association
UHF	Ultra High Frequency (part of the radio-spectrum used for communications and data transmission)
Verification visit	An intelligence led investigation to test a port's compliance with the Port Marine Safety Code
VTMS	Vessel Traffic Management System
VTS	Vessel Traffic Service

INTRODUCTION

This document is intended to supplement the Port Marine Safety Code. It contains useful information and more detailed guidance on a number of issues relevant to harbour authorities. It is designed to provide general guidance and examples of how a harbour authority could meet its commitments in terms of compliance with the Code. This Guide should not be viewed as the only means of complying with the Code and for some harbour authorities, it may not be the best means of achieveing compliance.

Like the Code, the Guide does not have any legal force, though it does refer to existing legal powers and duties. Further, while it describes typical legal powers and duties, it is not practicable for this Guide to cover the specific legal position for each harbour authority, and it should not be relied on for that purpose.

The Guide has been developed with representatives from the ports industry, the DfT, and the MCA. The Guide is designed to be a living document; one that will be maintained by the ports industry and can be reviewed and updated on an annual basis.

SECTION 1
THE LEGAL BACKGROUND

Summary

1.1. The duties of a harbour authority are of three kinds: statutory duties, imposed either in the local legislation for that authority or in general legislation, general common-law and fiduciary duties.

General duties and powers

1.2. The Code identifies these general duties of harbour authorities relevant to port marine safety:

A. Harbour authorities have a duty to take reasonable care, so long as the harbour is open for the public use, that all who may choose to navigate it may do so without danger to their lives or property.

B. This includes an obligation to conserve, and promote the safe use of, the harbour; and a duty of care to prevent loss or injury caused by the authority's negligence.

C. Each harbour authority has an obligation to have regard to efficiency, economy and safety of operation as respects the services and facilities provided.

D. Most harbour authorities have a duty to take such action that is necessary or desirable for the maintenance, operation, improvement or conservancy of their harbour.

The Code gives an outline of the main related duties.

Specific duties and powers

1.3. In addition to these general duties, the Code identifies a number of specific duties and powers -

A. A harbour master should familiarise himself with the extent of his legal powers under general and local legislation.

B. Powers to direct vessels are available - and should be used - to ensure safety of navigation.

C. Dangerous vessels and substances, and pollution, must be effectively managed.

D. A pilotage service must be provided if required in the interests of safety.

E. Properly maintained aids to navigation must be provided, and any danger to navigation from wrecks or obstructions effectively managed.

These principles are developed in separate chapters of the Code, and in this guide.

Port marine safety legislation

1.4. There is a substantial body of applicable general legislation, but many of the principal duties and powers of a harbour authority are in local Acts, or orders made under the Harbours Act 1964. This legislation includes powers to make byelaws. Paragraph 4.9 of the Code explains how the local legislation can be changed.

Legislation fit for purpose

Taking stock of existing powers:

- The first step for the harbour authority is to take stock of the powers, policies, systems and procedures that are in place having regard to an overall assessment of the risks to be managed. The level of detail required will depend partly upon the extent to which appropriate systems are already in place, but also shaped by the replies to your consultation, and publication of, the safety policies adopted by each authority. It is a requirement of the Code that each authority's policies and procedures should demonstrate that they are based upon a full assessment of the hazards which have to be managed to ensure the safety of the harbour and its users.

1.5. All legislation, including byelaws and directions, should be reviewed on a regular basis, preferably annually, to ensure that it remains fit for purpose in changing circumstances. The Code provides that the requirements for marine safety will be determined by risk assessment. If the legal responsibilities cannot be discharged effectively using available powers and other measures, and that authority does not have the powers to rectify the situation, then it should seek the necessary additional powers. In addition, it is good practice to dispense with redundant or obsolete legal functions.

1.6. It is essential that all harbour authorities are aware of their local duties and powers, and are well versed in all local legislation. Harbour authority boards and managers must understand clearly the meaning of all the relevant legislation which affects their harbour in order to avoid failing to discharge their duties or exceeding their powers.

Guidance on directions and byelaws

Legal duties and powers

- Every harbour authority's plan must include a statement of the legal duties and powers. Plans and subsequent reports should say when these were most recently reviewed.

- Duties and powers - whether in harbour orders, byelaws, or general or harbour master's directions - should be developed from a considered approach to risk. Where statutory force is given to an authority's rules, authority's plans should demonstrate that those rules clearly relate to the management of risks. Harbour authorities should also be able to demonstrate, therefore, that they are equally clearly enforced, and plans should show that adequate resource is available for this purpose. Powers should only be sought - and, in the case of harbour orders and byelaws, will only be granted - on that understanding.

1.7. Section 7 of this guide deals with the regulation of navigation; byelaws and directions are tools for this purpose. That section contains more guidance about how they can be used.

Directions (usually referred to as Special Directions)

1.8. Where sections 52 and 53 of the Harbours Piers and Clauses Act 1847 have been incorporated in local legislation, a harbour master has powers of direction to regulate the time and manner of ships' entry to, departure from and movement within the harbour waters, and related purposes. These powers are given for the purpose of giving specific directions to specific vessels for specific movements, unless the powers have been extended for other purposes. Harbour master's directions may be referred to as 'special directions' to distinguish them from 'general directions' given by the authority itself. Special directions are not for setting general rules but relate to specific vessels – or in an emergency, to a class of vessels - on particular occasions.

1.9. The powers of direction are also exercisable by a harbour master's assistant - or any other person designated for the purpose in accordance with the authority's statutory powers. It is an offence not to comply with directions[i] but the master - or pilot - of a vessel is not obliged to obey directions if he believes that compliance would endanger the vessel. It is the duty of a harbour master in exercising these powers to consider the interests of all shipping in the harbour. Directions may include the use of tugs and other forms of assistance.

General Directions

1.10. Some harbour authorities have powers, through their local enabling legislation, to give 'general directions' to enable a harbour authority, after due consultation, to lay down general rules for navigation (subject to certain constraints) and regulate the berthing and movements of ships. These carry the force of law, but are often easier to achieve and amend that using byelaws, and thus act as a useful mechanism for managing navigation and furthering safety.

1.11. Harbour authorities would be well advised to secure these powers, by using a harbour revision order, to support the effective management of vessels in their harbour waters.

Harbour Revision Orders

1.12. The Harbours Act 1964 enables a harbour authority to amend statutory powers in their local legislation. It can be used to achieve various outcomes one of which is to impose or confer additional duties or powers on a harbour authority (including powers to make byelaws). It can also be used in the context of the Code to substitute or amend existing duties and powers. It could be used for the purpose of (but not limited to):

a) improving, maintaining or managing the harbour (including harbour reorganisation schemes);

b) marking or lighting the harbour, raising wrecks therein or otherwise making safe the navigation thereof; or

c) regulating the activities of other individuals and groups in connection with the harbour and the marine/shore-side interface.

d) extending controls into the approaches of a harbour (for example, to extend compulsory pilotage beyond the harbour[ii]).

1.13. All proposals should, as far as is practical, be subject to extensive local consultation. The Department for Transport has issued guidance on submitting Orders. It is usually willing to comment on drafts, but may not be able to provide a definitive response before the applicant is ready to proceed to formal application.

1.14. The appropriate Minister will need to be satisfied that the order would:

a) secure the improvement, maintenance or management of the harbour in an efficient and economical manner; or

b) facilitate the efficient and economic transport of goods by sea; or

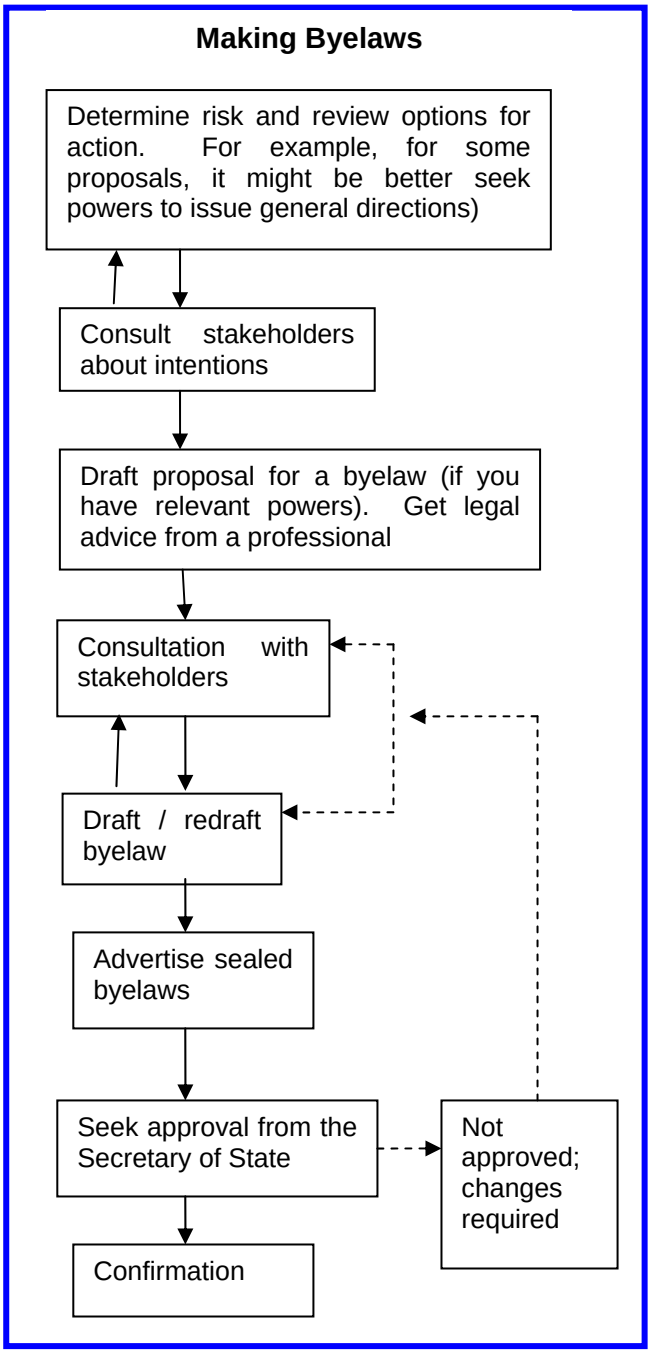
c) be in the interests of sea-going leisure vessels.

There are similar provisions for varying or abolishing such powers.

Byelaws

1.15. Harbour authorities have powers under their own local legislation, if they have incorporated Section 83 of the Harbours, Docks and Piers Clauses Act 1847, which allow them to make byelaws. Byelaws may cover a wide range of subjects within the harbour and on the port estate, for example, the quayside and the regulation of vessels within the port. On the marine side, this might include:

- navigational rules;
- general duties of Masters;
- movement of hazardous and polluting goods;
- alcohol and drugs;
- ferries, lighters, barges and tugs; noise and smoke;
- recreational craft including water-skiing, personal water craft;;
- bathing;
- speed limits;
- licensing port craft; and
- licensing personnel (e.g. boatmen).



1.16 There is a brief description of the function and making of harbour byelaws under paragraphs 4.11 - 4.13 of the Code. The procedure for each authority is in its local legislation. Modern practice replaces that in

Clause 83 of the Harbours, Docks and Piers Clauses Act 1847 with the modern standard in Section 237 of the Local Government Act 1972. This standard has itself been adapted by some authorities, to allow byelaws to be modified upon confirmation by the Secretary of State, although Section 237 by itself does not allow this.

1.17. Making and changing byelaws is often perceived as a difficult and prolonged process. However, the process can be expedited if harbour authorities avoid common pitfalls and take the following steps:

- Assess the risk and decide whether a byelaw would be the most appropriate method of mitigating the risk.
- Make sure your authority has the relevant powers to make byelaws for the measures that are being proposed.
- Make sure you can justify your proposal to consultees. Demonstrate that you have considered other options in addition to legislation. All proposals to improve safety of navigation in the harbour should be supported by a formal risk assessment.
- Make sure you consult on your proposal before drafting the byelaw and again before you present the byelaw to the Secretary of State.
- Demonstrate to the Secretary of State that the proposals can be clearly enforced and that resources exist for this purpose.
- Get experienced advice or use a legal professional to draft the byelaw on your behalf. Alternatively, ask DfT officials to provide you with a model byelaw that can be adapted for the purpose
- Be persistent. Opposition to a proposal does not mean that it will fail. Try to resolve any misunderstandings; address problems at the earliest opportunity and if appropriate revise the proposal. If differences cannot be resolved, you should still present the draft byelaw to the Secretary of State for consideration.

1.18. Possible consultees might (but not necessarily) include: leisure users - yachtsmen, motor cruisers, rowers, personal watercraft users, swimmers, boatmen, line handlers, tug operators, various associations and users organisations, trades unions, vessel owners, pilots, vessel operators - inland waterways and deep sea, local communities, other local regulators - e.g. MCA, adjacent port authorities, local authorities, RNLI, RYA, the Amateur Rowing Association (ARA). Further information on the process of consultation can be found under section 3 of the Guide.

Licensing

1.19. Some harbour authorities have responsibility for licensing port craft, personnel (local watermen) and works in, or adjacent to, navigable water. All competent harbour authorities have power in the Pilotage Act to approve or licence pilot boats. In all these processes proper and appropriate standards and competencies need to be established and applied uniformly in the interests of safety.

Enforcement

1.20. Byelaws and directions adopted in order to manage identified marine risks must be backed by an appropriate policy on enforcement; and that each authority should have a clear policy on prosecution, which is consistent with the safety assessment on which its directions are based.

SECTION 2
ACCOUNTABILITY OF THE DUTY HOLDER

2.1. SUMMARY

2.1.1. Chapter 2 of the Code states that the 'duty holder' is accountable for safety of navigation in ports and harbours. It then goes on to outline how that responsibility is discharged. It is based on these general principles:

A. The duty holder, on behalf of the harbour authority is accountable for managing operations within the port safely and efficiently.

B. Harbour authorities should make a clear published commitment to comply with the standards laid down in the Code.

C. The Code represents the national standard against which the policies, procedures and performance of harbour authorities may be measured.

D. Executive and operational responsibilities for marine safety must be clearly assigned, and those entrusted with these responsibilities must be answerable for their performance.

E. A 'designated person' must be appointed to provide independent assurance about the operation of its marine safety management system. The designated person must have direct access to the board.

2.1.2. The Code and this guide offer more detailed guidance about what that means in practice.

Demonstrating compliance

Compliance with the standard set by this Code is achieved in stages.

- Review and be aware of existing powers based on local and national legislation
- Confirm compliance with the duties and powers under existing legislation
- There should be a considered assessment of risks and the means of reducing them;
- Operate and maintain a Safety Management System (SMS) based on risk assessment to ensure there is proper control over ship movements in harbour waters;
- Use appropriate standards of qualification and training for all those involved in safety management and execution of relevant services.
- Establish a robust procedure for auditing performance against the policies and procedures that the authority has adopted in order to comply with the Code.
- Monitor the standard achieved using appropriate measures and publish the results.

2.1.3. The Code requires all harbour authorities to demonstrate compliance with Code by developing appropriate policies and procedures relevant to the scope and nature of marine operations in the port in order.

2.1.4. A harbour authority must:

- Record and publish its marine policies and make available supporting documentation if required
- Set standards of performance that it aims to meet
- Regularly review and periodically audit actual performance
- Publicly report on PMSC performance annually (e.g. in the annual report).

2.2. THE REPORT: A PUBLISHED COMMITMENT TO THE CODE

All harbour authorities must develop policies and procedures in accordance with the standard in the Code, and must publish the policies, procedures and amendments they have adopted to achieve the required standard. They should also publish reports of their formal periodic reviews, setting performance against their plans and against the standard in the Code. As a minimum, plans and reports should be published every three years.

A harbour authority's policies and procedures must include a statement of policy;

- committing the authority to undertake and regulate marine operations in a way that safeguards the harbour, its users, the public and the environment.
- identifying the measure it has adopted to facilitate the public right to use a harbour; to safeguard the public interest in the safety of its operation; support commercial activities in the harbour through the safe and efficient provision of specified services and, the effective regulation of shipping within the harbour.

2.2.1. The Code does not prescribe a form in which authorities are to report publicly about the safety of marine operations – that is for the port to decide. It is very important that the management plan should be the authority's: it is for the board to choose the priorities, the emphasis, and the detailed wording, just as much as the policies and procedures. Some authorities will prepare statements specifically for the purpose, others may include a separate chapter in their annual report. A management or business plan of any sort is likely to address more than marine operations and it is entirely right for these to be set within this context. The coherence of a single document, or suite of linked documents, is clearly an advantage to ensure that nothing is missing.

2.2.2. The reports required by the Code should include these components:

- a statement of the **aims, roles and duties** of the authority as duty holder;
- the overarching **policies and procedures** of the authority to achieve those aims, including the commitment to implement the Code;
- the **objectives** which support the overarching plans and policies;
- some means of **measuring their** achievement against those objectives; and

- accordingly, a review of how far the authority has achieved its aims and objectives, and of changes it proposes to its policies and procedures.

Aims and duties

A thriving business and good safety facilities are crucially interdependent - poor safety standards will eventually cost money. To trade commercial constraints against safety needs is the wrong approach. A harbour authority should have a clear view of its business purpose; and identify the implicit risks. It should then identify measurable risk management objectives and assess costs and benefits or any alternative mitigation measures. Every authority should decide whether the risks implied in the way it conducts its business are worthwhile - asking whether the value of an activity justifies the cost of managing the risks associated with it. These decisions will lead it to adopt a cost-effective management plan for the accepted risks.

2.2.3. A port's aims and objectives are closely tied to the identified risks which are assessed and managed through its safety management system. The risks relate directly to the nature of the trade and operations within the port. Thus, if there was no shipping or boating activity, many of the main risks would not arise. Changes in the harbour business also affect the risk – for example if commercial shipping gives way to recreational use. It is very important for an authority to consider the cost of managing different risks created in this way. Some risks remain even when there is no commercial shipping activity - for example, if the public retain access to the water and other hazards: these may become significant if revenue to manage them falls away. In such circumstances it may be necessary to mitigate risk by regulatory action.

2.2.4. These aims may be linked to other functions, for example those of a company, a local authority, or other statutory body entrusted with harbour functions. A statement of aims, encompassing marine operations in the harbour may already have been made in a document relating to those functions – for example, a company annual report, a management plan, or some other policy statement. It may be necessary, however, to review such statements considering whether or not they fully reflect the commitments made pursuant to the Code.

2.2.5. The following sample statements illustrate the sort of aims that a harbour authority might adopt to illustrate its commitment to its duties:

- undertake and regulate marine operations so as to safeguard the harbour, its users, the public and the environment.

- run a safe, efficient, cost-effective, sustainable harbour operation for the benefit of all users and the wider community.

- fulfil its legal responsibilities whilst meeting the changing needs of all harbour users.

- maximise the quality and value for money of its services, and to maintain dues at a competitive level so as to attract users to the harbour.

- meet the national requirements in the Code.

They must also recognise, explicitly, that the duty holder is ultimately accountable for meeting the standard the Code requires.

Policies and procedures

In developing a safety policy, a harbour authority should make the following commitments -

- to manage the relevant assets of the authority safely and efficiently;
- to discharge the duties and powers described in earlier chapters of this Code;
- to maintain relevant harbour equipment to agreed industry standards;
- to recruit and train operational staff to nationally agreed competence levels;
- to ensure that staff are properly trained for emergencies and contingencies.

A harbour authority's safety policy should promote a positive safety culture, fostered by the visible and active leadership of senior management. Its aim should include the motivation and empowerment of staff to work safely, not just to avoid accidents. Policy and related procedures should be underpinned by effective staff involvement and participation, and sustained by effective communication and promotion of competence.

2.2.6. If they are to be shown to have any practical effect, published aims and objectives need to be under-pinned firstly by appropriate statements of policies and procedures. The linkage to other subsidiary elements of the framework becomes evident – for example, a training policy must be applied by adopting appropriate training and competence standards.

2.2.7. Implementing the Code is a matter of policy to be adopted by each harbour authority. This would include a commitment to the publication of a policy statement (or statements) and of periodic reports, as the Code envisages.

Specific policies

2.2.8 Every harbour authority's policies should be supported by procedures to:-

- regulate the safe arrival, departure and movement within the harbour of all vessels;
- protect the general public from dangers arising from marine activities within the harbour;
- carry out all its functions with special regard to their possible environmental impact;
- prevent acts or omissions that may cause personal injury to employees or others, or damage the environment.

General management of navigation policy

2.2.9 The Authority will support marine activities in the port through the provision of appropriate services. These activities should be supported through efficient regulation and management of shipping/users within harbour limits.

2.2.10 The policy of the board or management is :

- managing the assets of the harbour authority safely, economically and efficiently;
- maintaining harbour craft and other [perhaps specified] equipment to the highest industry standards;
- pursuing contemporary cost-effective methods [perhaps specifying particular activities, such as dredging or surveying];
- training the operational staff to the highest professional standards;
- ensuring that staff are properly trained in emergency and contingency procedures.

Navigational Safety and environmental protection policy

2.2.11 In compliance with the requirements of the Port Marine Safety Code, the Authority will discharge its general and specific statutory duties in respect of:

- the regulation of traffic and safety of navigation within harbour limits;
- the conservancy of the harbour and its seaward approaches;
- the protection of the environment within the harbour and its surroundings; and
- ensuring so far as reasonably practicable the safety at work of its employees and other persons who may be affected by its activities;

and for these purposes will:

- facilitate the safe movement of vessels and craft into, out of, and within the harbour;
- carry out the functions of the Authority with special regard to their possible impact on the environment;
- prevent acts of omissions which may cause personal injury to employees or others, or damage to the environment;
- create and promote an interest and awareness in employees and others with respect to safety and protection of the environment; and
- take a leading role in the implementation of the Estuary Management Plan / Special Area of Conservation Management Plan, as appropriate.

Resources

2.2.12. The duty holder is responsible for ensuring that adequate resources are provided to its officers to enable them to manage marine operations effectively and to adhere to the stated marine and navigation policies, procedures and systems, recognising that proper discharge of the authority's duties will otherwise be compromised. This includes adequate resource for training. All this needs to be reflected in the relevant policy.

Development Plans

2.2.13. Harbour authorities are given statutory powers and duties in the interests of securing the improvement, maintenance or management of the harbour in an efficient

and economical manner or of facilitating the efficient and economic transport of goods or passengers by sea or in the interests of the recreational use of sea-going ships. Requirements to improve, maintain and manage have to be related to the needs, and resources of the harbour; and prioritised. Development plans must be realistic, achievable in a reasonable timeframe, and properly supported with resources.

Objectives

2.2.14. Aims, policies and procedures are supported by specific objectives, related to the particular requirements of the Code – and any other legislation or code of practice which the authority elects to bring within the management plan where marine operations are dealt with.

2.2.15. It is good practice to use the SMART principle (specific; measurable; agreed; realistic and timed) when drafting your objectives. They should be short and crisp and where appropriate, they should relate to a specific time frame. An example could be;

- to develop a harbour marine safety code by [a specified date], which meets all the relevant requirements of the Port Marine Safety Code.
- Monitoring through assessments and audits the effectiveness of the marine safety management system.

2.2.16. Not all the requirements of the Code are relevant to all authorities. Some have no compulsory pilotage, and a review (risk assessment) would confirm if there was a need to provide such a service. Others have no commercial activity – they handle no commercial vessels; or any of the berthing and dock facilities that go with them. Their professional staff may require particular skills for the local circumstances, but those associated with a commercial port might not be among them. But on the other hand, they may well support and encourage leisure activities within the port. Objectives will be framed and need to be stated accordingly.

Measurement

Measuring and auditing performance

A **'designated person'** is required to provide independent assurance directly to the 'duty holder' that the safety management system is working effectively. A safety management system should include proper record procedures so that the duty holder and designated person can be satisfied that the system is functioning properly. Incidents and complaints about safety should be promptly investigated; and the incident and investigation both properly recorded.

2.2.17. Objectives need to be expressed in terms which indicate how that progress can be measured. Objectives need not be quantifiable targets, but their purpose is to enable progress and achievement to be measured in some way. Where an objective does not relate to a specific time frame, there will be a place for simple performance indicators – for example, indicating how often inspections will be done; or the performance level inspections will be expected to reveal.

2.2.18. They might relate not only to internal inspections but, for example, set a standard for aids to navigation which the authority is expected to demonstrate to the

General Lighthouse Authority. There will also need to be indicators forming a basis for audit.

The duty holder and the assignment of functions

2.2.19. The harbour authority must have a 'duty holder' who is accountable for its compliance with the Code and its performance as regards the safety of marine operations in the harbour and its approaches. For most harbour authorities, the role of duty holder is undertaken by members of the harbour board who are (both collectively and individually) accountable for marine safety under the Code. This is the default position. If however, it is not appropriate for harbour board to assume this role – which might be, for example, the position for some municipal ports - the harbour authority must confirm and publish who the duty holder is.

2.2.20. Paragraph 2.6. of the Code says, although harbour authorities have powers to appoint a harbour master, and to authorise pilots, and may properly entrust the operation of the harbour to such professional people, they cannot assign their accountability. **The duty holder may not abdicate responsibility on the grounds that they do not have particular skills**. They retain strategic oversight and direction of all aspects of the harbour operation and they must ensure that their powers are discharged but not exceeded.

2.2.21. It is important that executive and operational responsibilities should be assigned appropriately by every authority - and to properly trained people. All the authority's employees should have training appropriate to the responsibilities for marine operations assigned to them relating to the safety of marine operations. In some small authorities, functions may be combined. It is also important in all cases that there is a proper separation of safety and commercial functions. This is important for authorities of all sizes.

2.2.22. It is recommended that all board members should take time to gain an appropriate insight and understanding of the port's marine activities, marine safety management system and supporting systems. This can be accommodated through briefings and operational visits.

2.2.23. Serious consideration should be given to appointing a member to the board who has relevant maritime experience, who can act as the initial point of contact for the designated person. An authority's principal officers holding delegated responsibilities for safety would normally be expected to attend board meetings.

Job descriptions

2.2.24. The use of formal job descriptions is good practice. Some jobs related to marine operations are formal statutory appointments (e.g. harbour master or pilot), and others are directly related to legal functions and the exercise of the authority's statutory powers. The assignment and delegation of legal functions including statutory powers must be formalised. A safety management system also demands that the roles and functions upon which its operation depends are formally documented. Everyone involved with safety of navigation should be aware of each others responsibilities. Visible delegation through job descriptions also provides a reassuring link in the measurement of achieving objectives – by showing that somebody has been given responsibility for a specific task.

The designated person

2.2.25. Each harbour authority must appoint an individual as the **designated person** to provide independent assurance directly to the duty holder. Their main responsibility is to determine, through assessment and audit, the effectiveness of the SMS in ensuring compliance with the Code.

2.2.26. In order to fulfil this function the designated person must have a thorough knowledge and understanding of the requirements of the Code (and supporting Guide to Good Practice) and associated port and marine legislation. In using this knowledge and understanding the designated person will take appropriate measures to determine whether the individual elements of the harbour authority SMS meet the specific requirements under the Code.

These measures will include:

- Monitoring the thoroughness of the risk assessment process and the validity of the assessment conclusions.
- Monitoring the thoroughness of the incident investigation process and the validity of the investigation conclusions.
- Monitoring the application of lessons learnt from individual and industry experience and incident investigation.
- Assessing the validity and effectiveness of indicators used to measure performance against the requirements and standards in the Code.
- Assessing the validity and effectiveness of consultation processes used to involve and secure the commitment of all appropriate stakeholders.

2.2.27 The role of the designated person does not obscure the accountability of the duty holder and its board members.

The need to appoint an appropriately qualified individual as designated person was one of the recommendations made in MAIB's reports on the Flying Phantom

Appointing a designated person

2.2.28. Ultimately, it is the duty holder who is responsible for deciding who should be appointed as the designated person and provide the level of assurance that is necessary to comply with the Code. However, in addition to the attributes listed above for the designated person, the duty holder should consider appointing someone who:

- has first-hand experience of the marine environment and how ports operate;
- is a harbour master / deputy at another port, perhaps under a reciprocal arrangement with the other harbour authority;
- is already a member of the harbour board, if they meet above criteria and were not directly involved in setting up and maintaining the safety management system.

2.2.29. In most harbour authorities, the harbour master and the deputies are directly involved in assessing and controlling the risks to navigation, as well as overseeing the operation of the marine safety management system. They are not usually therefore, in a good position to provide independent assurance to the duty holder;

and, as a consequence, it is **not** recommended that the harbour master or anyone who reports through him is appointed as the designated person.

2.2.30. Not withstanding the above advice, if the harbour master is appointed as the designated person, then it is even more important that an external audit of the Safety Management System is undertaken on a regular basis.

Operating manuals

2.2.31. Operating manuals establish an auditable link between this guide and the procedures adopted by each harbour authority. They answer the questions – 'how do we do this job', and 'is it in accord with good practice'. It will sometimes be the case that objectives also correlate to a section in the operating manual. Certainly, long term or standing objectives should be tested to see if their achievement might usefully be referred to in a manual.

Other documents

2.2.32. An authority's management or business plan might also be supported by other documents which form part of the audit trail. As noted elsewhere in this guide, each harbour, pier or dock has individual characteristics, conditions, position and mode of operation. Harbour authorities are equally varied in type and size. Local powers and duties have therefore been conferred by local legislation, created specifically for the harbour authority to which it relates, so that each individual harbour may be operated efficiently and safely. The different forms and levels of this legislation are described in Section 1 of this guide.

2.2.33. The intricacies of local harbour legislation are not in general well understood by users and others in the local community, but it provides the legal framework within which the whole undertaking is conducted. With some general legislation on particular topics, it contains the matters for which a harbour authority holds itself accountable under the Code. It will therefore serve a useful purpose for the authority's policy statement – and those who audit it - to point to the main pieces of legislation which establish its legal status and functions.

Frequency of publication

2.2.34. Following a port's initial statement of compliance with and implementation of the Code, harbour authorities should thereafter publish details of their formal periodic reviews, setting performance against their plans and against the standard in the Code.

2.2.35. At the very least, reports should be published once every three years.

SECTION 3
CONSULTATION

3.1. SUMMARY

3.1.1. It is paramount that ports operate as a regulated environment; their rules – and their commitment to safety - must be accepted and observed by all. Safety in harbours is not just a matter for the harbour authority, its officers and its authorised pilots. Users are also required to minimise risk to themselves and others, in doing so they must be able to put forward to the harbour authority their views on the development of appropriate safety policies and procedures.

3.1.2. Harbour authorities holding themselves accountable to the local community must work closely with local interests in developing policies and procedures for the discharge of their duties and powers.

3.1.3. It follows therefore that harbour authorities need to consult, as appropriate with two main groups: port users, both commercial and leisure, and local interests and communities

3.1.4. Port marine operations are technical matters – well understood by experienced mariners, but perhaps much less so by the wider public, including many recreational users. It is important that the appropriate involvement of wider interests safeguards the statutory authority's position – responsibility for managing safety in a harbour rests with the statutory authority. On the other hand, employees, users and others have safety responsibilities too – for themselves, and for others likely to be affected by their work or activity in the harbour. Some understanding, and through it acceptance, of the duty holder's policies and commitment both to safety and the interests of the community is a substantial objective and one which may be progressed and obtained through the right level of consultation.

3.1.5. A safety management system is only effective if the authority responsible takes active measures to involve and secure the commitment of those involved. This applies both to the risk assessment, and to the subsequent operation, maintenance and ongoing development of the safety management system. Not all will be the authority's employees.

3.2. FORMS OF CONSULTATION

3.2.1. Consultation takes various forms. There are some specific statutory obligations. These should form the basis for general consultation with users and other interests. There should also be established formal procedures for consulting employees – including, in the case of Marine Operations, any person not directly employed, but who offers their services under a contract for services, either directly to the port, or indirectly through the ship-owner or their local representative.

Statutory and non-statutory consultation

3.2.2. The procedures for **harbour orders** revising the statutory powers and duties of an authority include explicit guidance on consultation and rights to objection. The appropriate Minister will direct who is to be statutorily consulted by service of notice.

3.2.3. There are also well established procedures for advertising the making of **byelaws** which will be found in each authority's local legislation. Modern practice is to base these on the procedures for local authority byelaws. Details of procedures for making harbour orders and byelaws are discussed in Section 1 of the Guide; more information on the former can be found on the DfT website.

3.2.4. In both cases, however, it is good practice, and very much in the authority's interest, to have consulted those likely to be affected through 'informal' consultation before formalising proposals by applying for a harbour order or making byelaws. For one thing, it is generally the case that the appropriate Minister does not have power to modify byelaws at confirmation stage – even to take into account grounds of objection which the authority has accepted. If an authority is proposing changes to its powers or regulations as a result of a risk assessment, and has properly consulted about this, there is more likely to be general acceptance of its formal proposals. At any rate, likely grounds of objection will have been discovered and an opportunity found to deal with these informally.

3.2.5. Harbour authorities typically consult the appropriate Minister's officials on draft orders and byelaws. Officials have to be careful not to prejudice formal decisions to be taken later and will not therefore be ready as a rule to comment on the merits of proposals. The opportunity will be taken to promote wider consultation: officials giving advice will seek to understand how proposals relate to the risk assessment process.

General and Pilotage Directions

3.2.6. Users have a specific right to be consulted where they are made subject to general and pilotage directions. This is for the very obvious reason that such directions limit the right they would otherwise exercise freely. They have no other convenient recourse against unreasonable directions, such as the right of objection to byelaws allows.

3.2.7. There are sometimes quite specific requirements for the Chamber of Shipping to be consulted. This is to be regarded as a minimum, recognising that the port is likely to have users not represented in this way. Each authority should identify bodies which represent local users, and adopt a policy to consult them about directions. They should also consider drawing proposed directions to the attention of other users by alternative means.

Consultation during the risk assessment process

3.2.8. The general aim of consultation on these occasions with users and other interests is to provide an opportunity for contributions to be made both on the identification of risk and its management. Risk management often depends less on formal regulation than on winning the understanding of those whose activities create the risk and securing their agreement to safe behaviour. Harbour authorities are therefore encouraged to advertise that they are undertaking a risk assessment, and to seek ways of securing the widest possible response from those likely to have a meaningful contribution.

3.2.9. The Code does not require the outcome of risk assessments to be published in full, though some authorities may wish to do so. There may be well-found concern that drawing attention to risks would unduly alarm some stakeholders, in which case, the harbour authority might choose to issue a report outlining its risk management plan to explain the need for various measures that impinge on users. Whichever approach is adopted it is important that users are adequately informed of any measures adopted to mitigate against particular risks that may affect their particular activities.

Port Users' committees

3.2.10. Some authorities have established advisory or consultative committees for the purpose of facilitating users' contributions to risk assessment and of informing and updating users' on the day to day management of marine operations in the port In some cases, the authority's local legislation requires them to do so in various ways. It is not necessary, however, for these arrangements to be in the authority's local legislation. The general approach is to identify the bodies or individuals needed to make such a forum properly representative. There are, however, examples where the authority may ask for a different nominee – a right to be exercised exceptionally and for substantive reasons which could be justified publicly.

3.2.11. The ultimate authority for managing the harbour rests with the legally constituted harbour authority. The harbour authority does not share its legal functions with a users' committee or forum; nor is a committee accountable in the way required of harbour authorities under the Code. It is good practice to have set out in advance in general terms the circumstances in which it will or will not involve such a committee – for example, where emergency action is required or there are commercial and other confidences.

Providing information to port users

3.2.12. The counterpart of effective consultation arrangements is an effective means of communicating appropriate information, advice and education to harbour users. Harbour authorities should consider the most appropriate and effective methodologies to employ, certainly making use of modern technology, in order to reach their target audience.

Local lighthouse authorities

3.2.13. It is essential that all Local Lighthouse Authorities who are involved with the establishment, maintenance and navigational marking of the approaches to their harbour identify all users and provide for effective consultation, notification and

advice to ensure that they remain fully informed of proposed developments or changes to the harbour.

3.3. CONSULTATION WITH EMPLOYEES, CONTRACTORS OR OTHER RELATED SERVICE PROVIDERS

3.3.1. Whilst responsibility for port marine safety remains with the duty holder, employees and others may in turn be accountable to the authority through contracts of various kinds. All are responsible for their own safety at work, but this does not divide or dilute the harbour authority's particular responsibility. So, the decisions on policies and procedures are ultimately for the authority itself to take, and it is for them to see that they are effectively communicated to, and observed by, those whose activities are regulated or affected by the systems put in place.

3.3.2. A harbour authority is unlikely to employ all those who work in its port. For example, pilots may be engaged through a contract for services with a pilot co-operative; tug crews and others may work for service providers either contracted to the port or to particular terminal operators. All employers have a responsibility for the safety of their workforce. Consulting and involving employees, as appropriate, on the harbour authority's risk assessment helps them to discharge that responsibility.

3.3.3. Harbour authorities' regulation of activities in ports aims among other things to secure the safety of all those engaged in those activities in any capacity. It is to be expected that anybody whose safety is being so regulated may have something to contribute to a risk assessment or review of procedures and it is good practice to make an opportunity for them to participate. It may be appropriate in some cases to consult members of these groups through their own employers – and a consensus is most likely to be achieved in this way. At the same time, such groups may also have trade union representatives, who feel strongly that they should have an opportunity to contribute to the risk assessment. The Department considers that it is good practice to give that opportunity.

SECTION 4: RISK ASSESSMENT & SAFETY MANAGEMENT SYSTEMS (SMS)

4.1 SUMMARY

A harbour authority's safety policy should promote a positive safety culture, fostered by the visible and active leadership of senior management. Its aim should include the motivation and empowerment of staff to work safely, not just to avoid accidents. Policy and related procedures should be underpinned by effective staff involvement and participation, and sustained by effective communication and promotion of competence.

The aim of a safety management system is to minimise risks. Risk assessment methods are used to decide on priorities and to set objectives for eliminating hazards and reducing risks. Wherever possible, risks are eliminated through selection and design of facilities, equipment and procedures. If risks cannot be eliminated, they are minimised by physical controls, or as a last resort, through systems of work. Performance standards are established and used for measuring achievement. Specific actions to promote a positive safety culture are identified.

4.1.1 The agreed national standard, the Port Marine Safety Code, relies upon the principle that all harbour authorities will base their policies, and procedures relating to marine operations on a formal assessment of hazards and risks to marine operations. They should maintain a formal navigational safety management system (SMS) developed from that risk assessment and any subsequent supporting risk assessments deemed necessary as the SMS develops and evolves over time and as a result of changing trade and port usage. This is clear from the general principles of the Code :

A. Harbour authority boards are accountable for their duties and powers, and should measure themselves against nationally agreed standards.

B. Harbour authorities should publish policies plans and periodic reports setting out how they comply with the standards set by the Code.

C. Powers, policies, plans and procedures should be based on a formal assessment of hazards and risks, and harbour authorities should have formal safety management systems.

D. The aim of a safety management system is to ensure that all risks are acceptable and as low as reasonably practicable (ALARP).

E. Safety management systems depend upon competence standards applied to all parties involved in the management of the port, and those using the port.

F. The port should review regularly (annually as a minimum) the entire risk register.

G. Harbour authorities should consider the publication of Risk Assessments, where appropriate.

H. Harbour authorities should monitor and adopt risk assessment good practice.

Background

4.1.2 The Health and Safety Executive promotes a common approach to safety across all industries. In the past, safety regulation was introduced as the result of an accident or a series of accidents and tended to address the most obvious causes. However, over the years a number of defining incidents have altered the way in which safety is viewed. From a purely prescriptive regime, the UK has progressed to a risk based approach that aims to identify risks and control them and to do this in a way that constantly updates the risks in any given process or organisation. This has led to the safety case concept.

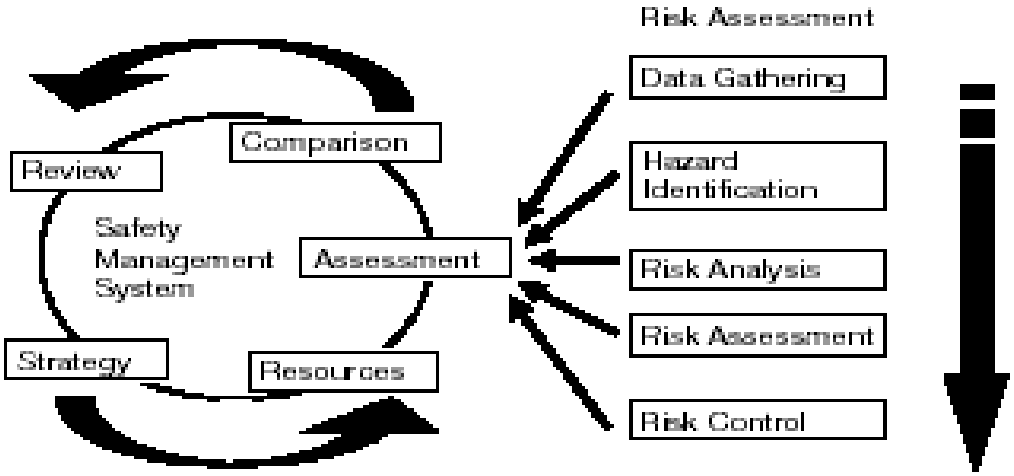
4.1.3 The Government has no general powers to approve plans prepared and adapted by harbour authorities to fulfil their marine safety responsibilities (Oil pollution response plans are a specific exception). The Department does not therefore purport to give formal approval to those plans drawn up to comply with the Code. The operation of safety management systems are matters for which the statutory authority is responsible.

4.1.4 In the same way, the Department has not issued prescriptive guidance in the Guide to Good Practice or elsewhere on the preparation of safety management systems for port marine operations. What follows in this chapter is intended to reflect the general principles of different approaches.

Risk assessment and safety management systems

4.1.5 This guide uses the terms risk assessment and safety management systems. The table below shows that one is part of the other. It also shows that risk assessment comprises several distinct activities. Since any system will be overlaid on existing measures, the value of these needs to be taken into account at the assessment stage of the cycle.

Figure 1. Relationship between safety management system and risk assessment



In short:

- a risk assessment **identifies and defines** the risks;

- a safety management system **manages** the risks.

4.1.6 The Code promotes a formal process to provide structure, and ensure that the safety management system is comprehensive and demonstrably fully effective. It might be useful to compare your existing procedures with those of other ports and draw on the recommendations and lessons learnt from MAIB publications. Ultimately however, a safety management system and the supporting risk assessment must be specific and relate to the port in question, its trade, topography, environment and scope of marine operations.

4.1.7 Safety management systems have to be maintained as a continuous cycle of review and re-assessment. Risk assessment is therefore recurrent. When an organisation adapts formalised safety management it is likely to begin with a new and comprehensive assessment of risk. This will always be a starting point and will establish a basis for regular review and the ongoing development and evolution of the port's marine safety management system.

Consultation

4.1.8 Safety is the business of everyone concerned in the provision and support of marine operations, whether commercial or leisure, and is no longer just the responsibility of the statutory harbour authority or navigational authority. The safety management system is the core system around which the entire port operation must function. The Code emphasises that an effective and comprehensive safety management system can only be achieved with the total commitment of the port's senior management and staff together with all practitioners, users, operators and interested parties. Communication upwards and downwards, and openness, are vital. The process must be seen for what it is; of benefit not only to the port authority, but the wider port and its users as a whole.

4.1.9 Involving those working in and using the port and others in the risk assessment process and subsequent reviews and development, utilising their specialist knowledge and skills, is essential. Harbour authorities are required to identify hazards and to develop or refine procedures and defences to mitigate those risks. It is good practice to establish channels of consultation which can be used for this purpose. In addition, especially for those ports with only a regulatory function, it is also very important to involve port users, practitioners, operators and those with an interest in the operation of the port, as necessary. They too have a significant contribution to make to the development and maintenance of the safety management system.

4.2 RISK ASSESSMENT

A safety management system should be informed by and based upon a formal risk assessment of the port's marine activities (routine and non-routine), a documented, structured and systematic process comprising -

- the identification and analysis of risks;
- an assessment of these risks against an appropriate standard of acceptability;
- a cost-benefit assessment of risk reducing measures where appropriate.

There should be a critical appraisal of all routine and non-routine activities. Those involved should not just include employees, but others including members of the public, contractors and users of the port.

Assessing risks to help to determine precautions can be qualitative or quantitative. Quantified risk assessment is not a requirement, and may not be practicable. Legal limits may apply in some cases. Risk assessments should be done by competent people, especially when choosing appropriate quantitative risk assessment techniques and interpreting results.

A positive, analytical approach is needed to enhance marine safety within the port and harbour approaches, including considering past events and accidents; examining potential dangers and the means of avoiding them.

The process of assessment is continuous, so that new hazards and changed risks are properly identified and addressed. At the very least, a formal review of the whole plan should be conducted at least once every five years.

4.2.1 There are two types of risk assessment:

- The planned, formal risk assessment (as referred to above), which is written down and provides the framework to describe how all risk assessments are carried out in practice.

- A dynamic assessment, which helps the individual to assess a situation which constantly changing.

The aim of a risk assessment is to define and minimise the risks that have to be managed.

Definitions

4.2.2 This section makes a distinction between hazard and risk:

- **Hazard** is something with the potential to cause harm, loss or injury
- **Risk** is a combination of frequency of occurrence and consequence (outcome).

Stages

4.2.3 The aim of a risk assessment is to define and minimise the risks that have to be managed. Risk assessment techniques are fundamentally the same for large and small ports, but the execution and detail will differ considerably. A risk assessment will typically involve five stages:

1. Problem identification, scoping and risk assessment design (information gathering)
2. Hazard Identification
3. Risk Analysis;
4. Assessment of Existing Risk Control Measures; and
5. Identification of new Risk Control Measures.

4.2.4 A port's risk assessment should aim to identify the hazards that may occur, the events that may cause them and the risk control measures used to mitigate them. In order to further refine the risk assessment it may be appropriate to identify high risk operations and locations (e.g. for collision or grounding) within the port area and key vessel types thereby allowing more detailed assessment of the risk associated with the hazard.

Poor or inadequate risk assessment was one of the factors identified in MAIB's reports on the Flying Phantom and Sea Express / Alaska Rainbow.

Triggers for risk assessment

4.2.5 The review of hazards normally takes two forms – **proactive** and **reactive.** The **proactive** approach establishes a structured and regular review (frequency will be dependent upon the outcome of the risk assessment and whether hazards are deemed to fall within the ALARP band) of the identified hazards. This involves the re-assessment (review) of hazards, their potential frequency, outcomes and consequent risk and associated risk control measures

4.2.6 The **reactive** approach prompts a review and identifies new hazards (and/or changes to existing hazards) following a change in trade or the scope of marine operations in the port, or following an incident or near miss, where the hazard may or may not have been identified previously in the risk assessment.

4.2.7 All risks need to be reviewed; higher ranked risks should be reviewed more frequently than those ranked lower and will require greater management time and attention.

4.2.8 The application of environmental consequences to the safety management system (and appropriate risk control measures) is essential.

Consultants and external advice

4.2.9 Harbour authorities may choose to undertake the risk assessment process and the subsequent development of a safety management system in house or to employ consultants or a mixed approach entirely at their discretion. The tables below suggest some of the pros and cons: the choice is not stark black and white. An external consultant is likely to be best employed as a facilitator. In this way, the commitment of management, the contribution by port users, and the consequential sense of ownership should be unaffected by the use of an external risk assessment expert.

4.2.10 The aim is to use sufficient expertise to secure a good outcome. The risk assessment and safety management system needs to be thorough, comprehensive and relevant, to the physical constraints of the port and the type, size, and frequency of shipping handled.

4.2.11 The advantages and disadvantages of an in-house approach are set out below:

Table 4.1 An in-house approach

Advantages	**Disadvantages**
Local expertise and complete understanding of the issues	Lack of unbiased judgements
Knowledge of local frequency/consequence associated with hazards	Inability to tap a source of expertise
Ownership and buy in of the assessment shared by management and consultees	Inability to draw on experience from other ports/sections
Ability to refine and update assessment on an almost continual basis	Inexperience in establishing an efficient and user-friendly framework for risks, particularly in large ports where varied geography and activity can result in very large hazard lists.
Potentially there is sufficient time to undertake thorough assessment	Prioritisation of in-house resources to undertake the risk assessment may not be readily achievable in the time scale required.
Ease of consultation at all stages	
Reduced costs	

4.2.12 The advantages and disadvantages of using external expertise are:

Table 4.2 External consultants and advice

Advantages	**Disadvantages**
Ability to make clear unbiased judgements	Lack of local knowledge, procedures trades and marine operations
Ability to consider differing viewpoints	Longer timescales
Ability to draw on work carried out at other locations	Higher costs
Using wide ranging	Consultant not involved in implementation or regular review. It is essential that skills transfer is part of any external expertise contract.

abilities/backup of a large company Less demand upon management time Potential to receive greater response from contributors (without fear of repercussion) Expertise at drawing out the information required Independent judgements and opinion. Ability to look in with 'fresh eyes'.	Despite some savings in management time – significant input may be needed to scope the requirement and to liaise with the consultants.

4.2.13 Consultants are especially useful for the hazard identification stage of formal risk assessment. They should apply a systems approach to the problem and not a situational approach which would normally be used by stakeholders close to the problem. Consultants will also encourage the inclusion of the widest range of stakeholders possible (especially external stakeholders) in the identification process.

Stage 0. Problem identification, scoping and risk assessment design (information gathering)

4.2.14 Anybody undertaking a risk assessment has to start by taking stock of the organisation, its culture, policies, procedures and priorities, and assessing the existing safety management structure.

4.2.15 One approach is to use this stage to inform consultation with those working in and using the port, and others; another is to do that consultation as part of this first stage. This stage and a full consultation exercise are not alternatives.

4.2.16 Taking stock covers a review of:

- the adequacy and completeness of any established incident database or similar records;
- current management procedures, including pilotage, navigation management (including VTS); hydrography / conservancy, marine operations, etc.,
- Consider seeking advice from and sharing best practice with other ports. The exchange of risk information is encouraged to promote good practice and inclusivity.
- Review MAIB reports and other investigative reports which make recommendations about incidents which have taken place in a harbour.
- Those port users affected by a particular risk should be informed and involved.

It is likely to involve a structured process, involving interviews with

- senior managers;

- management, port operations personnel, pilots, and other selected staff;
- a broad sample range of port users and operators;

and should include:

- auditing of selected marine/navigational safety procedures;
- utilisation of a structured questionnaire to provide feedback on the value placed by staff and users on the various management systems in place;
- familiarisation visits to VTS or appropriate operations rooms and tripping with pilots;

It will aim to develop an initial list of hazards

Stage 1. Hazard identification

4.2.17 Any list of hazards will include those already known (for example from incident records) and the existing defence mechanism/safety management system relating to them. The collective process needs to identify new hazards which may have been ignored, created by new trade or changes in marine operations or overlooked in the past. A hazard may occur as a result of one or more events taking place, for example a vessel may ground because a pilot did not board at the usual place and the vessel proceeded further inbound than planned. A harbour authority manages these events and minimises their opportunity for occurrence by use of control measures and risk mitigation measures.

4.2.18 Within the process of hazard identification and risk assessment, ports should take due regard of the link between:

- the port authority
- terminal operators
- vessel operators

4.2.19 Structured meetings need to be held during this process involving relevant marine practitioners at all levels. Port users, including groups such as PEC holders, commercial operators, leisure users, boatmen, tug operators, crew and possibly other regulators and agencies, is required. Where harbour authority areas abut, liaison with that authority is essential. There will also be benefit in consulting with other bodies including those who represent the users or workforce and neighbouring local authorities.

4.2.20 This stage should also identify the potential outcomes should the identified events happen. One useful approach is to consider both the most likely and the worst credible outcomes (set against likely frequency of the event happening in each case). This approach provides a more realistic and thorough assessment of risk, which reflects reality, in that relatively very few incidents result in the worst credible outcome. On the standard 5 x 5 risk matrix used by many ports, these incidents score highly for outcome, but this is tempered by a low score on the frequency axis (an example of a basic matrix is provided at 4.2.25)

Stage 2. Risk analysis

4.2.21 Hazards need to be prioritised. A method which combines an assessment of the likelihood of a hazardous incident and its potential consequences should be used. This is likely to be a matter of judgement best taken by those with professional responsibility for managing the harbour. The assessments of others can be gathered by a further round of consultation on that judgement.

4.2.22 The frequency of incidents can be established in part using historical data identified in the first stage of the work. It can be determined using a qualitative scale or on a per-shipping movement basis, or a combination of the two. There are a number of software tools now available to help in this process and to assist in the subsequently developed safety management system.

4.2.23 The likelihood of a hazardous incident and its potential consequences can often be determined with reference to historical data. However, it should be borne in mind that following an incident the risk of it re-occurring should have been reduced by management action. Therefore any assessment of frequency and consequence is likely to rely to a certain extent upon the judgement of the assessors or others capable of making such a qualified estimate. Historical data alone will not provide a true assessment of the risk of the current operations, nor will it necessarily reveal an extremely remote event.

4.2.24 Risks and the impact of identified outcomes should normally be assessed against four criteria; the consequence to:

- life (public safety);
- the environment;
- port and port user operations (business, reputation etc); and
- port and shipping infrastructure (damage).

Such an approach not only assesses the impact of hazards on port safety, but also their impact on other important areas of the port infrastructure. It may be appropriate to divide the harbour into several different areas for this process.

4.2.25 IMO Guidelines define a hazard as “something with the potential to cause harm, loss or injury” the realisation of which results in an accident. The potential for a hazard to be realised can be combined with an estimated (or known) consequence of outcome. This combination is termed “risk”. Risk is therefore a measure of the frequency and consequence of a particular hazard. One way to compare risk levels is to use a matrix approach (figure 2):-

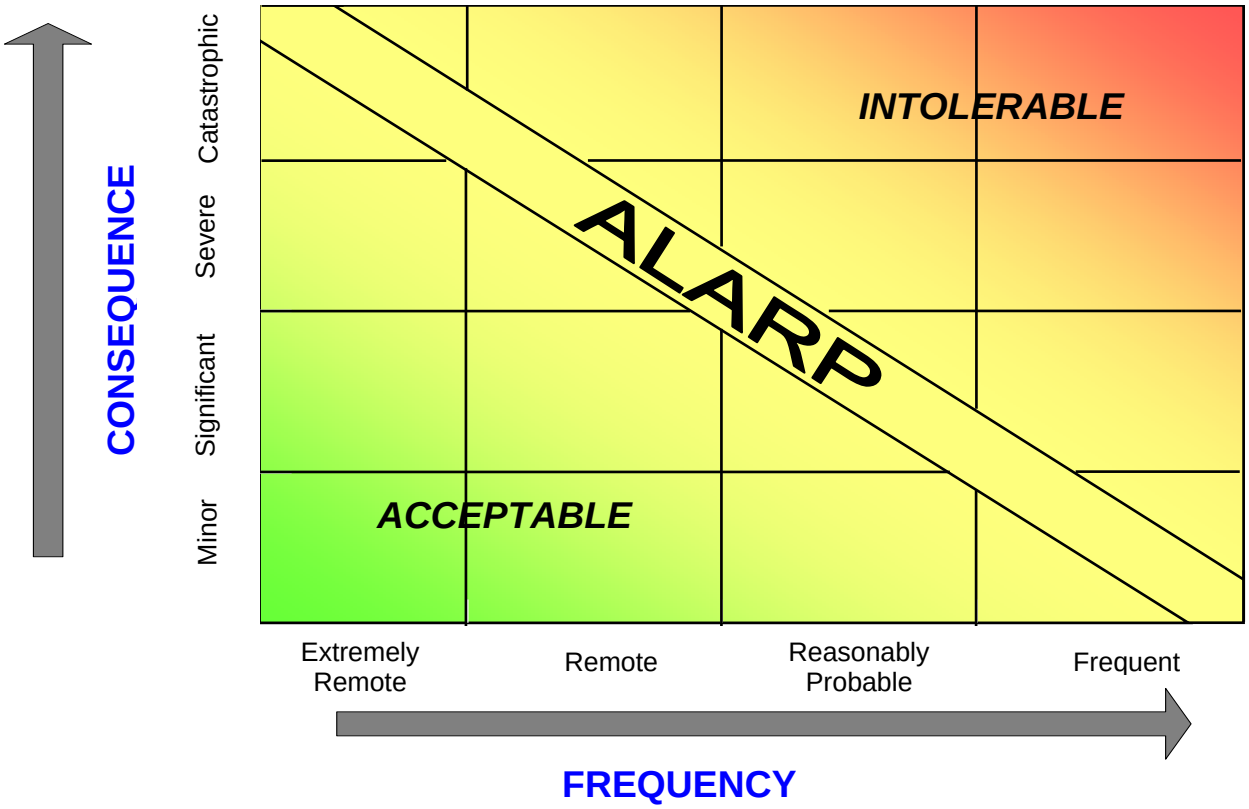


Figure 2. Example Risk Matrix

4.2.26 At the low end of the scale, frequency is extremely remote and consequence minor; risk can be said to be negligible. At the high end, where hazards are defined as frequent and the consequence catastrophic, then risk is very high.

Stage 3. Assessment of existing measures

4.2.27 Risk assessment necessarily includes a review of existing hazards and their associated risk control measures. As a result, new risk control measures (or changes to existing risk control measures) may be identified for consideration, both where there are gaps in existing procedures and where risk controls need to be enhanced. Some control measures might also be relaxed so that resources can be re-designated to meet a new priority. Care should be taken to ensure that any new hazards created as a result are themselves identified and managed. The overall risk exposure of the organisation itself will be identified during this stage and will allow recommendations to be made to enhance safety.

Stage 4. Risk control

4.2.28 All final decisions about risk control methods should take into account relevant legislation, which establishes minimum standards. Human factors should be considered. The aim is reduce risks as low as reasonably practicable. There is a preferred hierarchy of risk control principles -

- eliminate risks - by avoiding a hazardous procedure, or substituting a less dangerous one;
- combat risks - by taking protective measures to prevent risk;
- minimise risk - by suitable systems of working.

If a range of procedures is available, the relative costs need to be weighed against the degree of control provided, both in the short and long term.

4.2.29 The aim of assessing and managing marine operations in harbours is to reduce risk **as low as reasonably practicable** ('ALARP'). Judgement of risk should be an objective one, without being influenced by the financial position of the authority. The degree of risk in a particular activity or environment can, however, be balanced on the following terms against the time, trouble, cost and physical difficulty of taking measures that avoid the risk. If these are so disproportionate to the risk that it would be unreasonable for the people concerned to incur them, they are not obliged to do so. The greater the risk, the more likely it is that it is reasonable to go to very substantial expense, trouble and invention to reduce it. But if the consequences and the extent of a risk are small, insistence on great expense would not be considered reasonable.

4.2.30 Risks may be identified which are **intolerable**. Measures must be taken to eliminate these **so far as is practicable**. This generally requires whatever is technically possible in the light of current knowledge, which the person concerned had or ought to have had at the time. The cost, time and trouble involved are not to be taken into account in deciding what measures are possible to eliminate intolerable risk.

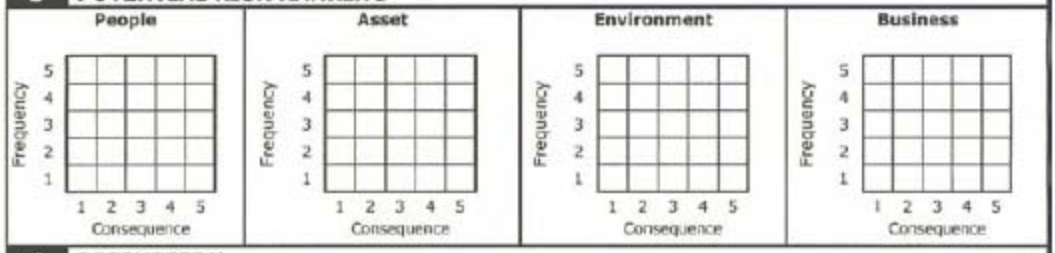
RISK ASSESSMENT RECORD

Belfast Port

1	SCENARIO DESCRIPTION					
Area		Hazard		Event		
Vessel						

2	CAUSES						
1.		3.		5.		7.	
2.		4.		6.		8.	

3 POTENTIAL RISK RANKING



4 DISCUSSION

5 RISK MANAGEMENT/EXISITNG CONTROL MEASURES

7 EMERGENCY RESPONSE/RECOVERY MEASURES

8 RECOMMENDATIONS/RISK CONTROL MEASURES

RISK SCORE	

Example of a risk assessment record sheet.

4.3 **DYNAMIC RISK ASSESSMENT**

4.3.1 Dynamic risk assessment (DRA) is used to evaluate the situation, tasks and persons at risk when carrying out any form of activity – whether routine or unusual. This process helps an individual to effectively assess a situation as it is unfolding. The person can continuously assess the circumstances and adjust his or her response to meet the risk presented moment by moment.

4.3.2 Examples of using DRA to deal with the unexpected might include.

- when handling a major incident;
- if an obstruction occurs in a navigation channel;
- navigation of vessels in particularly poor visibility
- equipment failure (either on board a vessel or ashore)
- a combination of the above.

It is essential that the generic risk assessment for the project describes clearly who is responsible for the subsequent DRA.

<u>Monitoring that dynamic risk assessments are taking place.</u>

4.3.3 It is unlikely that DRAs will be formally recorded, so there will be less evidence that the process is in fact taking place. Nevertheless, during monitoring and inspection exercises, it should be possible to demonstrate that it occurs. For example, discussions with persons recorded as being competent to carry out dynamic risk assessments should elicit examples of on-going work and decisions which reflect (amongst other things) how health and safety considerations have been included in their thinking. Over time, some of these dynamic assessments will lead to a review and revision of the planned / formal risk assessment, and there will be evidence of this. Managers can question staff about the health and safety implications of developments at any time, and make a brief note that they have done so. Routine team or individual progress meetings, or meetings to discuss the effectiveness of performance could also be used for this purpose.

4.3.4 There may also be examples of individuals reaching the limits of their competence, and asking for the work to be stopped until they have more training, information, assistance or resource – which should result in a review of the original assessment.

4.4 SAFETY MANAGEMENT SYSTEM (SMS)

4.4.1 An example of the headings used by a large trust port in its SMS can be found at annex A of this guidance. Examples of SMSs for harbour authorities can also be found on the web.

The key elements of successful safety management are -

- effective safety policies setting a clear direction for the organisation to follow;
- an effective management structure and arrangements in place for delivering the policy;
- a planned and systematic approach to implementing the policy through an effective safety management system;
- performance is measured against agreed standards to reveal when and where improvement is needed;
- the organisation learns from *all* relevant experience and applies the lessons.

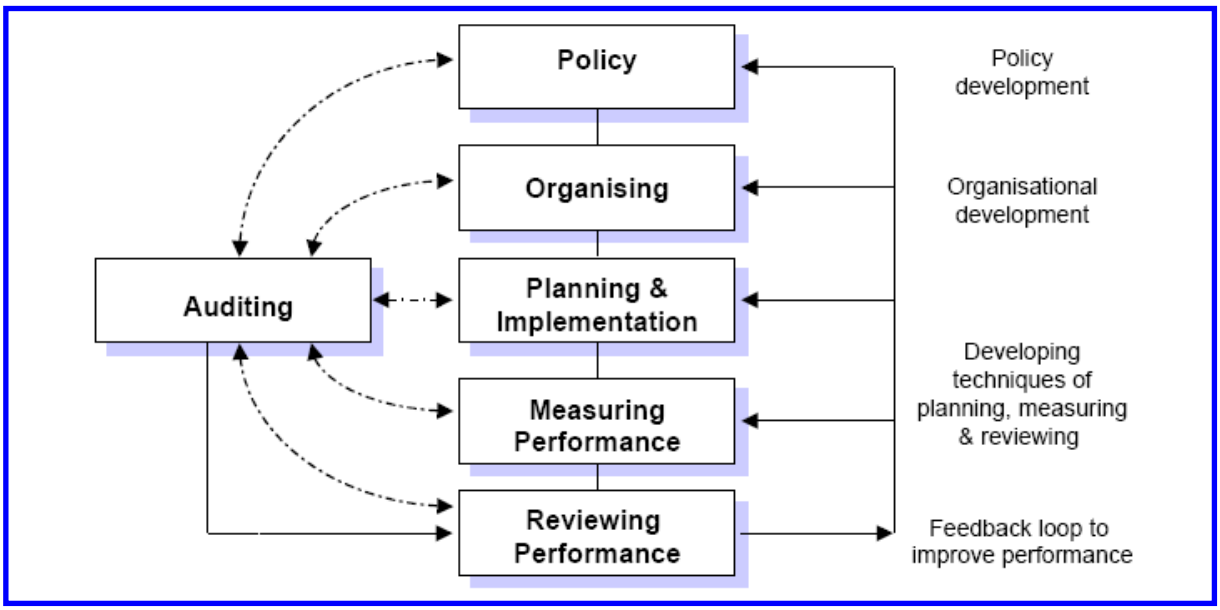
Together these elements constitute a continuous cycle over time, aimed at ensuring continued achievement of safety goals, and relevance of policies, plans and procedures; and continuous improvement in safety performance.

Harbour authorities should make the following commitments (to safety policy) -

- to manage the relevant assets of the authority safely and efficiently;
- to discharge existing statutory duties and powers;
- to maintain relevant harbour equipment to agreed industry standards;
- to recruit and train operational staff to nationally agreed competence levels;
- to ensure that staff are properly trained for emergencies and contingencies.

4.4.2 Your Safety Management System (SMS) should be developed with significant input from persons working at the Port (employees and service providers operating within the port) and supported by a series of risk assessments. The following diagram presents and overview of the general outline of an SMS.

Figure 3. Overview of a Safety Management System:



Description of the Marine Safety Policy

4.4.3 Harbour authorities must be aware of their legislative duties and powers, and should first refer to any relevant national and local legislation.

4.4.4 As part of their commitment to facilitating the safe navigation and operation of vessels the harbour authority must also highlight its policy commitments. Advice about what a harbour authority should include in its marine safety policy is covered under 2.2.7 of this Guide.

4.4.5 **Description of the organisational roles and responsibilities** (further information can be found under 2.2.20 of this Guide) and what their responsibilities are maintaining safety. Refer to:

- the duty holder;
- the designated person;
- chief executive,
- harbour master,
- deputies, assistants and other managers who may be responsible for ensuring the safety of navigation;
- other employees,
- users / agents,
- the general public,
- forums and committees that are in place to implement policies;

Reference also needs to be made to the impact on different port operations and departments. Remember that one of the core elements of the Code is that all persons involved in the safety of navigation should be competent (i.e. appropriately qualified and experienced).

Planning and implementation of procedures:

4.4.6 This section should identify what the present procedures on the major aspects of marine safety within your port (including the approaches) and document how risk assessment should be carried out and the emergency response procedures that will come into force in the event of an incident. It should also set out how personnel can make themselves familiar with the documentation and what is required under the SMS.

4.4.7 Common issues which are addressed under the Port procedures section of the SMS:

- Regulating the safe arrival, departure and movement within the harbour of all vessels. The different types of vessel and/or activities should be identified and rules and standard procedures should be summarised for each type.
- Procedures for protecting the general public from dangers arising from marine activities.

- Procedures for handling adverse conditions (e.g. high wind, dense fog)

Environmental management –

- Identify acts or omissions that may cause personal injury to employees or others, or damage the environment.
- Port marine operations – summarise procedures for:
    - ensuring that anchorages are safe – considering the size of vessels; possible weather conditions and disseminating this information to users
    - managing and marking wrecks
    - positioning and maintaining aids to navigation.
    - Dredging and other civil engineering works
    - Conducting surveys and disseminating the results to mariners.
    - Application of compulsory pilotage.

Measuring performance:

4.4.8 Harbour authorities must have a database or system to record incidents (including near misses). Performance should be measured against periodic audits; reviews; safety inspections; following a report of an incident, an incident investigation or an informal report / observation. There are several factors and reported on an annual basis. The port is expected to evaluate performance and identify any lessons learnt and improvements to be made to operational procedures.

Audit and Review:

4.4.9 A systematic audit and review must be carried out to ensure that the SMS is being operated effectively. An internal audit should be carried out [every year], and a statement about the performance standard of the port should be included in the Annual Report. An external audit should take place every three years and a formal review of the whole plan should take place every five years. The designated person will present any findings from the audits to the duty holder as part of the auditing and review process.

4.4.10 As part of this process, the SMS needs to reflect the lessons learnt from other ports and incorporate the recommendations and conclusions of any port related MAIB investigation, as appropriate.

4.4.11 A good example of the structure for a SMS can be found at annex A. Many ports publish their SMS on the web.

4.5 MARINE ACCIDENT INVESTIGATION BRANCH

4.5.1 Under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, the sole objective of the investigation of an accident by MAIB shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It is not the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.

4.5.2 The work of the Marine Accident Investigation Branch (MAIB) is integral to the continued development and evolution of the management of safety in UK ports. There is a clear need to ensure that a port's SMS evolves and responds to, for example, changes in local trade and the operation of the port. But it is also important that lessons are learned and assimilated following related marine incidents and accidents elsewhere.

4.5.3. The MAIB publishes a range of reports and guidance that can be of great benefit to individual ports and industry as a whole. These include specific investigation reports; not just in respect of commercial shipping, but also those relevant to fishing and leisure activity accidents, as appropriate to the mix of activity within the port in question; Safety Digests and targeted Flyers. See the MAIB website at www.maib.gov.uk. MAIB provide a facility whereby individuals, on request, can be advised by email of the publication of new reports and Safety Digests.

4.5.4. Ports are strongly advised to establish formal procedures for being notified of and reviewing the content of these various publications and when they are published. It is likely that unfortunate events elsewhere will trigger reviews in other ports SMSs, which inevitably enhance the margin of safety for all.

4.5.5. Under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, all harbour authorities have a statutory obligation to report accidents to the MAIB, by the quickest means available. Annex D of this guide reproduces MAIB's incident report form. This form, along with guidance - Merchant Shipping Notice (MGN 289) - can be found under the 'report an accident' section on MAIB's website.

4.6 MARITIME & COASTGUARD AGENCY (MCA)

4.6.1. The MCA is generally responsible for supporting the Department for Transport (DfT) in developing and implementing the Government's maritime safety and environmental protection strategy by:

- Promoting safety at sea and on the coast.
- Providing a 24-hour maritime search and rescue co-ordination service.
- Preventing pollution from ships and minimising the effects of pollution incidents by reacting quickly and effectively.
- Maintaining the quality of ships on the UK Ship Register through regular surveys and inspections.
- Promoting high levels of maritime safety and security.

It also publishes useful information on its website – for example Marine Notices, guidance and information

4.6.2. The MCA is responsible to the DfT Ports Division in advising on the composition and application of this Code to all ports in the UK. This includes (but not confined to):

- The conducting of Verification Visits (see below)

- Monitoring the compliance of harbour authorities against the Code

- The facilitation of regular meetings between port authorities, related maritime industries operating within ports and government within the context of this Code in order to exchange opinions and developments which may have a bearing on the content of the Code and the way in which it is applied.

- Other technical assistance which may be required by DfT.

Verification Visits:

4.6.3 The need for a verification visit is intelligence led, and may be triggered by a report from bodies such as MAIB, CoS, UKMPA/BPA, GLA, MCA area office, CHIRP (and others with a legitimate interest), if it suggests a failure in the port's safety management system (SMS). The purpose of the visit is to test compliance with the PMSC. It is not an audit and there is no wish to interfere with the safety management arrangements of port authorities. The MCA currently envisage conducting about four visits per year but this figure may be influenced by events.

Process of Undertaking Verification Visits:

4.6.4 Such visits will be undertaken by at least two MCA Officers who have experience within the port industry. The lead will be taken by a marine office surveyor accompanied by HQ personnel from the Navigation Safety Branch. A date for the visit will be arranged with the port concerned giving at least 28 days notice. It is expected that the port will wish to cooperate fully with the verification team who will discuss the operation of the SMS with both the duty holder and designated person (who provides independent assurance about the operation of the PMSC and has direct access to the Board). The verification team may wish to discuss operations with any staff member at the port. It is recognized that the verification team are visitors to the Port and their attitude should reflect this.

4.6.5 A checklist approach is used to ensure that verification criteria are consistent and directly linked to the Code and Guide to Good Practice. Duration of the visit may vary with the size and complexity of the port but typically be over 2 days. The Port authority will be invited to consider and sign off the report at the closing meeting.

4.6.6. Copies of the report will be provided to the port itself, DfT (Ports Division) and MCA. Under some circumstances, the reports may also be released to a wider audience.

SECTION 5
EMERGENCY PREPAREDNESS AND RESPONSE

5.1. INTRODUCTION

5.1.1. Paragraph 3.9 of the Code says that a safety management system should refer to emergency plans - and these should be developed as far as practicable, based on the formal risk assessment. Emergency plans need to be published and exercised.

Civil Contingencies Act:

5.1.2 The Civil Contingencies Act 2004 provides a single framework for civil protection in the UK. The Act is separated into two parts: local arrangements for civil protection (Part 1) and emergency powers (Part 2). Part 1 of the Act (and supporting Regulations and statutory guidance on emergency preparedness) sets roles and responsibilities for those involved in preparing for emergencies, at the local level. The Act divides responders into two categories. "Relevant Harbour Authorities" (definition within the Act given below) fall within category 2 organisations. This category of responder are viewed as "co-operating bodies" under the Act, and are less likely to be involved in the heart of the planning work, but will be heavily involved in incidents that affect their sector or operations, including compliance with other legislation. Duties placed on category 2 responders are essentially those of co-operation and information sharing with category 1 responders. This generally manifests itself as working within a multi-agency planning framework, including participation in Local Resilience Forums and emergency management training and exercising events.

5.1.3 “Relevant harbour authority” means a harbour authority, within the meaning of section 46(1) of the Aviation and Maritime Security Act 1990(**c**), which is responsible for a harbour through which the average annual maritime traffic, calculated by reference to the most recent three years for which data is available, is at least 1.5 million tonnes of cargo or 200,000 passengers[1].

5.1.4. It is usual to think of emergencies as unexpected: the challenge to those with professional responsibilities for safety is not to be taken by surprise. Factors to be considered can range from designating emergency anchorages and potential beaching points for vessels to considering the effects of a lock gate failure or impounding pump breakdown. The emergency might be a fishing vessel suffering from a flooding engine room to a yacht catching fire. Alternatively the problem could be with filmmakers or a Tall Ships festival. Whatever the situation, by taking a planned approach, evaluating the effectiveness of such a plan and modifying the plan when necessary, you will not only reduce the impact of potential problems, you will also be cost effective.

5.2. DANGEROUS SUBSTANCES

[1] Note: Regardless of size, some local authority ports will automatically be included in civil protection by virtue of having Emergency Planning Officers in the same organisation

5.2.1. Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997 defines the various categories of substances classified as Dangerous and refers to International Maritime Dangerous Goods Code (IMDG) for individual definitions and classifications. These Regulations apply if dangerous substances transit, or are handled, within the harbour area. Part V of the Dangerous Substances in Harbour Area Regulations 1987 covers Liquid Dangerous Substances in Bulk.

COMAH Regulations

5.2.2. If certain dangerous substances are stored in large quantities then the Control of Major Accident Hazard Regulations will apply. This legislation applies to the operator of the specific site, it also considers the type of substance, the quantity stored and what other combinations of product are stored in the area. The outcome of this will dictate the tier in which the site will be placed, either top tier or low tier.

5.2.3. COMAH requires those responsible for what it calls top-tier sites to:

- carry out a full quantitative assessment;
- submit a safety case report to the Local Authority and other appropriate authorities for consultation;
- submit the final documentation to the HSE for approval;
- carry out a programme of exercises;
- provide appropriate information to neighbouring sites;
- make information available to the public.

Those responsible for lower-tier sites are required to:

- plan;
- provide information to the public.

Good guidance can be obtained from the HSE about top-tier and lower-tier sites.

Dangerous Substances in Harbour Area Regulations (DSHAR) 1987

5.2.4. The Dangerous Substances in Harbour Area regulations 1987 defines the meaning of a dangerous substance and sets out the requirements for entry into the harbour area. It includes the harbour master's powers, marking and navigation of vessels, handling of dangerous substances, bulk liquids, packaging and labelling, storage and explosives. Most importantly, it requires the preparation of emergency plans by harbour authorities.

5.2.5. Before Dangerous Substances can be handled within a harbour area, the harbour authority must prepare an effective emergency plan. The harbour authority must consult the emergency services and any other body it considers appropriate in the preparation of such a plan. The harbour authority can appoint inspectors to enforce the entry of dangerous substances into the harbour area and ensure the marking and navigation of vessels is carried out in a safe manner. This is particularly important to ensure third parties maintain adequate safety standards.

5.2.6. The harbour master must record the granting or revoking of an exemption from the requirement to notify the entry of a dangerous substance. The purpose of

notification is to ensure adequate preparation can be made to store and handle the appropriate substance.

5.2.7. The harbour master should consider the safety of any person either within or outside the harbour area when giving directions. The harbour master should consult the police before directing the removal of dangerous substances from the port. It is important to consider the roles of the emergency services and their capabilities, which differ around the country. The harbour authority must designate a parking area for road vehicles carrying dangerous substances.

Explosives

5.2.8. It will almost certainly be the case that if the harbour authority handles explosives then an explosives licence will be required. Explosives licences are issued by the HSE, the procedure for application is set out in Schedule 7 of the DSHAR. The harbour authority must have a separate explosives plan. The harbour authority must appoint an Explosives Security Officer if explosives are being handled. The harbour authority must keep a record for a period of 5 years of all explosives handled.

5.2.9. The harbour authority may also be classified as the berth operator and owner. Under these circumstances they should take all precautions to minimise the effects of fire and explosion. Adequate access to berths must be ensured at all times.

5.3. OIL POLLUTION AND DANGEROUS VESSELS

5.3.1. The Code makes a number of references to oil spills:

- paragraph 5.10. says that the Secretary of State has power to give directions to a harbour authority, a harbour master (and certain other persons) where an accident has occurred to or in a ship and, in his opinion, there is a risk to safety or a risk of pollution by a dangerous substance;

- paragraph 5.10 also says that the Secretary of State, or persons authorised by him, may take any action he or she may direct to be taken; and that a representative of the Secretary of State (SOSREP) has been appointed to exercise these functions.

- paragraph 5.14 says that a harbour master may detain a vessel if he or she has reason to believe that it has committed an offence by discharging oil, or a mixture containing oil, into the waters of a harbour;

- all oil spills into harbour waters are to be reported and harbour masters have powers to board ships to investigate possible offences.

5.3.2. There is also a duty on harbour authorities, under the Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations 1998 (the OPRC Regulations), to prepare a plan to respond to oil spills in their waters.

5.3.3. It is good practice for the management of the risk of oil pollution to be part of the overall safety management system for marine activities in the port. Measures to respond to pollution, should it arise, are part of that system, although a separate plan has to be approved by the MCA. Pollution response is difficult: it is good practice to minimise the risk of it occurring in the first place. A comprehensive approach therefore addresses both the risk and the required response.

Scope of harbour authority responsibilities

5.3.4. The OPRC obligation arises if a port has oil handling facilities (of vessels over 400 GT or oil tankers over 150 GT), bunker vessels, or a turn over in excess of £1 million, The 1998 Regulations are now the principal legislation on counter pollution from a harbour authority perspective.

5.3.5. The obligation in the Regulations relates to pollution, or risk of pollution, by oil being discharged into harbour waters. The requirement is to plan to remove oil pollution from the harbour waters; and from structures owned by the harbour authority. The National Contingency Plan assumes that the cleaning of the shoreline is assigned to local authorities and the landowners; and port plans should do the same.

5.3.6. Harbour authorities should have in place sufficient equipment to adequately deal with what the Regulations term a Tier 1 response. They should also have in place a contract with a competent response company that has the capability to respond to what the Regulations term a Tier 2 spillage. The effect of these provisions is to limit the quantity of spilled oil for which a harbour authority must plan removal. Harbour authorities' plans may provide for a larger response capability, subject to approval of such plans.

Risk assessment

5.3.7. As the earlier section on risk assessment has shown, risk requires consideration of both hazards and consequences. The process therefore begins with a potential pollution assessment and potential pollution depends upon what vessels use the port – or might use it in an emergency. The assessment of consequences requires consideration of where in the harbour oil pollution is likely to occur; and where the oil is likely to cause damage.

5.3.8. The MCA and SOSREP are responsible, under the Safety of Life at Sea Convention (SOLAS), for providing shelter for maritime casualties which may require the use of waters within a port as a place of refuge. To assist in this the MCA aim to work with harbour authorities to develop and maintain a register of potential places of refuge. The help likely to be required will depend upon the port and passing traffic as well as the facilities likely to be available. It is therefore good practice for harbour authorities to plan for the reception of a casualty and to make any such plan part of their OPRC contingency plan.

Government support for large spills (Tier 3)

5.3.9. Under the Merchant Shipping Act, the UK Government has prepared a National Contingency Plan to manage very large spillages. The plan is a good guide particularly on harbour authorities powers and SOSREP's function.

5.3.10. The Port Counter Pollution Plan should be complementary to the NCP for several obvious reasons. The pollution potential assessment might identify that spillages in excess of the Tier 2 limit may occur and, unless the harbour authority also plans a response in excess of Tier 2, the Government's help under the NCP will be required. In any event, there is a power to intervene in all cases.

5.3.11. It is therefore important to share the potential pollution assessment with SOSREP: MCA need to know – and plan for – the areas where spillages beyond the local response capability may occur. The harbour authority, in turn, needs to share such a plan, especially as it will always assume the use of harbour authority resources and personnel.

5.3.12. The National Contingency Plan assumes that, for an incident occurring inside a harbour authority's jurisdiction, the harbour master will be in control of the incident response from the outset, although they may not remain so. Command and control may pass to SOSREP – either because it is a very large spillage, or because powers of intervention have been exercised. It is crucial that harbour authority plans should deal with this. To avoid confusion during an incident, it must be clear how the harbour authority's resources (including its personnel) will fit under SOSREP's command and control. It is also important to identify as clearly as practicable, in the harbour authority's plan, the circumstances in which that transfer of control is likely to occur.

Consultation

5.3.13. Plans should be compiled in consultation with adjacent ports, Local Authorities, the Department for Environment Food and Rural Affairs (DEFRA), the Environment Agency and Natural England and their equivalents under the devolved administrations. The plan must then be submitted to the MCA for formal approval. Some of the agencies required to be consulted have to prepare response plans of their own. They need the harbour authority's pollution potential assessment; and can assist greatly with the assessment of consequences. It is therefore good practice to involve them from the outset in the port plan: it is not good practice to make a first approach with a completed draft.

Resources

5.3.14. A harbour authority should have an adequate number of trained personnel capable of managing a pollution incident. Additional resources needed to cope with a Tier 2 spillage can include mutual help agreements with other ports, oil companies and local authorities, and resources may also be available from oil spill contracting companies. There is no requirement for a harbour authority to actually have in place arrangements with a competent response company but there must be a formal agreement in place to ensure that a response will be guaranteed in the event of an accident. The harbour authority has to demonstrate in the plan and through the arrangements they have made that they can deal with a Tier 2 response. It is prudent to share with other local interests information about the external resources being relied upon – if only to ensure that they are not double-counted. This also applies to SOSREP's plans.

Merchant Shipping (Prevention of Oil Pollution) Regulations 1996

5.3.15. This legislation is directed mainly at a satisfactory operational capability of the vessel, when navigating within the vicinity of the coast. The harbour authority must report to the MCA any noticeable defect of a vessel when operating within harbour limits or when a pilot is on board. A reporting process needs to be established for pilots and port operations centres to ensure the harbour authority can comply with this legislation. Consideration will need to be given to a means of detecting defects on non-piloted vessels, which may be sub-standard and not reported.

Dangerous Vessels Act 1985

5.3.16. Paragraph 5.12 of the Code notes that, under this Act, a harbour master may give directions prohibiting the entry into, or requiring the removal from, the harbour of any vessel if, in his opinion, the condition of that vessel, or the nature or condition of anything it contains, is such that its presence in the harbour might involve a grave and imminent danger to the safety of persons or property or risk that the vessel may, by sinking or foundering in the harbour, prevent or seriously prejudice the use of the harbour by other vessels. The harbour master must have regard to all the circumstances and to the safety of any person or vessel.

5.3.17. Directions given under the Act by a harbour master may be over-ridden by the Secretary of State. This power is likely to be exercised through SOSREP, having assumed powers of intervention relating to the salvage of the casualty. It is good practice to use the formal statutory procedures, where appropriate, since they provide a framework for managing responsibility for a casualty.

5.4. WORKING WITH OTHER AUTHORITIES.

5.4.1. Those preparing harbour authority emergency plans should consult other interested agencies from the start. They may be formally consulted before plans are submitted for final approval, but this process may be quicker if the agencies are involved throughout. Many of these agencies also have statutory obligations to meet in their own right. The specific responsibilities of each agency can be obtained from them.

Police

5.4.2. The role of the police is to:

- act as overall co-ordinators of any major incident on land;
- secure and protect the scene;
- investigate the incident;
- collect casualty information;
- identification of the dead on behalf of the coroner;
- prevent crime.

In the event of a major incident outside of the port area the police are overall co-ordinators but this is not the case in the event of a port marine incident.

Emergency Services

5.4.3. The harbour master, and the master of any vessel involved, should give every reasonable assistance to the fire, police, ambulance and other emergency services for dealing with, alleviating or preventing any emergency. At any fire, the Senior Fire Officer shall have sole charge and control of all operations subject to the overall authority of the master if on board ship (Fire Services Act of 1947 and Fire Precautions Act 1971) although they are not in charge of ship safety and other matters within the marine sense. Not all fire and rescue services will respond to an offshore incident.

The Environment Agency

5.4.4. The Environment Agency is a non-departmental public body with statutory duties and powers in relation to water resources, pollution control, flood defence, fisheries, recreation, conservation and navigation in England and Wales. Under the Water Resources Act 1991, the Environmental Protection Act 1990 and the Environment Act 1995. The Environment Agency is responsible for the control of pollution and water quality in all controlled waters; which include ground waters, fresh waters, estuaries and relevant territorial waters (these extend 3 miles seaward from specific baselines). Scotland and Northern Ireland have agencies with similar functions.

5.4.5. It is recommended that harbour authorities enter into a Memorandum of Understanding in order to record clearly its protocols for cooperation with the respective agency or emergency service.

5.5. HEALTH AND SAFETY AT WORK

5.5.1. Management of Health and Safety at Work Regulations and the Health And Safety At Work Act place upon the harbour authority a duty of care to take all reasonable and practical measures to ensure the safety of employees and the public.

5.5.2. This means that the employer can plan to control all work activities that may put people, property or the environment at risk.

5.5.3. The harbour authority should have in place a safety management system for controlled work such as:

- Hot work;
- Cold Work;
- Diving; and
- Entering enclosed spaces.

5.6. SEARCH AND RESCUE

5.6.1. The MCA have a national plan to manage major seaborne incidents. This is an integrated response relying upon voluntary bodies such as the RNLI and local resources. Arrangements have been made with various fire services and the RAF to provide helicopter support.

5.6.2. It is the responsibility of HM Coastguard to co-ordinate the search and rescue phase of any distress within harbour limits. Harbour authorities provide support in various ways, for example the use of pilot boats in emergencies. HM Coastguard will assist a harbour authority and provide co-ordination in the search and rescue phase of any incident which is being carried out under the Port Emergency Plan. The harbour authority will remain responsible for managing the overall response to a port emergency. Some authorities have a memorandum of understanding with HM Coastguard on lines of responsibility and communication in the event of a port incident.

5.7. NATIONAL AND OTHER PLANS

Major Incident Plan

5.7.1. In England and Wales the Home Office has instructed the Police to draw up a plan to manage a major incident. Its main *modus operandi* is based upon a tiered level of response:

- gold (strategic);
- silver (tactical);
- bronze (operational).

The gold, silver and bronze categorisations relate to the function of the post rather than the seniority of the officer dealing with the emergency.

5.7.2. The plan works on the basis of mutual support with each organisation involved in the incident providing personnel to provide the relevant expertise.

Regional plans

5.7.3. Each region within the UK has a Marine Rescue Co-ordinating Centre (MRCC) specifically designed to manage offshore and inshore incidents. The MRCC also has a resident Counter Pollution Officer for that region who is responsible for managing pollution incidents that occur outside Port Limits.

Pollution

5.7.4. Some areas have regional counter pollution plans, which have been compiled with the input of all relevant agencies, they detail:

- sensitivity of information;
- prioritisation; and
- locations for shoreline response centres and marine response centres.

5.7.5. These plans act as an umbrella support to individual; port and organisational plans and provide a bridge to The National Contingency Plan..

Local non-port Plans

- Environment Agency-flooding
- Chemical sites

- Local Authority

Port Plans

- Search And Rescue
- Counter pollution
- Salvage
- Media
- Disturbance
- Collision
- Grounding
- Sinking
- Fire
- Pollution
- Air pollution (Toxic cloud)
- Chemical spillage
- Bomb threat / terrorism
- Medical emergency
- Hazardous substances washed ashore

5.7.6. Good ideas about planning can be obtained from:

- Easingwold Emergency Planners College;
- Nautical Institute Publication *The Work of the Harbour Master;*
- local authority emergency planners;
- emergency services have dedicated personnel who will help (they will also advise what information they will expect from you);
- major organisations e.g. BP, Shell, and ICI etc, have dedicated departments who will provide advice; and
- visits to other ports and facilities.

Harbour authorities should plan generically as they cannot predict and prioritise all possible incidents.

5.7.7. Harbour authorities should consider the implications of external incidents e.g. a chemical plant having an incident creating a toxic plume that drifts across the port. It is important to consider all the port characteristics:

- tidal port or locks (in some cases both);
- type of industry in the port or close to it
- types of cargo are brought into the port
- industry within the port; and
- environmental considerations to be considered

Plan Development

5.7.8. The following areas should be considered in your planned approach:

- planning for existing facilities and vessels;

- planning for a new type of vessel or trade;
- planning a new facility within the port or close to it;
- planning for a major event;
- planning for an exercise; and
- planning for an emergency response and major incident.

5.7.9. It is worth considering that even the smallest of vessels can cause big problems. The plan should consider the size of the problem and how best to manage it, the following levels of port incident may help:

- minor – the harbour authority is capable of dealing with it with limited resources;
- port incident – requires additional resources/expertise;
- major incident – requires a large amount of resources and expertise.

Capability of the Port

5.7.10. This will dictate whether the port can manage an incident or even have the resources to carry out effective in house planning. Elements of the plan may include;

Plan Content

- location of Command and control;
- manpower;
- record keeping;
- event recording;
- financial records;
- resources;
- impact upon the business;
- cordons;
- security arrangements;
- specialists support;
- corporate image;
- external intervention;
- accommodation;
- documentation;
- continuity;
- good communications;
- picture building facilities;
- decision-making (pre-planned);
- the effect of events covering prolonged periods (Watch keeping);
- duty rostering and rest periods Location; and
- media.

Training and Exercises
(*Exercise Planners guide* Home Office Production)

Training Exercises

- seminar good for rolling out new plans;

- table tops very cost efficient, enables good control of the exercise and enables the big picture;
- control post carried out in the work environment for small teams; and
- live exercise large scale, enables real life real time scenarios to run.

5.8. PORT SECURITY

5.8.1 The introduction of the International Ship and Port Facility Security (ISPS) Code in 2004 placed a number of new responsibilities upon port authorities. The impact on ports has varied, depending upon their status.

5.8.2 The forthcoming Port Security Directive may develop the ISPS concept of security at the ship / port interface and extend it to the wider 'port estate'. The Directive will allow the establishment of Port Security Authorities, each appointing a Port Security Officer. The primary function of the Port Security Authority will be to undertake and maintain a risk assessment of port and maritime security in its area of jurisdiction. However, enforcement of port security legislation will remain with the Department for Transport's Security Directorate – TRANSEC.

5.8.3 It is a fact that a number of the resources and capabilities ports have in place to manage and facilitate navigational safety can and in many cases, do have associated benefits for maritime security.

SECTION 6

CONSERVANCY

6.1. SUMMARY

A. A harbour authority has a duty to conserve the harbour so that it is fit for use as a port. The harbour authority also has a duty of reasonable care to see that the harbour is in a fit condition for a vessel to be able to use it safely.

B. Harbour authorities should provide users of the harbour with enough information about conditions in the harbour such as depths of water, local Notices to Mariners, etc.

C. Harbour authorities have duties and powers as local lighthouse authorities (or providers of aids to navigation); and specific powers in relation to wrecks.

Hydrography

Harbour authorities have a duty to find, mark and monitor the best navigable channel or channels in the harbour. A statement of the measures adopted should be included in the published policies and plans. Effective arrangements to publish appropriate hydrographic information (charts, warnings about recent navigational hazards) must also be in place.

Admiralty charts

Harbour authorities should provide regular information required for Admiralty Charts and publications. The UK Hydrographic Office provides a standard form of agreement for these arrangements.

Prevailing conditions

In addition to information about general conditions, harbour authorities should also have procedures to make available timely information on prevailing and forecast meteorological conditions such as wind, tide and other factors liable to be affected by the weather and the way the harbour is used.

Aids to navigation

A local lighthouse authority should exercise its functions in accordance with a safety management system. The provision and level of aids to navigation provided should be based on formal risk assessment. The characteristics and availability of all aids to navigation should comply with internationally agreed guidelines, applied in consultation with the General Lighthouse Authority.

Anchorages

A harbour authority's safety management system should make appropriate provision for safe anchorages in the harbour and its approaches, taking into account the size and type of vessels likely to require them, the needs of other shipping - including passing shipping, and the local conditions.

Wrecks

A harbour authority's safety management system should require a risk assessment to be undertaken of any wreck in, or in or near the approaches to, a harbour. The authority's powers to raise, remove, destroy and mark a wreck which is, or is likely to become, a danger to navigation should be exercised having regard to that assessment, with the aim of reducing the risk to as low as reasonably practicable.

Reviewing changes

The need for survey should be considered if harbour operations are changed - for example the use of berths; the reception of larger vessels - and also significant increases in harbour traffic which may require additional passing places, anchorages, etc..

Works in harbours

Works in harbours are liable to interfere with navigation. The safety management system should have appropriate provision for this, should works be undertaken. There will be a need for a special assessment in each case where new hazards are likely to arise. The safety management system should provide in particular for the regulation of dredgers and other craft associated with such works.

6.1.2. A description of the duty is outlined below. A harbour authority has a duty to conserve the harbour so that it is reasonably fit for use as a port, and a duty of reasonable care to see that the harbour is in a fit condition for a vessel to use it. The Code says that the conservancy duty covers several points:

a) to survey as regularly as necessary and find the best navigable channels for vessels to navigate;

b) to place and maintain navigation marks where they will be of the best use to navigation (marked appropriately by day and night);

c) to keep a 'vigilant watch' for any changes in the sea or river bed affecting the channel or channels and move or renew navigation marks as appropriate;

d) to keep proper hydrographic and hydrological records; and

e) to publish as conspicuously as possible such further information that will supplement the guidance given by navigation marks.

Where a harbour authority states that there is a certain depth of water at a part of the harbour over which vessels may pass, it must use reasonable care to provide that the approaches to that part are sufficient, under normal conditions, or give warning that the advertised depth has not been maintained.

6.1.3. Conservancy includes not only monitoring but also covers the protection of navigation and the hydrographic regime in a harbour, and so covers the licensing of construction and dredging in order that the safety of navigation is not adversely affected.

6.1.4. Conservancy involves a number of functions, which include:

- hydrography;
- publishing and display of survey and navigation information;
- dredging;
- maintaining aids to navigation;
- managing wrecks; and
- regulating construction works.

6.2. HYDROGRAPHY

The General Requirements of a Hydrographic Survey

6.2.1. In the context of this publication, hydrography is the precise determination of navigational information, and the provision of charts and other navigational products for use by the mariner and those with a responsibility for conservancy.

6.2.2. The International Hydrographic Organization (IHO) provides information on the concepts involved in hydrography as well as guidance to plan and execute hydrographic surveys.

Position

6.2.3. Survey data must be positioned relative to a geographical co-ordinate reference frame. Positions should be referred to WGS84 datum, or the WGS84 compatible datum ETRS89 datum, when using Global Navigation Satellite Systems (GNSS) such as GPS. If terrestrial-based electronic or optical systems are used, then positions may be referred to OSGB36 datum, realised as the British National Grid. Local co-ordinate systems may be used for large-scale work.

6.2.4. All positioning systems should be fully calibrated before the start of each survey. Additionally, confidence checks should be conducted. Daily checks are recommended but, at a minimum, checks should be conducted at the start and end of the survey.

Bathymetry

6.2.5. The entire survey area should be covered in a methodical manner. The pattern and spacing of survey lines should be carefully considered before starting the survey. No irregularities in the depth must be overlooked and sounding density must be sufficient to discover all obstructions and shoals. If shoals are discovered then they must be investigated further in greater detail. Leading lines must be sounded along and, if sounded with a single beam echo sounder, a detailed examination undertaken using side scan sonar.

6.2.6. All soundings must be reduced to Chart Datum by applying observed tidal heights. See paragraph 6.2.9.

6.2.7 There are two main categories of echo sounder - **Single Beam Echo Sounders (SBES)** and **Multi Beam Echo Sounders (MBES)** - both of which require careful calibration.

Wrecks, Obstructions and other Dangers to Navigation

6.2.8. The position of, and least depth over, every shoal, rock, bank, wreck and other obstruction that is a danger to safe navigation must be determined by close examination. The minimum depth is found using an echo sounder, supported where possible by high definition side scan sonar when sounding with SBES . If necessary, in depths of less than 40 metres, wrecks and obstructions could also be swept by wire or checked by a diver to make sure there is a safe clearance depth. All dangers discovered during previous surveys or reported by other means must either be found and examined or positively disproved by an extensive and rigorous search.

Tidal Heights and Tidal Streams

6.2.9. Observations of the rise and fall of the tide should be made to reduce soundings to a common datum as well as to provide data suitable for tidal analysis thus enabling the predictions in the tide tables produced by the UK Hydrographic Office to be of better quality.

6.2.10. The means of obtaining tidal data, either by tide pole and/or tide gauge should be referenced to Chart Datum and / or Ordnance Datum (Newlyn).

6.2.11. Tidal height observations can be obtained manually to produce a tidal curve, or automatically using a recording tide gauge. Where automatic gauges are used a

daily check against a tide pole should be made to ensure its correct operation. The tide pole should have a reference mark on the structure to which it is secured to make sure that its position has not been moved.

6.2.12. Modern tide gauges usually have telemetry links, which allow real time tidal heights to be monitored remotely and then broadcast to vessels in the area. Where electronic monitoring and recording of tidal heights is available, it is also possible to compare the actual tidal height at any one time with that predicted, and to present any difference graphically. This is particularly useful in assessing the meteorological effects on tides.

6.2.13. Measurements of the tidal stream and current will be required throughout the survey area.

Coastline & Topography

6.2.14. The position of the high and low water lines must be fixed and the nature of the foreshore described. All land features and conspicuous objects of any interest to the mariner that help him recognise the coast and determine his position must be carefully fixed. The heights of such objects must also be found.

Aids to Navigation

6.2.15. All aids to navigation, both fixed and floating, should have their positions accurately recorded. Lit fixed marks should have their sectors and characteristics regularly checked where necessary. The mean positions of floating marks should be determined from observations taken at full ebb and at full flood. All local lighthouse authorities are required to advise the relevant GLA of position details for the aids to navigation.

The Survey Process

6.2.16. The surveying process is divided into five major stages with each stage divided into a number of groups of instructions or procedures.

Table 6.1 Five stages of the surveying process

Stage	Group	Instruction or Procedure
Preparation	Planning	Find out what survey information already exists and plan observations.
	Calibration	To remove instrument errors from survey equipment before doing any observations.
Data Gathering	Verification	To ensure that the instruments are gathering information to the correct standard during survey operations by comparison with other instruments.
	Observation	To make observations and check them on the survey line or in the field

	Data Logging	To store observed information and transfer to a data processing system
Data Processing	Editing	To ensure the removal of invalid data
	Selection	To select valid data
	Data Storage	To store relevant information in analogue or digital formats
Data Analysis	Quality	To determine the quality of surveyed data and compare it to the required standard
	Coverage	To determine that sufficient valid data has been surveyed
Data Rendering	Reports	To report dangers before the completed survey is rendered
	Plots	To render data as graphics
	ROS	To write the Report of Survey
	Digital Data	To render digital data
	Field Records	To render field records

Frequency of Survey

6.2.17. The finding, marking and monitoring of the best navigable channel or channel in a harbour is an essential part of the formal hazard assessment and safety management system. There needs to be a clear understanding between the harbour authority and any berth operator about responsibility for arranging surveys alongside a berth.

6.2.18. The need and frequency of surveys should be determined by formal risk assessment. It should reflect the stability of the sea bed and its susceptibility to change. The depth of available water, in relation to the draught of vessels using that water, is also a consideration. Given that the depth of water and stability of the seabed will often vary within a port, it is recommended that an overall survey plan be drawn up which meets the need for surveys at varying times in different areas.

6.2.19. Surveys are needed to produce charts and intervals between surveys of the whole harbour below high water vary and may also be different for different parts of the harbour.

6.2.20. More frequent periodic surveys will be necessary where the depth of water is known to fluctuate in areas critical to navigation. These surveys need not be as comprehensive as a main survey and should aim to establish any variation since the last survey, thus enabling a warning to be given and any appropriate remedial action to be taken.

6.2.21. Incident assessments may also indicate a survey requirement. For example, where a vessel has grounded, it is important for the area to be re-surveyed as soon as possible to check the accuracy of published information; and to ensure that any

resultant disturbance to the bed does not present a hazard to other vessels. It is also prudent in the event of a grounding, to establish promptly the depth of water available at the time of the incident in case of subsequent dispute. Post-incident surveys should also be conducted whenever there is a risk that the navigation channel has been compromised in some way, such as might happen when a large object is known to have fallen in the water. The conservancy duty demands that re-survey findings must be published in accordance with the guidance cited in this chapter.

6.3. PROMULGATION OF SURVEY AND NAVIGATION INFORMATION.

6.3.1. A harbour authority is responsible to ensure that the mariner is provided with the necessary information to ensure the safe passage of his vessel in the port. It is vital for procedures to be in place to make sure that this information is given out as soon as possible

6.3.2. The UK Hydrographic Office (UKHO) is responsible for compiling and publishing charts for all tidal waters around the UK, together with the Admiralty Sailing Directions. Paragraph 4.4 of the Code requires harbour authorities conducting surveys to arrange to provide the UKHO with the results of their surveys. The UKHO has a standard form of agreement for these arrangements.

6.3.3. A suitable warning must be given by the harbour authority as soon as they become aware, through survey or other means, that the water available to the mariner is less than that promulgated in nautical charts and publications,. Such warnings will normally be broadcast by the harbour authority in the first instance over the appropriate VHF channel(s). Where a local Notice to Mariners is issued, distribution should include the UKHO, all pilots authorised by the authority, all current PEC holders and masters of vessels not subject to compulsory pilotage. Shipping agents also need to be included, so that they are alerted to the changes.

6.3.4. The UKHO will decide if the local Notice should be promulgated more widely as an Admiralty Notice to Mariners. In order to avoid the need for frequent chart corrections it is sensible to arrange with UKHO that in areas prone to depth fluctuations the minimum water available is that shown on the Admiralty chart.

6.3.5. Where changes within harbour limits may impact on the safe navigation of passing coastal traffic or vessels approaching the port, harbour authorities, particularly local lighthouse authorities (see below), should inform the UKHO Radio Navigation Warning section (which operates a 24/7 service). Contact details are included on the front cover of Admiralty Notices to Mariners and on the UKHO website. The UKHO will determine if a Coastal Navigation Warning will be issued on Navtex and / or through the Coastguard Coast Radio Stations. Such changes may include:

- Casualties to aids to navigation (see Section 6.5) particularly a principal Fairway Buoy or major Category 1 (see paragraph 6.5.6.) lights with ranges beyond harbour limits;

- New wrecks or shoals and their marking located towards the outer limits of the port;
- Closure of a port or anchorage in exceptional circumstances; and
- The failure of local VHF radio navigation services.

The UKHO drafts these warnings, but the MCA is responsible for their transmission.

6.3.6. Where tidal heights vary from that predicted, warnings should be made over the appropriate VHF channel. Where tidal variations potentially affect vessels alongside or at a mooring, consideration should be given to alerting the relevant shipping agents if the vessel risks taking the ground or could otherwise be put at risk. In some areas, the tidal information available to a harbour authority may be useful for warning of possible local flooding.

6.4. DREDGING

6.4.1. Harbour authorities typically have a statutory power in their local legislation to dredge for the maintenance and improvement of channels. There are two main types of dredging:

Maintenance Dredging

6.4.2. Maintenance dredging is done to maintain existing access to the port and discharges the responsibility to ensure that all vessels using the port may do so safely. It is undertaken on a routine basis to maintain the level of water at the depth advertised on charts. It is important that risk assessments deal with this requirement. Maintenance dredging should be planned for the sake of efficiency and to minimise environmental effects. Advertised depths should be determined – and reviewed – having regard to the need to ensure the safety of commercial and recreational vessels using the port. Water depth may be reduced to a level less than that charted, or otherwise promulgated, for example because no user any longer requires the charted depth to be maintained. However, appropriate warnings to mariners must be given and charts up-dated as soon as reasonably practicable.

Capital Dredging

6.4.3. Capital dredging can take the form of deepening or widening an existing channel. Occasionally, it may be necessary to construct an entirely new channel to facilitate access to a new facility. Capital dredging involves improvement of access for example to allow bigger and deeper vessels, longer optimum tidal windows and the provision of passing places, etc. Capital dredging may often be prompted by commercial considerations. However, a risk assessment might also identify a safety requirement for better access – even for vessels already using the port.

Controls on dredging

6.4.4. Where the Crown Estate or another person owns the bed of the harbour their permission for dredging operations is likely to be needed.

6.4.5. A harbour authority's statutory power to dredge is almost invariably subject to consent to dispose of dredged materials in tidal waters. This consent is required from DfT (Ports Division) or its counterpart in the Devolved Administrations. This

requirement is usually found in the harbour authority's local legislation alongside the power to dredge. It mirrors – and takes the place of - the requirement in Part II of the Coast Protection Act 1949. The 1949 Act will also apply if dredging is proposed beyond the limit (usually the harbour limit) of the harbour authority's power to dredge. The consenting Department can advise which control applies. Capital dredging may require additional powers, for which a harbour order is required.

6.4.6. Consent to dredge is subject to the Harbour Works (Environmental Impact Assessment) Regulations 1999. The Directive which these regulations transpose imposes controls on 'projects'. This means that consideration must be given to the dredging and disposal of material, even though the consent requirement may relate to the disposal only. Consents may also be subject to the Habitats Regulations 2000, which impose severe restrictions and special tests on works which may adversely affect a European site. There are similar controls on harbour orders in Schedule 3 of the Harbours Act 1964 (as amended). It is even more likely in these cases that an environmental assessment will be required, or that adverse effects on a European site will have to be considered. Advice on environmental controls is found in Section 7 of this guide.

6.4.8. A licence to dispose of dredged spoil at sea must also first be obtained in accordance with the Food and Environmental Protection Act.

6.4.9. Seabed samples will be required from the areas in which it is proposed to dredge for chemical analysis. The means and location for spoil disposal must also be agreed and approved with all the relevant authorities. Early consultation with all parties concerned, including those who navigate or fish in the area is strongly advised.

Dredging and hydrography

6.4.10. It is good practice to undertake a hydrographic survey before dredging work commences and when it has been completed. This will establish the need and the basis for any contract, as well as ensuring that the contract has been fulfilled. Post dredging survey information should always be supplied to the UKHO. Locally produced charts should also be revised promptly after dredging work.

6.5. AIDS TO NAVIGATION

6.5.1. Paragraph 5.25 of the Code explains that each harbour authority, and any other existing local lighthouse authority, is the local lighthouse authority (LLA) for their area. Every harbour authority has the power to carry out and maintain the marking or lighting of a harbour or any part of the harbour within the harbour authority's area or on harbour land.

General Lighthouse Authorities

6.5.2. The General Lighthouse Authorities (GLAs) have guidance on the provision and maintenance of aids to navigation by LLAs.

6.5.3. The GLAs have the general superintendence and management of all lighthouses, buoys or beacons within their respective areas. They have a duty to

inspect all lighthouses, buoys, beacons and other navigational aids belonging to or under the management of a local lighthouse authority (see paragraph 6.5.5), and may give directions to a local lighthouse authority and other providers of aids to navigation.

6.5.4. The GLA for England and Wales is Trinity House. In Scotland, it is the Commissioners of Northern Lighthouses, and in Ireland, the Commissioners of Irish Lights. Where aids to navigation lie within the limits of a port, but are solely or mainly used by vessels transiting through the area en route to another port, then it is usual for the GLA to retain responsibility.

Local lighthouse authorities (LLA)

6.5.5. The LLA may have responsibility for providing and maintaining buoys and lights within its limits, but the establishment of a light or mark, or any alteration to existing lights and marks, may only be done with the approval of the GLA (see paragraph 6.5.3). All approved alterations should be notified to the UKHO. LLA's give the GLA's all information concerning the lighthouses, buoys and beacons under their management as the GLA may require.

Availability criteria

6.5.6. All harbour authorities must establish and maintain aids to navigation within their area of responsibility in accordance with the criteria laid down by the GLAs unless otherwise agreed. GLAs have a responsibility for ensuring that any aids to navigation within the port established and/or maintained by another party meet these standards. LLAs which are not harbour authorities must also categorise their aids to navigation on the basis of these criteria. The categories, detailed below, are based on Guidelines developed by the International Association of Marine Aids to Navigation and Lighthouse Authorities. The three categories are to be applied according to the importance of a particular aid for safety of navigation:

Category Availability

Category 1	99.8%
Category 2	99.0%
Category 3	97.0%

6.5.7. Each LLA needs to adopt, state and accomplish the availability targets and response priorities for individual aids to navigation, in consultation with the GLA. Each LLA must therefore have clearly laid down procedures for responding to casualties to aids to navigation within timescales laid down by the GLAs, including those for issuing Notices to Mariners and notifying UKHO as described in this guide.

GLA superintendence

6.5.8. The GLA guidance also considers reporting and inspection. The GLAs have a reporting system which allows for an authority to monitor its aids systematically This can be used by the authority's management system to generate reports to the GLA.

6.5.9. Many devices are used to assist navigation in harbours, including navigation marks, lights, beacons and navigation buoys. These will be referred to collectively in this guide as aids to navigation (AtoNs).

6.5.10. Advice of manufacturers should be sought when considering the installation of new aids to navigation. In particular, the availability of more efficient power sources makes it possible to fit greater electronic payloads, including transponders and data transmission facilities, to isolated or floating aids to navigation.

6.5.11. Care is needed to ensure that anticipated performance for aids to navigation are checked and that the level of provision of aids to navigation is both appropriate and practical having regard to the identified risk. Provision has to be acceptable to the GLA and it is therefore recommended that their advice is sought before any consent or sanction is applied for under the appropriate legislation.

Casualties and alterations

6.5.12. Harbour authorities, and LLAs that are not harbour authorities, are responsible for notifying users of casualties to any aids to navigation within the port. They are also responsible for notifying UKHO where appropriate. This notification should normally be by means of local broadcasts but may involve Coastal Navigational Warnings on Navtex and/or through the Coastguard Coast Radio stations. However, the issue of a local Notice to Mariners may be more appropriate in cases where the casualty is likely to take more than 7 days to rectify.

6.5.13. In addition, alterations to AtoN's must be notified to users and the UKHO, where such alterations affect the advertised characteristics of the aids to navigation. Wherever possible, this notification should be carried out in advance of any change taking place. The procedures laid down in respect of Notices to Mariners should take into account the UKHO timescales for publishing Admiralty Weekly Notices to Mariners.

6.6. WRECKS

6.6.1. In the event of a vessel becoming a wreck in or near the approaches to port limits, the process of removing the wreck is laid down in Section 252 of the Merchant Shipping Act 1995.

6.6.2. Paragraph 5.29 of the Code explains that harbour authorities must exercise their wreck marking and removal powers where, in their opinion, a wreck is - or is likely to become - an obstruction or danger to navigation. They have a duty to have regard to the environment in the exercise of this and all other duties and powers. A risk assessment should be undertaken for any wreck in, or near the approaches to a harbour. The authority's powers to raise, remove, destroy and mark a wreck which is, or is likely to become, a danger to navigation should be exercised having regard to that assessment, with the aim of reducing the risk to as low as reasonably practicable. The UKHO should be informed of wrecks within port limits.

Salvage

6.6.3. A harbour authority may:

- take possession of, raise, remove or destroy the whole, or any part of the vessel, and any other property to which the power extends;
- light or buoy the vessel until it is raised, removed or destroyed; and
- subject to various restrictions, sell the vessel or part of the vessel so raised or removed and any other property recovered during the exercise of the above powers.

6.6.4. Harbour authorities may have additional powers under legislation other than S252 of the Merchant Shipping Act that enable them to recover the costs of wreck removal from the vessel owner, particularly where such costs are not covered by the proceeds of any sale.

6.6.5. If a vessel is abandoned, or if the owner has made no valid attempt to remove a vessel that has been sunk or stranded, then the harbour authority or conservancy authority may act to raise or remove or destroy the vessel if it is an obstruction or danger to navigation or to lifeboats engaged in the lifeboat service. It is recommended that before embarking on the removal of the vessel a harbour authority should ensure that:

- there is a well documented reason for the authority to require the removal of the vessel;
- that ownership of the vessel is established beyond any doubt or evidence obtained to show that the vessel has been abandoned;
- notice is given to the owner (if known), or posted on the vessel or in a public place that the authority intends to take possession of the vessel and raise, remove or destroy it (so that the owner has a reasonable opportunity to remove the vessel himself);

- any sale is well advertised in the local press;
- where the wreck has not sunk, and is still visible, a photographic record of the vessel's condition is made before any attempt is made to salvage it;
- if the vessel is beyond the salvage or dispersal capabilities of the authority, a reputable salvor or wreck removal contractor is engaged to carry out the work under a recognised wreck removal contract (wreckhire, wreckcon, wreckfixed, etc);
- it has suitable insurance to cover any residual liability;
- any such salvor or wreck removal contractor submits a detailed salvage plan covering;
- the method of raising the vessel including whether explosives are to be used;
- any temporary lay-by berth for the vessel;
- arrangements for limiting environmental damage;
- if pollution does occur, how it will be dealt with;
- agreed delivery location/beaching site/drying berth;
- diving operations connected with the salvage operation, and an assurance that they are to be carried out in accordance with the relevant diving regulations; and
- a suitable plan for the final disposal of the vessel, whether this involves sale of the entire vessel or part thereof.

6.6.6 Section 5.3 in this Guide refers in several places to powers exercisable in relation to marine pollution by the Secretary of State's representative (SOSREP). These include powers in relation to the command and control of salvage. If the salvage of a wreck is associated with a risk of significant pollution, the harbour master must immediately inform the MCA and intervention powers may be exercised directing the salvor to give SOSREP information. A decision on whether the salvor has the capability to carry out the necessary salvage actions, in terms of experience, personnel and material will be for SOSREP to determine and, if necessary, whether to set up a salvage control unit.

6.6.7. Harbour authorities and LLAs must therefore establish clearly defined procedures to deal with the timely raising, removal or dispersal to a safe clearance depth of a wreck which in their opinion is likely to become an obstruction or danger to navigation. These must include proper exercise of their powers to lay down emergency aids to navigation pending such raising, removal or dispersal. If it is impractical to arrange for such clearance, then the wreck must be permanently marked to the required standard. Periodic surveys – including chain sweeps – should also be carried out to check the position of dangerous wrecks.

6.7. REGULATING HARBOUR WORKS

6.7.1. Some harbour authorities have the powers to license works where they extend below the high watermark, and are thus liable to have an effect on navigation. Such powers do not, however, usually extend to developments on the foreshore.

6.7.2. Some harbour authorities are statutory consultees for planning applications, as a function of owning the seabed, and thus being the adjacent landowner. Where this is not the case, harbour authorities should be alert to developments on shore that could adversely affect the safety of navigation. Where necessary, consideration should be given to requiring the planning applicants to conduct a risk assessment in order to establish that the safety of navigation is not about to be put at risk. Examples of where navigation could be so affected include:

- high constructions, which inhibit line of sight of microwave transmissions, or the performance of port radar, or interfere with the line of sight of aids to navigation;
- high constructions, which potentially affect wind patterns;
- lighting of a shore development in such a manner that the night vision of mariners is impeded, or that navigation lights, either ashore and onboard vessels are masked, or made less conspicuous.

6.7.3. There is a British Standards Institution publication on Road Lighting, BS5489. Part 8 relates to a Code of practice for lighting which may affect the safe use of aerodromes, railways, harbours and navigable Inland waterways.

SECTION 7
MANAGEMENT OF NAVIGATION

7.1. SUMMARY

7.1.1. This Section of the guide relates to measures harbour authorities can use to manage navigation in their waters. The Code concentrates on those available in statute, but there are others that are important, including agreements with users and education.

7.1.2. The general principles in relation to the management powers of harbour authorities are as follows:

A. Ports have byelaws and directions, which every user must obey as a condition of his or her right to use the harbour.

B. Harbour authorities have a duty to make proper use of the powers to make byelaws, and to give directions (including pilotage directions), to regulate all vessel movements in their waters.

C. These powers should be exercised in support of the policies and procedures developed in the authority's safety management system, and should be used to manage the navigation of all vessels.

D. Harbour authorities should have clear policies on the enforcement of directions, and should monitor compliance.

E. Powers of direction should be used requiring the use of port passage plans in appropriate cases - whether vessels are piloted or not.

Public Right to Navigate

7.1.3. There is a general public right of navigation in tidal waters, subject to the payment of proper tolls and dues, and to the provisions of any laws regulating the operation of the harbour. (These laws may impose special restrictions on the otherwise general freedom of navigation.) It follows that a harbour authority's right to regulate the entry and movement of ships within the port to ensure safety of navigation must be conferred by statute. The Code describes the related 'open port duty', and conservancy duty of harbour authorities

Regulatory Functions

7.1.4. The Code also describes the various powers likely to be available for statutory regulation of navigation in a harbour. These may be in the harbour authority's statutes, in byelaws, in the power to give directions, or in general directions. General Directions are rules which apply to all ships within the harbour area.

7.1.5. Control of the port is a function exercised by the harbour master and/or designated deputies. Its function will include the Vessel Traffic Services (VTS), a term covering internationally recognised standards of vessel traffic management, but

it may be wider. In big estuaries, port control may involve more than one local port harbour master managing shipping movements in and out of specific ports.

There are four main powers available to a harbour authority to regulate ship movements -

- **byelaws**: provide a general framework for rules of navigation which apply to all vessels - including speed limits, defining fairways, anchorages, etc. - and which can be treated as unlikely to require frequent or short term amendment.
- **harbour directions -** may be given by the harbour master: these directions are time and vessel specific, and are most apt for operational purposes and for emergencies. Some harbour authorities have more effective powers of general direction to be given by the authority itself. Directions should apply to all vessels, including where a vessel is conducted by a pilot or the holder of a pilotage exemption certificate.
- **pilotage directions -** may generally be given by harbour authorities which have the power to regulate navigation: these determine the circumstances in which pilotage is to be compulsory.
- **dangerous vessel directions -** are a special case, permitting a harbour master to remove a vessel from the harbour in clearly defined circumstances: they may be over-ruled by the Secretary of State.

The use of all these powers should be governed by the authority's formal risk assessment, and should support the safety management system. It is to be noted, in this connection, that the master - or pilot - of a vessel is not obliged to obey directions if he believes that compliance would endanger the vessel. It is therefore essential that the use all of these powers should be clearly based on a proper assessment of the safety of the harbour and vessels using it.

7.2. ESTABLISHING THE REQUIREMENT

7.2.1. Every harbour is different, and the requirement to manage navigation varies from one to another. This guide deals only with general principles of good practice. It recognises that a VTS system is essential in some cases, but is not appropriate in others. A formal assessment of navigational risk, as required by the Code, will determine what management of navigation is required, and to what degree monitoring, controlling or managing traffic needs to be taken in mitigating risk.

7.2.2. Management of a harbour begins in determining which activity is safe and where it can take place, having regard to the physical constraints and the variety of activities being undertaken. Effective tools need to be in place which will ensure as far as practicable, that these determinations are carried through in practice.

7.2.3. Tools available include: means of marking out the harbour, aids to navigation, anchorages, mooring areas, local charts, slipways and other landing points, etc. Some of these are covered in Section 6 of this guide. Rules will determine the use of channels, traffic separation schemes, compulsory pilotage, and other navigational regulations. These rules can, for example, include regulated navigation zones, collision avoidance rules, anchorage regulations, etc. Tools to facilitate communication between those managing the port and its users are also important. The main one is VTS. Written communication through local charts, Notices to Mariners, Port Handbooks, newsletters, etc are also valuable tools. They may all be supported in turn by dialogue with as many users as possible. This can be directly with individual users, or through agents, advisory committees, user groups and clubs, or other methods of education.

Traffic Management

7. 2.4. A harbour authority’s primary duty is to ensure the safe and efficient use of the harbour by those who have a right to use it and navigate in its waters. This includes a duty to regulate navigation using available powers and other means.

Exercise of this function depends upon communication with users and is typically located where port communications from vessels are handled.

7.2.5. The extent to which traffic management is required depends upon a number of factors which may include: -

- whether the port has direct and easy access to the open sea or whether it has a long approach channel;
- whether the port has dense traffic requiring a high degree of management and regulation, or has little traffic in which the risk of collision is minimal;
- whether the port is subject to tidal ranges, or other limitations which impose special conditions of entry or departure, e.g. locks, bridges and rivers;
- whether the vessels using the port are of widely differing characteristics, which as a result could have consequences for other navigation and require the assignment of specified channels, e.g. deep draught vessels;
- whether cargo is handled by ships at anchor, moored to buoys, or berthed alongside;
- types of cargo handled e.g. dangerous and pollutant goods (LNG, LPG, crude oil, chemical products in bulk, explosives, etc.) and their effect on other navigation;
- numbers and types of recreational craft;
- presence of high speed craft, passenger ferries and local ferries
- availability, monitoring and potential overloading of port VHF frequencies.
- Under-keel clearances, and / or air draft restrictions
- port and river regimes, depth of water, sand banks, bars, shoaling patterns; meteorological conditions, tides and currents;
- berth locations;
- proximity of the navigation channel to shore structures (particularly hazardous ones);

7.2.6. When setting out to plan, monitor, or control, the movements of vessels, it is first necessary to establish the nature of the requirement, before looking at options for meeting it. The following questions are amongst those that need early answers:

- Where are the port boundaries?
- What powers does the harbour master hold?
- What are the options for achieving the required level of monitoring/control?
- To what degree is traffic management necessary in order to ensure safety

7.2.7. Clearly, the powers to regulate navigation are bounded by the port limits and the VTS Area as appropriate. Whether these are in the right place is a question the risk assessment should review. The need to regulate depends upon the vessels using the port, or likely to do so; and the hazards in the harbour from which they need to be protected. Management is achieved by various means: observing, advising, educating as well as enforcing formal rules. The resources required to

manage navigation effectively depend on the measures which need to be taken. These may be simple and inexpensive, or involve sophisticated equipment and specially trained operators.

7.2.8. Where the formal risk assessment shows that a VTS is not required then a Local Port Service (LPS) may be established. It is important that the standard and level of service offered by a port is made clear to users. Officers manning a VTS facility, and all operational staff, must be fully conversant with the disciplines and procedures required by their responsibilities; the level of service to be provided; and the overall structure and capability of the system. The chapter in this guide on occupational standards discusses the competencies and knowledge required.

7.3. VESSEL TRAFFIC SERVICES (VTS)

7.3.1. The purpose of a VTS is to improve the safety and efficiency of navigation, safety of life at sea and the protection of the marine environment and/or the adjacent shore area, worksites and offshore installations from possible adverse effects of maritime traffic.

7.3.2. A port VTS is mainly concerned with vessel traffic to and from a port or harbour or harbours, while a coastal VTS is mainly concerned with vessel traffic passing through the area. A VTS could be a combination of the two. The type of service or services offered should be determined through a risk assessment which identifies the degree of mitigation required.

7.3.3. A VTS comprises of at least an information service and may also include a traffic organisation service and a navigational assistance service, defined as follows:

- **an information service** - ensures that essential information becomes available in time for on-board navigational decision-making. The information service is provided by broadcasting information at fixed times and intervals or when deemed necessary by the VTS or at the request of a vessel, and may include for example reports on the vessel's position, identity and intentions of other traffic; channel conditions; weather; hazards; or any other factors that may influence the vessel's transit.

- **a traffic organisation service** – assists in preventing the development of dangerous maritime traffic situations and provides for the safe and efficient movement of vessel traffic within the VTS area. The traffic organisation service concerns the operational management of traffic and the forward planning of vessel movements to prevent congestion and dangerous situations, and is particularly relevant in times of high traffic density or when the movement of special transports may affect the flow of other traffic. The service may also include establishing and operating a system of traffic clearances and/or VTS sailing plans, in relation to priority of movements, allocation of space, mandatory reporting of movements in the VTS area, routes to be followed, speed limits to be observed or other appropriate measures which are considered necessary by the VTS authority.

- **a navigational assistance service** - assists the on-board navigational decision-making process and monitors its effects. The navigational assistance service is especially important in difficult navigational or meteorological circumstances or in case of defects or deficiencies on a vessel. This service is normally rendered at the request of a vessel or by the VTS when deemed necessary.

Further guidance on VTS and LPS is available from the IALA VTS Manual and the appropriate 'M' notice.

Terminology

7.3.4. The following terms are used in connection with vessel traffic services:

- **Vessel traffic service (VTS)** – a service designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service allows the operating authority the capability of interacting with traffic and to respond to traffic situations developing in the VTS area;

- **Competent authority** – the authority with responsibility, in whole or in part, for safety, including environmental safety, and the efficiency of vessel traffic and the protection of the environment;

- **VTS area** – the authority must delineate, and formally declare the service area of its VTS. A VTS area may be subdivided in sub-areas or sectors;

- **VTS centre** – the centre from which the VTS is operated. Each sub-area of the VTS may have its own sub-centre;

- **VTS operator** – an appropriately qualified person performing one or more tasks contributing to the VTS;

- **VTS sailing plan** – the key points of a port passage plan should be made available to the VTS in terms of arrival times, at pilot station/berth and intended channels etc, through normal port notifications.

- **VTS traffic image** – The 'picture' of vessels and their movements in a VTS area.

7.3.5. The powers required by a Harbour Authority to establish and provide Vessel Traffic Services are broadly drawn from the existing powers and duties already held. However, a VTS must be formally designated by the MCA and the type of service should be formally declared in ALRS Volume 6 (1) and in the World VTS Guide. The Harbour Authority should ensure that those who exercise the powers are properly empowered to do so. The associated responsibilities are diverse and will reflect, in part, the sophistication of the equipment available for monitoring navigation, as well as the navigational complexities of the port. What is common to all is the need for VTS staff to hold the required qualifications and competencies..

7.3.6. An important distinction arises between the collecting and giving of information and advice (which is a two-way flow between those using the port and those managing it); and the giving of directions by, or in the name of the harbour

master. Communications need to identify whether they are information, advice or directions. The power to give directions is properly controlled by the delegation procedures adopted by the authority. Communications to vessels should be in a specific language which makes clear whether it is advice or a direction that is being given. Language needs to be clear and concise, avoiding jargon and colloquialisms by the use of IMO SMCP (Standard Marine Communication Phrases). It is recommended as best practice that Message Markers are always used in the delivery of Navigational Assistance.

7.3.7. VTS systems incorporating automatic vessel detection and tracking are more versatile than basic radar vessel monitoring equipment. Most incorporate electronic navigation charts, and are thus able to track vessels in relation to charted features and not just those detectable by radar.

General considerations for VTS - objectives

7.3.8. VTS allows identification and monitoring of vessels, strategic planning of vessel movements and the provision of navigational information and assistance. It can also manage the port's emergency response and assist in the prevention of pollution and co-ordination of a pollution response. The efficiency of a VTS will depend on the reliability and continuity of communications and on the ability to provide accurate and unambiguous information. The quality of accident-prevention measures will depend on the system's capability of detecting a developing dangerous situation and on the ability to give timely warning of such dangers.

7.3.9. When the VTS is authorised to issue instructions to vessels, these instructions should be result orientated only, leaving the details of execution, such as course to be steered or engine manoeuvres to be executed, to the master or pilot on board the vessel. Care should be taken that VTS operations do not encroach upon the master's responsibility for safe navigation, or disturb the traditional relationship between master and pilot. IALA has issued more detailed advice on the delivery of Navigational Assistance and specifically the provision of advice on courses to be steered or made good (see IALA Guideline No. 1068).

7.3.10. Imprudent communication can increase risk rather than reduce it. For example, a VTS operator should not wait until the last minute before intervening in a situation which risks a close quarters situation between two or more ships in the VTS area. At such a moment the masters of the vessels concerned are likely to require the urgent use of the VHF. If assisted collisions are to be avoided, careful guidance and training needs to be given to staff.

7.3.11. A VTS area can be divided into sectors, but these should be as few as possible. Area and sector boundaries should not be located where vessels normally alter course or manoeuvre; or where they are approaching areas of convergence or route junctions; or where there is crossing traffic. VTS centres in an area or sector should use a name identifier. The boundaries should be indicated in the appropriate nautical publications.

Recruitment and selection

7.3.12. It is for authorities to decide recruitment standards for new VTS operators in terms of prior skills, knowledge, and personal suitability characteristics relevant to

the tasks or functions they will be required to perform. These standards or the skills and knowledge requirements may in part be assessable through existing qualifications (e.g. STCW certificate of competence or pilot's authorisation).

7.3.13. VTS authorities may wish to consider introducing additional screening mechanisms to ensure that recruits have the necessary aptitudes and personal suitability characteristics relevant to the tasks or functions they will be assigned. These mechanisms will assess, amongst other things, the ability to meet medical standards commensurate with the working conditions of the VTS position, spatial problem-solving capabilities and other job-related aptitudes; ability to work under pressure and language capability required for the particular VTS. There is a requirement to keep these qualifications current through continuous professional development (CPD) and/or formal refresher training.

Qualifications

7.3.14. Authorities must be able to determine what competencies a VTS operator needs to possess to carry out assigned functions, in order to establish the combination of prior qualifications and subsequent training required to ensure that their operators are competent. VTS operators and their supervisors must be qualified to National occupational standards based on IALA V-103, and in possession of a VTS certification log, appropriately endorsed by the VTS authority.

7.4. MONITORING AND COMMUNICATING WITH PORT TRAFFIC

7.4.1. Control of vessel movements within a port depends upon effective two-way communication between port personnel ashore and vessels using the harbour.

7.4.2. A number of different methods are used to monitor the movement of traffic within port areas. They include:

- visual observation;
- VHF surveillance;
- basic radar surveillance;
- VTS assisted automatic tracking;
- Closed Circuit Television (CCTV); and
- Automatic Identification System (AIS).

7.4.3. A person managing traffic movements in a port may use any of the following to communicate with waterborne users:

- visual signalling equipment (signal lights, shapes, etc.);
- loudhailer equipment;
- telephones (fixed and mobile);
- VHF radio;

- e-mail; and
- data links.

In-port communications

7.4.4. In-port communication links are needed in addition to links provided for communication with vessels. These can typically include:

- VHF communications with tugs, pilot cutters, and other harbour craft;
- low power UHF radio for use in berthing/docking operations;
- high power UHF the for transmission of data, such as GPS digital corrections for precision surveying, etc;
- computer networks and mobile telephones;
- fixed data links (analogue and digital) for transmission of remote sensor information; and
- fibre optic land lines for transmission of broad band sensor and other data.

Procedures

7.4.5. Where a VTS is established, clear guidance on operational procedures should be documented in an Operational Procedures manual. IALA has issued guidance in the IALA VTS Manual and in the IALA Recommendation V-127 – Operational Procedures for VTS. Examples of VTS Operational Procedures Manuals are available from IALA.

7.4.6. In managing navigation, in the interests of safety, it will often be necessary to require vessels to alter their navigation in some way. Such requirements may be expressed in the form of a request, but it should be made clear that the harbour master, or an assigned deputy has the power to issue special directions, and should consider doing so, if a vessel ignores, or declines to comply with a direction, for reasons other than safety. A good example is a special direction requiring a vessel to take a minimum number of adequately powered tugs in adverse weather conditions. In such circumstances it is important that staff have clear instructions, guidance or procedures on how to act and what is required of them.

7.4.7. It cannot be assumed that all port users will operate VHF and making it a requirement can only be enforced when spot checks are practicable. Where VHF is widely used, there is also significant potential for cluttering port VHF channels with unnecessary transmissions. Users may need to be educated in maintaining a listening watch. This can be achieved through management plans and user guides.

7.4.8. Modern VTS radar systems incorporate sophisticated tracking, way-time calculations and perimeter alerts that are more versatile than basic marine radar equipment. Most incorporate electronic charts and are able to track vessels in relation charted features and not just those detected by radar. They therefore allow more effective and efficient vessel traffic monitoring from shore.

7.5. PASSAGE PLANNING

Directions and passage plans

Harbour authorities' and harbour masters' powers to regulate the time and manner of ships entry to, departure from and movement within their waters serve to compliment port passage planning. Passage plans are therefore to be operated and enforced as an adjunct to the powers of direction.

7.5.1. A harbour authority's powers of direction should be used to require the use of port passage plans in appropriate cases - whether vessels are piloted or not. The powers to regulate the time and manner of ships entry to, departure from and movement within their waters serve to complement port passage planning. Port passage plans should be operated and enforced under the powers of direction.

7.5.2. The object of a port passage plan as required by the Code is to ensure that:

- all parties know relevant details of any particular port passage in advance;
- there is a clear, shared understanding of potential hazards, margins of safety, and the ship's characteristics;
- intentions and required actions are agreed for the conduct of the port passage - including the use of tugs and their availability and any significant deviation should it become necessary.

Harbour authorities should use directions not only to require the use of plans, but also the advance preparation of appropriate passage plans by visiting ships' masters, including masters and ships officers exercising pilotage exemption certificates. Authorities should monitor compliance with such requirements.

7.5.3. Passage plans should be flexible. It is the responsibility of a pilot, on embarkation, to brief the master on his proposals for the pilotage passage plan within the pilotage area. This plan should be agreed with the master as soon as practicable. The plan will make allowance for any variations of tide and other local circumstances such as vessel movements, berth availability etc. It is important not to constrain the pilot's need to react to unforeseen circumstances; but deviations from the agreed plan should be discussed with the master and, when relevant, with VTS, and recorded with reasons.

Scope of passage planning requirements

7.5.4. The use of passage planning is not confined to vessels conducted by a pilot. They should also be required for vessels conducted by a pilotage exemption certificate holder, and on vessels exempt from an authority's pilotage directions. Passage plans may be not be required for particular kinds of vessel if a formal risk assessment has established that they are not necessary for the management of risk in such cases. As a general rule it is acceptable under the Code to exclude vessels for which the harbour authority's byelaws give sufficient control for example, recreational vessels. There is, however, no objection to including such vessels if it is necessary and practicable.

Passage Abort Procedures

7.5.5. In some Ports, particularly in ports with long river or estuarial characteristics where tidal constraints are evident, it will be necessary to develop abort procedures. In developing such procedures ports should give consideration to turning points for different sizes of vessel, the notice needed for all involved to execute an abort and to the need for stakeholders – particularly berth holders - to give due warning of berth unavailability and the potential impact on navigational safety.

Passage record keeping

Plans adopted for particular passages should be recorded - ideally on the chart or other plan record. Harbour authorities should satisfy themselves that they can secure access to these records in any case where they may be needed for incident investigation.

7.5.6. Access to proper records makes it much easier for the port to monitor the port's safety management system, and to investigate incidents. It is also in the interest of all concerned that, in the event of an incident, it is possible to demonstrate that the master was properly briefed by the pilot (if one was used), and that there was an agreed pilotage passage plan. This is a routine duty of the bridge team. However, it is not necessary or practical for a harbour authority to retain records on charts. Indeed, particularly in the case of an outbound vessel where the voyage is continuing, charts are not removed where this would put the master in breach of his statutory obligations. In the event of an incident, recordings of the VHF and the VTS track may well be enough to provide the critical evidence. There are examples of simple documentation, completed by the pilot and agreed with the master, which together with a radar archive and other VTS records is likely to be sufficient for most purposes.

7.6. MASTER/PILOT EXCHANGE

7.6.1. IMO Assembly Resolution A960 has been amended to include, at Annex 2, a summary of the respective responsibilities of master and pilot. It recommends that they should exchange information regarding navigational procedures, local conditions and the ship's characteristics, and that this information exchange should be a continuous process that generally continues for the duration of the pilotage. The pilot's presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. It is important therefore, that enough time is allowed for the pilot to safely board the ship; and that the pilot, the master and the bridge personnel are aware of their respective roles in the safe passage of the ship, before the pilotage commences.

7.6.2. The master, bridge officers and pilot share a responsibility for good communications and understanding of each other's role for the safe conduct of the vessel in pilotage waters. Masters and bridge officers have a duty to support the pilot and to ensure that his actions are monitored at all times.

7.6.3. A Port passage guidance provides a general framework for the preparation and agreement of specific passage plans for particular transits in the port. This preparation depends upon an exchange of information between master and pilot. This includes but goes further than the statutory requirements. The Pilotage Act 1987 requires a certain minimum exchange of information between the master of a

ship and the pilot. In addition, the Merchant Shipping (Port State Control) Regulations 1995 (SI 1995 No. 3128) requires a pilot to report to the Port State (MCA), through the harbour authority where appropriate, any ship deficiencies that may affect its safe navigation.

7.6.4. The master/pilot exchange of information needs to be both detailed and structured, if the respective roles of the pilot and the master are to be integrated to best effect. It should include as a minimum the following.

- The provision by the pilot of detailed local navigational information, including his recommended pilotage passage plan. Such details will assist the master to update his own plan and charts.
- Details on how the bridge is managed, and who fulfils what functions will also assist the pilot to integrate into the bridge team.
- Presentation by the master to the pilot of a completed standard Pilot Card. In addition, information should be provided on rate of turns at different speeds, turning circles, stopping distances and, if available, other appropriate data.
- Discussion of any special conditions such as weather, depth of water, tidal currents and marine traffic which may be expected during the passage.
- Discussion of any unusual ship-handling characteristics, machinery difficulties, navigational equipment problems or crew limitations which could affect the operation, handling or safe manoeuvring of the ship.
- Information on berthing arrangements; use, characteristics and number of tugs; mooring boats and other external facilities.
- Information on mooring arrangements.
- Confirmation of the language to be used on the bridge and with external parties.

This should ensure that the vessel has an agreed passage plan, and that the vessel position can be monitored independently on the bridge whilst the pilot has the conduct of the ship. It is not good practice to excuse regular visitors and others from passage planning requirements. They should find compliance easier than strangers to a port or infrequent visitors. However, the notification requirements may be modified appropriately (e.g. limited to modifications to “standard” passage plans already on file).

7.6.5. In order to help avoid misunderstandings, and to overcome any possible language problems, an oral exchange between master and pilot should be complemented by written details. Such details will also facilitate the provision of a record of the exchange, should it ever be necessary to establish who said what. The paper based records should include the following:

Master to Pilot	<u>The Pilot Card</u> This should provide, in clear, written/diagrammatic format all relevant information and details regarding the vessel and its equipment.
Pilot to Master	<u>Pilotage Passage Plan</u>

This should provide a written/chart/schematic containing all information relevant to the passage from pilot station to berth, including any tidal constraints and abort plans.

Pilot to CHA/MCA Pilots have a statutory duty to report ship deficiencies that may adversely affect its safe navigation. These should be reported to the harbour authority which should, in turn, inform the MCA. (If any such defects are of major concern, the pilot should not commit the vessel to a passage in confined waters but instead abort the proposed movement to a place of safety).

Master to Pilot Hazard checklist
The master of any vessel carrying dangerous or polluting goods must supply the pilot with an appropriate checklist. If the checklist is not satisfactorily completed, or it is not supplied, the pilot must report the fact to the harbour authority immediately. The harbour authority, in turn, must pass this information to the MCA.

7.6.6. Harbour authorities or their agents should arrange for pilots to be tasked in adequate time to prepare passage plans. Harbour authorities or their agents should ensure that systems exist for the provision of relevant information for their pilots, and ensure that they operate properly.

Poor communication between the pilot and the bridge team is one of a common factor in accidents near ports. Several MAIB reports have referred to this problem. notably the Skagern and Sanskip Courier; the Stolt Tern and the Sichem Melbourne.

7.7. HARBOUR PATROLS

7.7.1. Harbour Master's launches or similarly identifiable port craft carrying out service patrols can play an important role in the management of navigation within port limits. These craft have a wide range of functions, which will, to some extent depend upon the size of the port and the internal management structure. Their presence acts as a visible encouragement to users to navigate with care, whilst providing a means of enforcement should such action be necessary. Their presence also enables available assistance to any users in difficulty or distress. Where harbour service personnel are used to enforce local rules, it is important that they are suitably trained to deal with confrontation, and the procedures to be followed if formal action become necessary. The management of such craft, and the standards to be applied, are discussed in Section 9 below.

7.7.2. Typically, the objects of a harbour service function include:

- maintaining a visual presence in the port area, and in so doing representing the harbour master on the water;
- enforcing port byelaws and Directions;
- collecting evidence following an incident and conducting preliminary investigations;

- conducting spot checks on vessel navigational documentation;
- assisting craft in difficulty, and responding to other emergencies;
- acting as Forward Control/On-Scene Commander respectively during port emergencies and SAR incidents;
- escorting vessels as required (e.g. vessels restricted in their ability to manoeuvre);
- control and directing vessel traffic (e.g. during partial port closures);
- monitoring craft licensed by the harbour authority;
- monitoring jetty and other navigation lights and aids; and
- conducting routine surveillance of licensed works and moorings.

7.8. RECREATIONAL NAVIGATION

7.8.1. There is recreational activity in almost every harbour. In some it is predominant and it presents particular management requirements whether or not other forms of shipping activity are also present. The Code says nothing specific about recreational activity.

7.8.2. Recreational users are not all well-trained, safety conscious, experienced boat handlers affiliated to local clubs; or the RYA; neither do they all have detailed knowledge of their harbour of residence. Harbour masters have traditionally given passage planning advice to recreational users without making a distinction regarding their affiliation or experience. There is, however, a real need in most harbours for educating recreational users about the harbour authority's role and responsibilities as they relate to different harbour functions.

7.8.3. Recreational navigation includes a wide range of differing activities and craft types, ranging from off-shore power boats, cabin cruisers, yachts, sailing dinghies, rowing sculls, canoes, personal watercraft, and water-ski boats. The requirements and priorities of such sports are often at variance - both with each other and with other harbour users and interests (including conservation of the environment). Good management, use of appropriate powers, and consultation are all needed to strike a balance. Conflicts can be resolved and it is recommended that such issues are approached openly, without bias, and demonstrably with the overall objective of ensuring the safety of navigation.

7.8.4. A risk assessment is likely to identify potential conflicts between both commercial and recreational users; as well as between different classes of recreational user. Many of these conflicts are best managed by arranging some form of segregation, bearing in mind that an authority's powers are to regulate – and not prohibit – the right of navigation.

7.8.5. Byelaws provide the main formal statutory mechanism for managing recreational navigation. Large recreational craft can also be subject to General Directions. Subjects typically covered include:

- requirement to maintain VHF communications;

- speed limitations in specified areas;
- prohibitions on defined recreational activities close to beaches, navigational channel, or environmentally sensitive areas,
- restrictions on the use of deep water channels by shallow draught vessels;
- navigation restrictions in the vicinity of specified port infrastructure; and
- establishment of zones for designated recreational activities.

7.8.6. When preparing byelaws and general directions, consultation with the recreational boating communities is strongly recommended, even if the byelaw or direction in question does not directly affect recreational navigation. Accusations of bias towards one form of navigation at the expense of another are best countered by wide and open consultation in all matters.

7.8.7 Where risk assessment identifies a need to confine certain recreational activities, such as water skiing, or the use of personal water craft, to designated "zones", consideration needs to be given as to how such zones are to be marked, and how craft are to be permitted to access them. The size and location of such zones should permit the users to operate their craft safely and appropriately. They should only be established after full consultation with users and others potentially concerned, or affected, by the activity. Where zones are created for certain recreational activities such as water-skiing and personal watercraft use, consideration should be given to promoting appropriate qualifications to use them. Therefore, the water-ski boat driver's qualifications (already well established) and the personal watercraft qualifications (not so well established) would become the norm. This would answer many of the criticisms concerning uneducated and irresponsible use. It would also feature prominently in any risk assessment.

Event planning

7.8.8. Harbour authorities may need to consult with organisers of recreational events in their waters about the need for risk assessments. The need will be proportional to the activity; harbour authorities may be able to agree that formal assessments are not needed for some low-key leisure activities. Those intending to hold a recreational event for which any form of risk assessment will be required should be encouraged to consult the harbour master at the earliest opportunity. Formal approval to such events can then be made subject to a proper risk assessment conducted by the event organiser. Where an event occurs regularly, the scope of subsequent risk assessments may be adjusted accordingly. In approving any event, the harbour master needs to be satisfied that risk to the safety of navigation, or other port users has been effectively mitigated. The harbour master also needs to ensure that the event organiser has consulted with, and has met the requirements of, the MCA (Coastguard), the RNLI, local emergency services, and local authority where appropriate. Also, if applicable the event should be conducted in accordance with the guidance provided by, and with the approval of, the national bodies representing the types or classes of craft or vessel participating. The RYA has prepared a series of standard templates for various categories of event and harbour authorities may wish to refer to these.

7.8.9. Any requirement for additional harbour authority resources, be they navigational marks, craft to patrol, control, or escort the event, or any emergency or SAR response resources, would normally be at the expense of the event organiser. The same would normally apply to any public safety or emergency provision considered necessary by the police or other emergency services.

7.8.10. Having conducted a risk assessment, and following any advice or requirement of the harbour master, the event organiser should be required to promulgate clear details of the event, including where appropriate:

- names of event organisers and officials;
- list of participants;
- list of authorities consulted;
- timetable and programme of events;
- arrangements for controlling the event, including any special communications, i.e. contact telephone numbers, VHF channels and call signs;
- any navigational constraints being imposed, e.g. restricted areas, or partial port closures;
- emergency arrangements; and
- media arrangements.

Depending on the scope of the event, it may be appropriate to publish the full risk assessment and associated mitigating measures.

7.8.11. Where recreational events are a common feature of a harbour, consideration should be given to drawing up a Code of practice for the planning and implementation of such events, thereby providing early guidance to any organisation so minded.

Dialogue with the recreational port user

7.8.12. The co-operation of recreational users is best assured by comprehensive consultation and dialogue. To this end, harbour authorities should consider making available to all port users, including recreational users, published material of relevance to the safety of navigation, including the following:

- byelaws and general directions;
- notices to mariners;
- port guides;
- details of the facilities available to visiting recreational users;
- advice on passage planning, including the identification of any areas of high density recreational activity;
- port emergency arrangements; and
- the International Collision Regulations.

The promulgation of this information may be achieved by direct provision or through articles and features in local press and radio, and by the use of notice boards in key locations.

7.8.13. The use of a web site will also greatly assist general awareness of the port and the details of its regulatory regime. In addition, such a medium is well suited to promulgating current operational issues such as details of relevant shipping movements, tidal data, etc.

7.8.14. Current operational information is usually broadcast to all port users, including recreational users so equipped, on VHF radio from the Port Information or VTS Centre where one exists.

7.8.15. Regular dialogue with the recreational users should be achieved by means of liaison meetings, and participation on working groups and committees. With the advent of safety management systems, there is a need for all port users, including the recreational user, to contribute to the hazard identification and risk assessment process, and subsequently to assist in reviewing the safety of navigation. This can be achieved through the medium of appropriate local committees.

Education and training

7.8.16. In discharging their responsibilities for the safety of navigation, harbour authorities should take a keen interest in helping to educate recreational users and others about safety on the water. To this end, they should encourage recreational users to attend training courses run by the RYA and other associations. They should also consider giving talks to selected groups of the local community on port operations and navigational safety issues. Additionally, the inclusion of educational information, and projects in support of local schools and colleges on a harbour authority's web site can be a most effective way of influencing prospective recreational users of the port.

Facilities for the recreational user

7.8.17. Facilities provided for the recreational user often require specialised management. These include:

- moorings design and specification of moorings and mooring areas, maintenance schedules etc;
- alongside berths maintenance, access, security, collection of charges, provision of services, waste disposal, emergency arrangements etc;
- drying grids, safety inspections maintenance of safe drying area including FEPA requirements for works below mean high water;
- slipways for launching/recovery of trailed craft. Requirement for maintenance and manning, supervision of launching and recovery where necessary, enforcement and collection, parking of trailers;
- slipways for careening and repairs. Health & safety requirements, waste reception for contaminants;

- boat lifts, cranes, hoists health & safety requirements, training for crane operators etc, storage, shoring arrangements ashore;
- provision of fuel health & safety, pollution prevention, emergency procedures, formal safety inspections for installations;
- supply of electricity health & safety, prevention of misuse, failsafe devices;
- shore side services including showers, toilets etc repair and maintenance, compliance with regulations, access for people with disabilities, security; and
- conservancy facilities in addition to those necessary for large vessels marking of secondary channels, maintaining depth in secondary channels and other areas, removing obstructions in areas of recreational activity.

Leisure moorings

7.8.18. Harbour authorities are often required to provide, license, or regulate leisure moorings in order to meet demand, but also to facilitate the safety of navigation. A clear policy on areas to be used for leisure moorings should be established. This should take into consideration the need to:

- maintain safe navigational channels;
- ensure that a selected position takes into account size and type of craft, swinging areas, depths of water, type of seabed, and the need for safe access to and from the mooring areas; and
- ensure that environmental/hydrographic regimes are not adversely affected.

In providing or licensing moorings, consideration needs to be given to the design and construction of mooring gear. Moorings owned by the harbour authority must be fit for the purpose, regularly maintained and checked. Those licensed by the authority should be to minimum specifications laid down as guidelines or requirements.

7.8.19. A published mooring plan of each area of the harbour should be maintained, which clearly identifies the positions of all moorings.

7.8.20. In providing moorings and other facilities, a harbour authority should consider the use of contracts or agreements in order to ensure that any requirements for insurance, and other criteria are defined and met.

Marinas

7.8.21. Establishing a marina within a harbour area requires careful planning and consultation. Local authority planning permission will almost certainly be required. The resulting density of boat traffic will need to be reflected in port pollution and other emergency plans. All marinas are required to put into operation waste reception management plans.

7.8.22. Traffic management procedures may be needed to facilitate entry into, and departure from, a marina. Lighting levels in and around a marina, whilst serving their purpose, must not impede the safety of navigation at night in the port area adjacent to a marina. Noise levels within marinas may need to be controlled.

7.8.23. Access to shore from a marina must be safe, and fit for purpose. The maintenance of life saving appliances throughout the marina is a fundamental responsibility of the marina operator.

7.8.24. An effective liaison needs to be maintained between a marina operator and the respective harbour authority. In particular, the movement of craft to and from a marina may need to be confirmed from marina records, which should be available for scrutiny by a harbour authority.

Houseboats

7.8.25. Some harbour authorities permit houseboats to be moored within the limits. Such permission is often controlled by licence, issued by the harbour authority. Before such a licence is granted, local planning permission may be required, as well as the approval of the riparian landowner. Adjacent landowners should also be consulted. Waste disposal facilities, including those for sewage, need to be provided.

Shore side Life Saving Equipment

7.8.26. The provision of shore side life saving equipment is normally the responsibility of the relevant riparian land-owner, including, where appropriate, the harbour authority. The availability of such equipment should be taken into account when conducting risk assessments. Riparian authorities have a duty of care to ensure that adequate life saving equipment is made available, despite its vulnerability to abuse by vandals.

7.8.27. In principle, life saving equipment should be established as indicated by risk assessment. Such equipment should include recovery methods, means of raising the alarm and guidance on how to call the emergency services. The availability of RNLI assets should be taken into account when conducting risk assessment.

7.9 SUBSEA PIPELINES DAMAGE

7.9.1. Recent subsea pipeline damage attributable to ships' dragging anchors in UK and Norwegian waters have led to the development of guidance for harbour authorities to help reduce the risk of such events occurring in the future.

Subsea Pipelines – Use and Hazards

7.9.2. Subsea pipelines are normally used to transport oil and gas from offshore production installations as part of national infrastructure or within port areas or between different countries. The pipelines may lie either directly on the sea bed or buried under it. It follows that pipelines can be vulnerable to ships' anchors, which may cause damage when they drag over the pipeline, land on it or when they snag the pipeline and potentially pull it out of the sea bed. Pipelines are also vulnerable to grounding damage.

7.9.3. Pipelines used in UK waters vary in diameter, but most are in the range 10cm to circa 125cm. In general, smaller pipes are more at risk of being snagged and ruptured, and larger pipes are more at risk of being scraped, dented or gouged and displaced, causing damage to coatings and potentially loss of containment. Even if a

pipeline is not ruptured at the time that the anchor strike occurs, any damage could lead to cracks that grow and result in seepage or failure in the future. Displaced pipelines also become more vulnerable to damage (including scouring of the adjacent seabed) due to tidal currents and trawling activities.

7.9.4. Pipeline operators are required to prepare a major accident prevention document (MAPD) in respect of subsea pipelines, in which relevant damage and pollution hazards are identified, risks assessed and where necessary appropriate risk control measures established to reduce the associated risk of the presence and use of the pipeline to acceptable levels. Where subsea pipelines lie within port areas, the development of the operator's MAPD will necessarily require them to liaise closely with the relevant harbour authority.

7.9.5. The consequences of damage to a subsea pipeline could include loss of life, injury, fire, explosion, loss of buoyancy around a vessel and major pollution, but in more serious cases, is also likely to result in significant commercial and economic impact as the associated distribution system is closed or restricted to very limited operation.

Guidance to harbour authorities

7.9.6. A harbour authority needs to be aware of the presence of any subsea pipelines in its area of responsibility. It should recognise and assess the potential for damage to those pipelines from shipping and fishing operations, and the associated potential consequences of such damage as part of its navigational Safety Management System.

7.9.7. Following review and where deemed necessary, harbour authorities should ensure they have in place appropriate emergency plans and operational procedures for the management of vessel traffic in the vicinity of pipelines within their area of responsibility. Close consultation and liaison with the pipeline operator is essential. Plans and procedures should take account of, or provide for, the following:

- Liaison between harbour authorities and pipeline operators to assess whether any subsea pipeline within their area of responsibility is at risk of being damaged by marine activities under the management or control of the harbour authorities or presents a pollution or other hazard.

- A Harbour Master's assessment of the need for any restrictions taking into account any relevant information such as pipeline type, contents, protection measures, the nature of the seabed, the depth of the pipeline, the depth of water or the size and/or type of vessel likely to be anchoring or operating in the immediate area.

- A description of such pipelines, their location and accurate details of pipeline routes through the port area. Pipeline locations should be recorded on appropriate, up to date charts and where available, the port's Vessel Traffic Services displays. Pipeline details should be documented and include: the fluid the pipeline conveys (e.g. natural gas, crude oil etc.), the diameter, the wall

thickness, the operating pressure, and the current name and emergency (24/7) contact details for the pipeline operator.

- Any restrictions on anchoring, fishing or navigation associated with a pipeline in the port area and the provision of advice and/or direction on suitable safe anchorages clear of subsea pipelines for all vessels within their jurisdiction. This guidance should be developed in consultation with pipeline operators and take into consideration the risks of dragging anchor Harbour authorities should also promulgate any advice or direction as part of the port's navigational safety management system.

- The establishment of suitable monitoring arrangements of vessels underway and at anchor in the vicinity of subsea pipelines. This should include operational procedures and the responsibilities of harbour authority staff for monitoring vessels and for informing vessel masters of the presence of pipelines.

- Arrangements agreed with pipeline operators on alerting procedures should a risk of imminent damage to a pipeline be identified to include contact arrangements.

- Documented contingency plans for effective response to pipeline damage or the threat of damage to a pipeline, which should be developed in consultation with the pipeline operator(s) and other responsible and relevant agencies such as the:

    - Department for Business, Enterprise and Regulatory Reform (DBERR);
    - Department of Energy and Climate Change (DECC);
    - Department for Transport;
    - Health and Safety Executive;
    - Maritime & Coastguard Agency (Survey & Coastguard); and
    - Secretary of State's Representative (SOSREP);

- Periodic reviews with pipeline operators of the emergency arrangements and associated contingency plans to take into account changes to: pipeline or port uses; harbour authority and pipeline operator responsibilities; contact details.

- Regular briefings to all relevant staff to ensure that they are familiar with the associated procedures and plans.

- Periodic testing of contingency plans in respect of pipeline emergencies and their emergency arrangements with pipeline operators to include testing of incident notification arrangements and emergency response exercises with the pipeline operator and appropriate agencies.

7.9.8. Contingency planning should take into account the need for early notification. Where a vessel is dragging its anchor and may ultimately endanger a subsea pipeline, advance notice may enable the pipeline operator to minimise the impact of

an incident through reduction of operating pressure or closing of valves and mobilisation of their response teams.

7.9.9. Where a pipeline lies within the VTS Area but outside port limits, harbour authorities should liaise with the MCA to agree responsibilities and contingency planning.

7.9.10. In line with The Pipelines and Safety Regulations 1996 section 26, harbour authorities may charge a fee to the pipeline operator for the preparation, review, revision and testing of the emergency procedure.

SECTION 8
PILOTAGE

8.1. SUMMARY

8.1.1. Chapter 5 of the Code refers, amongst other things, to the main powers and duties which harbour authorities (as a competent harbour authority (CHA) under the provisions of the Pilotage Act 1987) have to provide a pilotage service. It says that the use of these powers should follow these general principles:

A. Harbour authorities are accountable for the duty to provide a pilotage service; and for keeping the need for pilotage and the service provided under constant and formal review.

B. Harbour authorities should therefore exercise control over the provision of the service, including the use of pilotage directions, and the recruitment, authorisation, examination, employment status, and training of pilots.

C. Pilotage should be fully integrated with other port safety services under harbour authority control.

D. Authorised pilots are accountable to their authorising authority for the use they make of their authorisations: harbour authorities should have contracts with authorised pilots, regulating the conditions under which they work - including procedures for resolving disputes.

8.2. THE COMPETENT HARBOUR AUTHORITY

8.2.1. CHAs should, through their boards, play a formal role in the recruitment, training, authorisation and discipline of pilots. They should also approve the granting of pilotage exemption certificates (PEC) and the discipline of PEC holders.

8.2.2. It is likely that the harbour authority will delegate responsibility for the management of pilotage to the harbour master or another qualified executive officer, or in combination. These arrangements need to provide that the delegated powers are defined with clarity for each person; and the statutory role of the authority observed.

8.3. PROVIDING A SERVICE

Each competent harbour authority should provide the pilotage services it considers to be needed. This duty is not discharged simply by authorising one or more pilots: it includes the management of the service, ensuring that the person assigned as pilot to every vessel taking one is fit and appropriately qualified for that task. The service should be managed in a way which allows such control.

8.3.1. The 1987 Act requires that the pilotage service provided by any CHA should be based upon a continuing process of risk assessment. Operating a pilotage service will involve consideration of the following factors:

- safety assessment**;**
- agents and joint arrangements;
- pilotage directions;
- boarding and landing arrangements;
- consultation;
- pilotage regulations;
- authorisation of pilots;
- contracts with authorised pilots;
- training;
- rostering pilots; and
- incident and disciplinary procedures.

Safety assessment

8.3.2. Section 2(1) and 2(2) of the Act requires CHAs to keep under consideration:

a) whether any and, if so, what pilotage services need to be provided to secure the safety of ships navigating in or in the approaches to its harbour; and

b) whether, in the interests of safety, pilotage should be compulsory for ships navigating in any part of that harbour or its approaches. If so, for which ships under which circumstances and what pilotage services need to be provided for those ships.

8.3.3. The hazards involved in the carriage of dangerous goods, pollutants or harmful substances by ship have to be particularly considered. These requirements are clearly best addressed as part of an authority's overall risk assessment and safety management system (see Section 4 of this guide). CHAs were identified under the Act by means of criteria which included responsibilities for the regulation of shipping, and the safety of navigation. It is likely, therefore, that pilotage will need to be managed in the context of such wider responsibilities.

8.3.4. For the purposes of the safety management system, the provision of pilotage (whether by authorised pilots or PEC holders) is to be treated as a risk reduction measure, to be considered with other possible measures to mitigate the risks in question. The decision under Section 2 of the Act is therefore to be taken in the context of available safety measures as a whole. There may be no need for a pilotage service where other measures are considered sufficient.

8.3.5. The authority has to be satisfied that a measure will be effective before relying on it. An authority with the powers to provide an effective and efficient pilotage service must be satisfied that it can do so competently. This means firstly that the authority has the competence to assess and oversee authorised pilots, and those

who may apply for pilotage exemption certificates; and secondly, that they will have sufficient pilotage work to maintain their skills adequately.

8.3.6. It is important to note that an authority has two separate decisions to make:

a) to identify the pilotage service required in the interests of safety (Section 2 of the Act); and

b) the scope of pilotage directions (Section 7).

8.3.7. The service provided must obviously cover all vessels required to have a pilot by the directions. However, the authority must also consider two other points:

a) that some vessels subject to directions may not require a pilot because the master or first mate is entitled to use a pilotage exemption certificate;

b) a vessel not subject to directions may nevertheless need a pilot in the interests of safety (for example in unusual conditions such as poor weather, reduced visibility, unfamiliarity with, or lack of knowledge of, the port or due to fatigue).

8.3.8. A master entitled to conduct their vessel under an exemption certificate may nevertheless ask for a pilot for assistance. The principal point to be remembered is that the authority has a duty to provide the service required in the interests of safety (not in terms of the service required by the pilotage directions). The requirement is of course determined through the safety management system, which may identify alternative risk reduction measures where pilotage, and pilotage directions, would otherwise be needed.

8.3.9. If a risk is identified for which there is no satisfactory alternative to pilotage, the service provided must fully meet the requirements of the Code. Section 2 of the 1987 Act does not allow financial considerations to be used as a justification for not providing a pilotage service.

8.3.10. An authority which identifies the need to provide a pilotage service, incurs an obligation to find and maintain the resources and expertise.

Agents and joint arrangements

PMSC - Agents and joint arrangements

The Pilotage Act provides for a competent harbour authority to use an agent for pilotage services, and for formal joint arrangements between competent harbour authorities for the discharge of pilotage functions. There are important limitations to the power to make such arrangements, and key functions must be retained by each competent harbour authority. In these and other cases where harbour authorities have functions relating to the safety of any harbour - for example because they have jurisdictions in different parts of an estuary, they should collaborate as necessary on all aspects of this Code, and not just on pilotage. It is especially important to have a robust agreement about the resourcing of any operations conducted jointly or through another undertaking.

8.3.11. An authority may arrange for certain pilotage functions to be exercised on its behalf by such other persons as its sees fit, including a company established for the purpose, or another harbour authority. The Secretary of State also has power to appoint one authority as CHA for another's area – a power not used to date. Two or more authorities may arrange to discharge such functions jointly. Under S11(2) of the Pilotage Act a CHA may assign all its pilotage functions other than the duty under 2(1) to another CHA. Otherwise, the following arrangements may not be assigned or shared:

- the duty to keep the need for pilotage under review;
- the authorisation of pilots;
- the arrangement under which its authorised pilots are engaged;
- the approval of pilot launches;
- the issue of pilotage directions;
- the issue of pilotage exemption certificates.

8.3.12. These are all key elements of the safety management system required by this Code. Where other functions have been delegated, or there is a joint arrangement, the body or authority should be fully consulted in developing the system or consider having a joint safety management system. Authorities should also consider seeking a joint system for jetties and berths outside their jurisdiction, where their pilots may be providing a service.

8.3.13. Any delegation or joint arrangement should be subject to a formal contract with any other body used in this way (including another harbour authority) which fully recognises statutory obligations which cannot be delegated or shared. The contract should set out the decisions which the delegated or joint body may make, and any conditions to which this is to be made subject. There should be provision in such a contract to terminate the arrangement at any time in order to enable an authority to carry out delegated or joint functions itself, or to make some other permissible arrangement instead.

Pilotage directions

PMSC Compulsory pilotage

Pilotage Directions should define the circumstances in which pilotage is to be compulsory. A considered approach should be taken to this. Pilotage directions should specify how and to which vessels they apply, and in what circumstances. It may be that pilotage is appropriate for a class of vessels in some circumstances and not others.

A pilotage direction may specify that it does not apply for example to a vessel under the conduct of a licensed boatman. It may also be appropriate, for example, not to require pilotage while a dredger is working within the pilotage district but when it is transiting from the sandbanks to a river berth. A direction might also, for example, exclude certain vessels from compulsory pilotage except in 'circumstances' such as poor visibility. It is always necessary for these cases to be decided by reference to the authority's formal risk assessment, which must provide assurance to the authority that risks remain properly managed; and on the competence of those excepted from pilotage by these means.

The master of a vessel may ask for a pilot even when not required to take one by pilotage directions. These may be special circumstances - for example, the master is unfamiliar with the port, or traffic or weather conditions are difficult. The authority should allow for such requests when providing the pilotage service. An authority is obliged to satisfy itself that any vessel representing that it is not covered by the pilotage directions is entitled to do so. A harbour authority should monitor such requests carefully and refer to them when reviewing whether in any such circumstances pilotage should become compulsory.

8.3.14. If a CHA decides in the interests of safety that pilotage should be compulsory in the harbour or any part thereof, it must issue pilotage directions. This is a separate matter from the decision to provide a service. As noted above, an authority might decide to provide a service without making pilotage compulsory in some or all circumstances. Vessels are subjected to pilotage directions where the authority has decided that the management of safety so requires. Such vessels may nevertheless be conducted by PEC holders who have been assessed for skills, experience, local knowledge and an appropriate knowledge of English. Authorities will need to satisfy themselves that the risks relating to vessels that are not subject to compulsory pilotage are appropriately managed. This applies both to vessels which the authority decides to exclude under its pilotage directions, as well as those excepted by statute.

8.3.15. The authority's pilotage directions must define the geographic area within which pilotage is compulsory. A risk assessment should indicate where the limits of the area should be drawn. If risk is identified in an area outside the statutory limits of a port, then there is a provision for port limits to be formally extended by harbour revision order, so that the risk may be managed. There is special provision in the 1987 Act for such extensions for pilotage purposes only.

8.3.16. Pilotage directions describe how pilotage applies to vessels using the port. The content of the directions should be driven principally by the results of the risk assessment. Directions have to specify the ships or type of ship, and the geographical area, to which they apply; and in any circumstances in which an assistant pilot must accompany an authorised pilot.

8.3.17 Directions should specify vessel types. Ships have been specified in directions according to size (traditionally by length, but sometimes by draught, tonnage, beam etc). Risk assessments provide an opportunity to consider the relevance of such criteria – and others, and whether they are the right way of

deciding which vessels present a risk which is appropriately managed by compulsory pilotage.

Excepted vessels

Pilotage directions may not apply to certain small vessels and other means need to be identified to manage any risks associated with these. Pilotage directions cannot apply to ships of less than 20m length or fishing boats with registered lengths below 47.5m The formal risk assessment may confirm that other vessels need not be subject to pilotage directions provided any risk relating to them can be effectively managed by other means

Two pilots

The formal risk assessment should be used to identify any circumstances in which more than one pilot would be needed to conduct the navigation of a vessel safely.

Pilot Boarding and landing arrangements.

Risk assessment should be used to identify safe pilot boarding and landing areas. Every harbour authority's safety management system should incorporate the requirements of the Merchant Shipping (Safety of Navigation) Regulations 2002. There is also a dedicated Code of Practice relating to the boarding and landing of Pilots.. They should take steps to ensure that pilots do not board or land from vessels in conditions contrary to these requirements and guidance.

8.3.18. A revised code of practice entitled *The Embarkation and Disembarkation of Pilots*, which was prepared jointly by the Marine/Pilotage Working Group, provides advice on pilot boarding and landing arrangements. Pilotage directions may include such supplementary provisions as the authority considers appropriate. This provision is used to designate pilot boarding and landing positions. The following are examples of considerations applying to the fixing of these positions, especially the seaward position:

- it must be in a safe place to transfer a pilot to and from a vessel;
- it must allow for a pilot to be on board where the pilotage directions so require; and
- it must be where there is sufficient time and sea room to allow a proper master – pilot information exchange.

8.3.19. The requirements might also vary according to different types of vessel – and for other temporary reasons, such as adverse weather. Subject to the following two paragraphs, the boarding and landing position is normally established at the limit to which the relevant pilotage direction applies.

8.3.20. Section 7 of the 1987 Act allows for a range of circumstances to be accommodated by the pilotage directions. In particular, they may specify the area and circumstances in which a direction applies. Circumstances in which special arrangements might apply need to be identified in the risk assessment and reflected in the directions. These might include procedures in the event of a pilot not being available, for example because conditions make boarding and landing unsafe or impracticable. Provisions might include the use of different boarding and landing positions for different circumstances.

8.3.21. It should also be noted that Section 17(5)(b) of the Act contemplates that a person (other than the master or one of the crew of the ship) who is on the bridge of the ship *or in any other position* from which the ship is navigated (whether on the bridge *or elsewhere*) may be deemed to be piloting the ship. This contemplates a form of what is referred to as remote pilotage **provided** that the person in question is an authorised pilot and can be considered to be navigating the ship. It may be appropriate to rely on this provision, for example, where the navigation can be conducted elsewhere than on the ship; and/or where the pilot transfer, boarding and landing, are assessed as too high a risk.

Waiving directions

8.3.22. There is no provision for pilotage directions, once given, to be waived or disapplied - other than by the making of new directions by the authority. This is not a matter on which a harbour master should have discretion. It may be necessary for the directions to be carefully drafted to ensure that special circumstances in which they would otherwise apply are properly covered. Exceptions should be fully justifiable by reference to the formal risk assessment. It would not be appropriate, for example, to provide that pilotage is not mandatory in highly adverse conditions which make boarding or landing a pilot too dangerous to be undertaken, (subject to any overriding considerations to enable a vessel to be directed to a position of safety).

Consultation

8.3.23. Before issuing a new direction or directions, an authority must consult with ship owners whose vessels use the port, or those who represent them, and with those who conduct operations within the harbour (e.g. towage companies, pilots, etc), though it may consult more widely if it chooses. An authority should publish its directions so that they are readily available to all who require them, or are likely to be interested in them.

Pilotage regulations

8.3.24. Pilotage directions exist to define formally the broad structure of a pilotage service, and in particular to define where, and for whom, compulsory pilotage applies. Harbour authorities should provide a method of publishing these administrative requirements and details which support these directions. Some authorities refer to this published version as ‘pilotage regulations’. These may include:

- arrangements for the application, assessment, approval, renewal and use of a Pilotage Exemption Certificates (PEC);
- pilot authorisation procedures;
- any conditions governing the provision of the pilotage service;
- how vessels should obtain the services of a pilot;
- details of the local radio communications allocated for pilotage; and
- criteria for excepted ship status.

Authorisation of pilots

8.3.25. Each CHA may authorise suitably qualified pilots in its area. The 1987 Act says that authorisations may relate to ships of a particular description and to particular parts of the port. The authority determines the qualifications for authorisation in respect of age, medical fitness standards, time of service, local knowledge, skill, character and otherwise.

8.3.26. Authorities should establish proper arrangements for assessing competence, in accordance with the national occupational standards developed in parallel to this code and for keeping fitness under review. These should be published and available to applicants.

8.3.27. Subject to the principle that it is for the harbour authority alone to decide (using appropriate procedures for delegation to its officers) that an authorisation should be given, it is for an authority, or its agent, to determine that a particular authorised pilot is appropriately qualified and fit to pilot any ship on any occasion. Authorities are accountable for these decisions. They and any agent should have discretion to decide not to allocate an authorised pilot for a period, or for particular ships, and this should be an accepted condition of every authorisation.

8.3.28. An authority may also suspend or revoke an authorisation after giving notice and allowing a reasonable opportunity for representations to be made, if it appears to the authority that the authorised person is guilty of any incompetence or misconduct affecting their capability as a pilot. The same applies if an authorised pilot has ceased to have the required qualifications; or level of medical fitness; or failed to provide evidence of continuing to meet any of the criteria. An authorisation may also be suspended or revoked, on reasonable notice, if any contract or other arrangement under which the services of pilots are provided is terminated. Authorities should have formal procedures for these circumstances, incorporated in the contracts they have with authorised pilots. CHAs may wish to take legal advice in such matters.

8.3.29. Authorities should have procedures for re-validating authorisations not less than every five years. Harbour authorities should not allow pilot authorisations to be held by persons who have not been rostered as working pilots for more than two years. Revalidation should include an assessment of competence sufficient to satisfy the authority that the pilot remains qualified to be authorised. The authority should consider re-assessing any authorised pilot who has not been active for any reason if it considers that competence may be in question. It should do that assessment, and arrange appropriate training, before allowing the pilot to be rostered.

Contracts with authorised pilots

An authority may refuse to authorise any person who does not accept the arrangements it has made for providing the pilotage service. An authority may also - after giving notice and allowing a reasonable opportunity to make representations - suspend or revoke an authorisation if it appears to the authority that the authorised person is guilty of any incompetence or misconduct affecting his capability as a pilot or has ceased to have the required qualifications - or failed to provide evidence that he so continues. Authorities should have formal procedures for these circumstances, incorporated in the contracts they have with authorised pilots.

8.3.30. For the purposes of being able to regulate the provision of its pilotage service, each authority should have a contractual arrangement with its authorised pilots (whether under a contract of employment or a contract for services). This may be individual with each pilot or with an agent such as a pilot company. The contract should reflect the general conditions under which people are employed by the authority, including regulation of hours, leave, medical standards, training, incident reporting, discipline, employment protection, grievance and complaints procedures. The purpose of the contract is to regulate the relationship between the authority and its pilots in the proper interests of both. In the authority's case, it should retain sufficient control over the provision of the service which it has a statutory duty to provide.

8.3.31. The Pilotage Act 1987 obliges harbour authorities assuming pilotage functions to offer authorised pilots employment. It is relieved of this obligation only if the majority of relevant authorised pilots agree it need not do so, but that agreement does not oblige the authority to offer an alternative or preclude it offering direct employment. The authority has to decide whether any alternative arrangements are acceptable. The authority is not allowed to delegate the decision on whether its pilots should be employed. Alternative arrangements have to be satisfactory to the authority, enabling it fully and freely to discharge all its statutory responsibilities for pilotage. An authority may refuse to authorise any person who does not accept the arrangements it has made for providing the pilotage service.

8.3.32. The contract between an authority and its authorised pilots should also take account of any contract the authority has made with another body or authority to have pilotage functions discharged on its behalf.

8.3.33. An authorised pilots' contract should enable the authority or its agent to decide that a particular pilot may, or should not be allocated to a particular ship on a particular occasion. Authorities should ensure that any arrangements by which the operation of the pilotage service is delegated, reserve their control over rostering.

Training

8.3.34. Harbour authorities should ensure that all their authorised pilots are trained and qualified to conduct the vessels to which they are likely to be allocated. They should not allow any pilot to be allocated if not appropriately trained and qualified. The training standards should be appropriate to the National Occupational Standards developed in parallel with the Code. Every authorised pilot's training needs to be kept under review, with additional training provided as necessary before allocation to different types of vessels or to the use of new types of tugs. It is good practice for shipping companies, particularly regularly trading ferries under PECs, to also participate in pilot training programmes. These programmes promote shared good practice and team-working.

Rostering pilots

8.3.35. The shift patterns for any given pilotage service will vary depending on local circumstances, including the length of act, density of shipping, proximity of boarding and landing areas, etc. In designing shift patterns, care should be taken to ensure that pilots are

The collision of the Orade with the Apex Beacon, highlighted the risk of fatigue on mariners and pilots.

suitably rested before commencing an act of pilotage, and that time has been allocated for the proper development of the pilotage passage plan.

8.3.36. Formal risk assessment should be used to identify any circumstances in which more than one pilot would be needed to conduct the navigation of a vessel safely.

Incident & disciplinary procedures

8.3.37. It is good practice for each authority to have a formal incident and discipline procedure in the event of a marine incident. This would be in addition to normal industrial incident and discipline procedures. It is good practice for harbour authorities to make provision for ship masters to make reports, including confidential ones, of unsatisfactory performance by an authorised pilot, whether or not there has been an incident. Such provision must, however, be coupled with an equitable investigation procedure.

8.4. PILOTAGE EXEMPTION CERTIFICATES

8.4.1 There are powers and duties which CHAs have to exempt certain ships officers from their requirements to take an authorised pilot. The use of these powers should follow these general principles:

A The standards for exemption certificates must not be more onerous than those required for an authorised pilot; but they should be equivalent.

B Exemption certificate holders and their employers are accountable to the issuing harbour authority for the proper use of any certificate.

C Harbour authorities should have formal written agreements with certificate holders and their employers to regulate the use of certificates.

The requirements of a Pilotage Exemption Certificate (PEC) system are outlined in Sections 8 and 15 of the Pilotage Act 1987.

Eligibility for a PEC

8.4.2 The Act requires CHAs to grant a PEC to only certain senior officers – see 8.4.3 below. In practice, a large proportion of commercial shipping movements, especially ferries, are conducted by such officers with a PEC. Many are highly trained and experienced not only to be familiar with their ship but also harbours which they visit regularly. The arrangements whereby applicants may qualify, obtain, and use a PEC should be laid down in the pilotage regulations, which normally accompany the pilotage directions. The pilotage directions will specify the type and size of vessels which are subject to pilotage and therefore, by definition, the vessels to which a PEC applies.

Bona Fide Master and First Mate

8.4.3 The Pilotage Act requires that a PEC is granted only to persons who are bona fide the master or first mate (referred to “chief mate” under the STWC95) of a ship.

This language recognises that practice on board varies. The first mate is the person on board who will take command in the event of the master being indisposed. Some ships carry two mates and two masters, and often ships do not have articles which establish unambiguously that a particular officer is the first mate: whoever is the de-facto master/first mate at the time must be a PEC holder.

Award of Certificates

Authorities have a duty to issue pilotage exemption certificates to appropriately qualified mariners, and are not allowed to withhold one for reasons unconnected with an applicant's skill and experience.

Harbour authorities should have formal procedures for assessing the suitability of applicants. The standards adopted by harbour authorities should be equivalent to the national guidelines developed in parallel to this Code for the issue of exemption certificates. The standards and procedures adopted by each authority should be published and available to applicants. Where an authority's pilots participate in the assessment process, it is necessary to have an additional independent element of validation.

8.4.4 When an applicant applies for a PEC the first step will be for the CHA to register the application and brief the candidate on what he is required to do before his application can be assessed.

8.4.5 Once the requirements have been determined, applicants who satisfy them have a right to exemption whilst serving as bona fide master or first mate on the vessel for which they hold a certificate whether they choose to use it or not. It should be noted that CHAs are not allowed to withhold certification for reasons unconnected with an applicant's skill and experience, local knowledge and knowledge of English. (But see 8.4.25 below regarding a CHA where there are exceptional navigational hazards). A risk assessment may show for example that special requirements apply if the vessel were to take tugs. In that case, the authority has to choose whether it is reasonable to make the related skills a requirement for exemption; or whether to adopt an alternative risk management device. If the ship for which the master holds a PEC requires the services of tugs on a regular basis then this particular experience and ability should be covered with other relevant matters in the assessment prior to granting a PEC.

Responsibility of the Authority

8.4.6 A PEC is valid for one year from date of issue. Renewal should depend upon the CHA being satisfied with the conduct of the PEC holder. The PEC should only be renewed on confirmation that the holder's certificate of competency remains valid. The CHA should also ensure that the skill and local knowledge is still

The importance of ensuring that harbour authorities review the competency of PEC holders and ensuring they are fully informed. These points are illustrated following the grounding of the ro-ro ferry Dieppe; the collision between the Tor Dania and Amenity, and the collision of the ro-ro ferry Ursine.

sufficient, and one way of doing this might be satisfy itself that the applicant has conducted pilotage on similar vessels in the pilotage area(s), on a predetermined number of occasions.

8.4.7 There must be procedures to ensure that a PEC holder's local knowledge is kept permanently up to date. It is recommended that in cases where a PEC is not renewed continuously, any subsequent application by the previous PEC holder should require a further assessment and/or examination. Where a PEC is continuously renewed, it is recommended that the holder should be fully reassessed, and/or re-examined every five years.

Training

8.4.8 CHAs should offer an examination when required without undue delay. The CHA should also provide to the PEC holder, and the PEC holders employer relevant up to-date navigation information and may offer further training on aspects of the examination.

8.4.9 Where applicable, it is also recommended that applicants be required to visit, and to be briefed on, the VTS system. A full appreciation of how such a system can monitor and record the detailed track and manoeuvres of every ship, will often encourage higher standards of navigation than otherwise might have been the case.

Skill, experience and local knowledge

8.4.10 The granting of a PEC is dependent upon the CHA being satisfied, by examination or otherwise, that the applicant's skill, experience and local knowledge is sufficient for him to pilot his ship safely within the whole of the area of the harbour to which the authority's directions apply, or a specified part.

8.4.11 Qualifying for a PEC should not be more onerous than qualifying for an authorisation as a pilot in the same district; but the requirements should be 'equivalent'. However, it should be noted that a PEC relates to a particular vessel or vessels and may be restricted to a particular berth whereas a pilot's authorisation can cover a wide range of different vessel types and sizes and a range of different berths.

8.4.12 A checklist at the end of this section lists the criteria which a CHA should apply when assessing applicants for PEC.

8.4.13. If a CHA considers it necessary in the interests of safety for the person piloting the ship to speak English, a PEC may only be issued where the CHA is satisfied that the applicant's knowledge of English is sufficient for that purpose. This may be established during an oral examination or practical assessment.

Assessment of skill

8.4.14 A mariner's level of skill is, in principle, confirmed by his certificate of competency. It is therefore fundamental that a PEC applicant holds a valid and relevant certificate of competency, which entitles him/her to hold the position as

master or first mate in the ship(s) named in the application. Experience has shown, however, that in practice, certificates of competency do not always reflect accurately an applicant's professional ability in ship handling. It is therefore recommended that consideration be given to confirming the overall competency of an applicant, together with his/her ability to communicate effectively in English, during the practical assessment of his local pilotage knowledge. A CHA should also ensure that the applicant's certificate of competency is applicable to the type and size of ship being navigated.

Assessment of Experience

8.4.15 A master, or first mate's certificate of competence reflects achievement of a reliable and stringently examined standard in respect of the safe operation of a ship, and a minimum time spent at sea. They are not a record of service on ships of particular types and sizes. Experience of the relevant area, or part thereof, should be ensured by requiring a PEC applicant to complete a number of training acts in the company of an authorised pilot or a holder of a valid PEC for the area concerned.

8.4.16 Tripping should be undertaken on the ship, or class of ship, in which the PEC is to be used. The CHA must lay down the tripping requirement for its harbour or any part, if applicable. This requirement must specify the number of trips required by daylight and night. It may also specify the number of trips to be undertaken with an authorised pilot, rather than a PEC holder. The proportion of inward trips to outward trips may also be defined. In order to minimise the risk that qualifying trips being falsely claimed, the use of a Tripping Log is recommended. This should require the accompanying pilot or PEC holder to countersign to the effect that the PEC applicant had responsibility for pilotage of the vessel throughout the qualifying trip. Tripping Logs can also be validated by comparison with port records.

Assessment of Local Knowledge

8.4.17 The level of local knowledge can be assessed practically and by written and/or by oral examination. The level should be sufficient for the applicant to pilot his vessel with safety throughout the area covered by the PEC.

8.4.18 The checklist lists the criteria which the CHA should apply in assessing applicants. This includes both generic matters and local knowledge.

Responsibility of the Authority - CHA's obligations

8.4.19 A CHA should provide PEC applicants with a clear statement of its requirements for exemption. These might be accompanied by a full set of byelaws, general directions and other documentation necessary for safe navigation within the port.

Procedure for examining applicants

8.4.20 The CHA will establish a procedure for examining applicants for a PEC, to verify whether they meet the criteria set out in the checklist. The procedure should

include an oral examination and/or a practical assessment, and may, in addition, at the discretion of the CHA, include a written examination.

8.4.21 The CHA will decide who should be responsible for the conduct of the examination. The harbour master may conduct the examination himself, or it may be delegated to a senior pilot, a representative of the pilotage committee, a board member or a dock master. The CHA will also consider whether decisions on the award of the PEC should be endorsed by a committee of the harbour board. They should also make arrangements for applicants to be given feedback on their performance in the examination(s).

Additional vessels

8.4.22 It is often the case that a PEC applicant will request his/her certificates to be valid for more than one vessel. However, where the other vessels involved differ significantly in size or manoeuvring characteristics, from that named in the original application, consideration should be given to requiring the applicant to demonstrate proficiency in those different vessels, before approving the addition of such vessels to his certificate.

Additional areas

8.4.23 A PEC holder may request that his certificate be extended to embrace additional areas of the port. In these circumstances, the requirements for additional tripping and/or further assessment should be specified in the pilotage regulations, and should be fully satisfied before any such extension is approved.

Conditions governing the use of a PEC

8.4.24 After a PEC has been issued, the CHA should set out conditions attending to its use. The checklist sets out matters which will normally be included in such conditions.

Authority not to grant a PEC

8.4.25. Under Section 8(3) of the Act a CHA may apply to the Secretary of State to be allowed not to grant certificates, if the CHA believes that exceptional navigational hazards exist within its pilotage district, such that safety considerations dictate that all vessels navigating within the district must take an authorised Pilot. This provision is rarely used in practice.

Suspension or revocation of a PEC

8.4.26. A CHA may suspend or revoke a PEC if it shown that the holder has been guilty of incompetence or misconduct. Before so doing, prior written warning of the suspension or revocation must be given, as must the right to make representation. It is recommended that the procedure for suspending, or revoking a PEC is documented in the pilotage regulations.

Vessels operated by the CHA

8.4.27. It should be noted that any vessels operated, or owned by the CHA, are also bound by pilotage directions and regulations.

PEC Criteria

KEY

Minimum (M)
Consideration (C)

GENERIC
Valid certificate of competency as deck officer
Bona fide master / first (chief) mate
Evidence of current medical fitness
Vessel name plus size
Thorough understanding of own vessel handling characteristics
Knowledge of squat and interaction
Is able to communicate sufficiently for the purposes of safety in English
Is able to prepare, implement and provide pilotage passage plan
Is able to prepare and implement blind pilotage passage
Relevant knowledge of Pilotage Act 1987
Relevant knowledge of Port Marine Safety Code including standards for marine pilots

LOCAL KNOWLEDGE
Port regulations
Speed limits
Local notice to mariners
VTS
PI
Communications – VHF channels
Communications – local sound/light/shape signals inc, traffic signals
Channels/tracks/widths/depths/buoys/track distances/escapes depths
Navigation marks and aids
Coastal features
Tidal streams, prevailing wind
Restricted visibility procedures
Berths/wharves/jetties
Local knowledge – anchorages and no anchoring areas
Local knowledge – docks, locks
Local knowledge – prohibited areas/submarine cables, pipelines etc.
Tidal limitations/constraints
Emergency plans, oil spill contingency plans
Harbour tug – knowledge
Other harbour activities – recreational areas, diving locations etc.
Knowledge of local traffic patterns
Abort positions

PROCESS
Registration of candidate
Tripping *(Inwards/outwards & daytime/night time)*
Practical assessment
Familiarisation visits *(tugs, VTS, PI, port & terminal)*
Written examination
Oral examination *(maybe conducted as part of the practical assessment)*
Feedback procedures

CONDITIONS OF USE
No other duties whilst conducting pilotage
To be adequately rested and fit
Adequate bridge manning levels and support for PEC holder
Updating of knowledge capability
Reporting of incidents to HM without delay, written report o/c
Record of passages conducted to be maintained & presented if required
Required to report to HM when instructed
Required to report defective Aids to Navigation
Required to report onboard defects
Renewal and variation criteria (period of validity clearly stated on certificate)
Suspension criteria
Restrictions relating to use of tugs

SECTION 9

SHIP TOWAGE OPERATIONS

9.1 INTRODUCTION

9.1.1. Ship towage is a vital service that needs to be properly reviewed, approved and regularly assessed by harbour authorities.

9.1.2. Harbour authorities need to develop systems to ensure continued safe and efficient towage services including the ability to respond to emergencies. These systems should be reviewed regularly in the light of experience, changes in legislation, tug technology and the operating environment.

9.1.3. In developing these systems harbour authorities should seek to involve the relevant stake holders including; the towage operators, pilots, berth operators, dock masters, boat men, vessel owners and operators

9.1.4. The prime consideration in developing these systems and policies should be to enhance the safety of those that operate in the port and to prevent accidents.

9.1.5. Good communications and team work between towage operators and harbour authorities are essential to ensure efficient and safe operations.

9.1.6. This section provides guidance to harbour authorities in establishing good practice for the safe operation of towage services within port limits.

Tugs

The need for tugs should be included in the risk assessment - taking account not only those vessels which need their assistance to navigate in the harbour (whether as an active or passive escort), but also of the scope for using tugs as a means of reducing risk. An assessment may identify that additional use of tugs is an appropriate means of adequately reducing a particular risk.

The assessment should have regard to the capacity of available of tugs. If tugs are provided commercially, this may be determined by the operator's judgement of the likely work. If commercial provision of tugs is not enough for the effective management of relevant risk, the authority will have to identify other means of doing so. These may impose restrictions on harbour operations. Options include augmenting commercially provided towing resources - including the authority contracting tugs itself.

Harbour authorities should, in consultation with users and pilots, develop towage guidelines based on their risk assessment and incorporate them in their safety management system. The guidelines should not used however, to restrict access to the provision of services by properly qualified suppliers.

Towage guidelines, and related directions, should be used to ensure the use of tugs with appropriately trained and qualified pilots and crew. Competence standards developed for inshore tug personnel should be used for this purpose. The safety management system should provide wherever possible for tug crews to train with pilots and other port marine personnel.

9.2 ASSESSMENT OF PORT TOWAGE OPERATIONS

9.2.1. There are four main areas that the harbour authorities need to consider when assessing towage operations in the port:

Tugs and Equipment

Crew Competence and Training

Safety Management Systems (SMS)

Additional Tug Capabilities

9.2.2. Harbour authorities should develop their own methods of assessing and authorising tug operations and tugs as "fit for purpose" within the port limits, using suitably qualified surveyors, with the following items amongst the considerations.

Tugs and Equipment

- Tug propulsion type and configuration
- Tug general condition and certification
- Tug equipment for towing, particularly winch operations including quick release mechanism of winches and tow hooks, noting that such items are not presently covered by class survey
- Navigation and communications equipment.
- Verification of bollard pull

Crew Competence and Training

- Recruitment, training and certification to MCA required standards [2]
- Manning Policy
- General safety culture
- Crew familiarisation with specific tug types and local port environment
- Familiarity and involvement with Risk Assessment process especially regarding inherent risks in towage operations including
    - girting
    - inter-ship and fixed objects interaction
    - watertight integrity

[2] Crew to have STCW or Boatmaster Licence where appropriate, depending on tug or area of operation. Relevant crew will also be expected to have the MCA towage endorsement Modules "Basic Towing Knowledge" and "Ship Assist Towage" Endorsements which will become the recommended qualifications for harbour towage.

    - manual handling of towage equipment
    - adverse weather including restricted visibility
    - Slips, trips and falls
- Crews' familiarisation with the harbour authorities' emergency response plans and exercise of same
- Required levels of joint training between Pilots and Tug Masters and, where appropriate, PEC holders. (i.e. Simulator and Bridge Resource Management training).

Safety Management Systems (SMS)

- Crew knowledge of and compliance with Safety Management Systems.
- Incident and near-miss reporting, investigation, including follow up, close out and sharing of lessons learned
- Maintenance procedures and operational defect reporting
- Critical systems plant condition monitoring
- Risk assessments
- Compliance with Hours of Work regulations

Additional Tug Capabilities

9.2.3. For routine and emergency planning purposes it would be prudent, at the time of periodic assessments, to record the available tugs' design and construction capabilities and limitations, e.g.

- Towing over the stern capability and whether fitted with towing winch or hook
- Suitability for push/pull operations with bow winch or not
- Active escort capability
- Fire fighting capability
- Clear deck space for helicopter or other emergency operations
- Pollution response capabilities including oil recovery.
- On-scene command facilities
- Transfer of stores/equipment

9.3 TUG UTILISATION GUIDELINES

9.3.1. Guidelines on the number, bollard pull and type of tugs to be used should be established following consultation between facility operators, towage service providers, pilots, harbour authorities, vessel owners and operators following detailed risk assessments. When establishing such guidelines, it is essential to consider the capabilities of tug types as well as propulsion power and bollard pull.

9.3.2. These guidelines need to be based on an objective assessment of safety and take account of the conditions normally prevailing in the harbour and at the berths, as well as the manoeuvring characteristics of vessels normally calling. Towage guidelines may generally be advisory; however, where risk assessments identify a minimum towage requirement in order to mitigate the risks, consideration should then be given to make this requirement mandatory.

9.3.3. Allocation of tugs will depend upon the number, type, propulsion power and bollard pull of the tug fleet available.

The principal factors are:

- Risk assessments
- Bollard pull versus vessel's displacement and windage
- Size, type and manoeuvrability of ships assisted, e.g. tankers, gas carriers, container vessels, ferries etc.
- Scientific data including simulator and other trials
- Historical evidence and experience, including past reports and incidents
- Physical and environmental limitations including tidal streams, wind speeds and directions, and restricted visibility
- Redundancy and back up
- The geography of the port and its approaches, i.e. its navigational complexity
- Difficulties associated with particular berths, locks, bridges etc, including their condition, dredged boxes and limiting water depths
- Environmentally sensitive areas
- The applicability of escorting
- Dead-ship and other floating objects
- Preferred method for securing tugs (if required for particular berths, locks etc).

Special Considerations include:-

Restricted Visibility

9.3.4. Towing in restricted visibility poses the most serious threat to the safety of the tug and its crew.

The Flying Phantom tragedy illustrates the risk to crew when towing in poor visibility.

9.3.5. Harbour authorities should have agreed comprehensive procedures for the use of tugs in restricted visibility, including limitations of visibility for use of tugs, methods of tug assistance, and contingencies.

9.3.6. Particular attention should be paid to

- passage planning with particular reference to forecasts
- communications
- tug positions
- tug assist methods
- speed of vessel
- abort positions
- contingency, including lay berths, anchorages and turning areas
- emergency procedures.

Berth / Jetty / Dock / Terminal Hazard Assessments

9.3.7. Harbour authorities and or facility operators, whoever has primary responsibility, should conduct a periodic hazard assessment of each berth or group of berths. That assessment should involve towage service providers and pilot representatives. It may be appropriate to engage all relevant stakeholders, including vessel operators, line handlers and facility managers, for efficiency and team-building purposes.

Liaison and Co-ordination

9.3.8. Ship towage operations have inherent risks. These risks can largely be mitigated by good communications with open reporting, dialogue and regular liaison.

9.3.9. Among the means of facilitating cooperation and understanding between stakeholders, the following should be considered:

- Regular stakeholders' meetings to include, but not limited to, marine incident reports and lessons learnt
- Regular Tug Master and Pilot meetings
- Management of change, such as new technologies and the introduction of new tugs
- Strategic planning for port developments as they impact on towage requirements, including new berths or vessel types.
- System to communicate changes to dedicated port fleet, including dry-docking or redeployment.
- Tug Masters' input to Pilots' training in simulators

- Pilots to accompany Tug Masters on tug operations; several during initial training and thereafter periodical re-familiarisation.
- Tug Masters to accompany Pilots on the same basis as above.
- Clear directions from harbour authorities when there are requirements to act contrary to guidelines
- Encourage open discussion between stakeholders in case of any difficulties being experienced and promote “no blame” culture.
- Institute incident and near-miss reporting system including feedback and lessons learnt
- Contingency planning including towage in restricted visibility
- Emergency response exercises.

Other Considerations

9.3.10. Harbour authorities should agree a policy on use of ships’ towing gear; with towage operators, generally; ships’ mooring lines should not normally be used for towing operations except in an emergency, or where a proper risk assessment is carried out. Where such use is authorised, extreme caution should be taken to ensure that the size and condition of the line is suitable and duly certificated.

- Dead tows and unusual objects - The proper use of tugs on such objects requires special consideration and proper planning should be given to the movement of such vessels or floating objects.
- Harbour authorities should have a procedure, developed in consultation with towage operators, to establish the SWL of vessels’ bitts that are used for towage. These bitts need to be sufficient for the bollard pull of the tug employed. If the bollard pull of the tug exceeds the SWL of the bitts, then the tugmaster should be informed and reduced towage forces employed.
- Harbour authorities should have a procedure to ensure that ships’ personnel do not use unsuitable or dangerously weighted heaving lines.
- Harbour authorities should have a procedure that ensures that ships’ crews do not let go towing gear in such a fashion that there is a danger of it fouling the tug or ship’s propulsion system, or endangering personnel.

9.4 USEFUL REFERENCES

Tug Use in Port (Ch 8)	Nautical Institute
Working with Tugs	Videotel
Mooring Equipment Guidelines (3rd Ed)	OCIMF

MGN 209(M) towage endorsement - *“Basic Towing Knowledge” and “Ship Assist Towage”” Endorsements*

Major Ports who have undertaken extensive work on the Port Marine Safety Code Towage Guidelines, with input from:-

- The Bristol Port Company
- Port of London Authority
- ABP Southampton
- ABP Humber
- Harwich Haven Authority
- Forth Ports Limited

SECTION 10
MARINE SERVICES

10.1 SUMMARY

10.1.1. 'Marine Services' means the support activities carried out by a harbour authority to maintain safety of navigation and the hydrographic regime. Some of these activities are covered in earlier parts of this guide; this section gives guidance on:

- regulation of port craft
- work boats and berthing operations
- salvage
- diving operations
- dredgers
- bunker barges

10.1.2. There are a number of general principles when operating marine services:

A. An authority's safety management system should cover the use of harbour craft and the provision of moorings.

B. The formal safety assessment should be used to identify the need for, and potential benefits for safety management of harbour craft.

C. The authority should ensure that harbour vessels or craft which are used in the harbour are fit for purpose and that crew are appropriately trained and qualified for the tasks they are likely to perform.

D. Byelaws and the power to give directions are available for these purposes.

10.1.3. Marine services may be provided by the harbour authority itself or by commercial organisations operating on-site. Specialist services, like salvage and diving, are likely to be mobilised from elsewhere and may not be available at short notice. The guidance in this section should apply equally, irrespective of the way the service is provided.

10.2. REGULATION OF PORT CRAFT

10.2.1. National legislation requires craft which operate commercially “at sea”, i.e. outside category C and D waters to be certificated and to comply with defined codes of practice, as follows:

- Merchant Shipping (Small Workboats and Pilot Boats) Regulations, 1998, which enables the code of Practice for the Safety of Small Workboats and Pilot Boats.
- Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations,1998 as amended, regulation 5 of which requires compliance where relevant with the following codes of practice :
    - The Safety of Small Commercial Motor Vessels,
    - The Safety of Small Commercial Sailing Vessels and
    - The Safety of Small Vessels in Commercial Use for Sport or Pleasure Operating from a Nominated Departure Point (NDP)

10.2.2. Some craft are not subject to these regulations. In this case, harbour authorities should have procedures for ensuring they are properly maintained, equipped and manned and used only for purposes for which they are capable. Harbour authorities should have regard to their own capabilities when carrying out these inspections and may use commercial organisations if they do not have the competence in-house.

10.2.3. Local legislation may empower harbour authorities to register, inspect and license commercially operated port craft. Where this is not the case, the authority’s risk assessments should show some form of agreement with commercial operators about the maintenance and proper use of these vessels. It may be appropriate for the authority to consider seeking these powers.

10.2.4. A key part of successful port craft inspection is consistency. To facilitate this, harbour authorities should prepare a set of criteria for the inspections. These criteria should be based on national standards, laws, agreed codes of practice, manufacturers handbooks and other similar information. The criteria should also refer to the minimum manning and competency standards for the craft’s crew.

10.2.5. The results of the inspection, and any restrictions on the vessel’s use, should be recorded and discussed with the vessel’s owner and operator.

10.2.6. This guidance should apply equally to any vessel used to provide marine services; irrespective of its owner/operator or the way the inspection is carried out.

10.3. WORKBOATS

Pilot launches and workboats

Harbour authorities have a duty to approve the use of vessels as pilot launches. Authorities should not approve any vessel as a pilot launch that does not satisfy the Merchant Shipping (Small Work Boats) Regulations 1998 and the associated Safety of Small Work Boat and Pilot Boat Code of Practice. Work boats used in harbours should also comply with these requirements.

Harbour authorities should ensure compliance with the boarding and landing Code of Practice. Pilots should be instructed not to use facilities which do not comply with statutory safety requirements. Failure to board a pilot for this reason does not entitle a master to proceed without a pilot where his vessel is subject to pilotage directions.

Harbour authorities have a duty to ensure the safety of those they employ to work on or from their tugs, launches and workboats. They have a similar duty where they contract such vessels. Proper training is one means to this end: it is not optional.

10.3.1. Harbour authorities should ensure that workboats used in their harbours are 'fit for purpose' for any use to which they are put and that they comply with the Merchant Shipping (Small Work Boats and Pilot Boats) Regulations 1998 and the associated *Safety of Small Work Boats and Pilot Boats a Code of Practice*. A further code of practice, *The Boarding and Landing of Pilots by Pilot Boat*, is published by the British Ports Association. Harbour authorities should use risk assessment to identify where hazards exist and what mitigation measures are required. This process should apply equally to any activity undertaken by a workboat.

10.3.2 A harbour authority may set its own standards for small commercial craft within its jurisdiction which do not proceed to sea. Small commercial craft which go to sea (i.e. beyond categorised waters) should be in possession of a valid Small Commercial Boat Certificate and the crew should be qualified in accordance with the appropriate codes of practice (Red, Yellow, Blue or Brown) or the harmonised code of practice under MGN 280. In either case owners/operators of small commercial craft should conduct a formal risk assessment of their procedure in accordance with MGN 20.

10.3.3. Some harbour authorities have the powers to licence boatmen for running lines and assisting with the mooring of vessels. In these cases, harbour authorities should mandate the use of national guidelines or, if they are not available, a locally developed code of practice.

10.3.4. Risk assessment should form the basis of locally developed codes of practice and particular attention should be paid to circumstances where the operation requires more personnel than that laid down for the navigation of the craft, and/or when specialist safety equipment is necessary.

10.3.5. If a harbour authority does not have the power to license activities (and insist on the use of a code of practice) they should come to formal, documented agreements with providers. They may also wish to seek the appropriate powers.

10.4. DIVING OPERATIONS – REGULATION AND MANAGEMENT

10.4.1. The Code makes no specific reference to diving operations.

Commercial Diving

10.4.2. Divers employed by harbour authorities, or in harbour areas, are typically engaged in survey operations, construction work, clearing foul propellers and other underwater maintenance operations.

10.4.3. The Health and Safety Executive regulate commercial diving in the UK under the Diving at Work Regulations 1997. The Health and Safety Commission has produced a set of five mandatory Approved Codes of Practice (ACOP); one for each section of the commercial diving industry. Typically work carried out in docks and harbours falls within the scope of the Inland/Inshore ACOP. Divers engaged in commercial operations must be qualified to HSE recognised standards and must operate within the approved code of practice.

10.4.4. There are a number of parties involved in any diving project all of whom have specific responsibilities. The HSE considers these to be:

- the diving contractor,
- the diving supervisor,
- the client; and
- others (e.g. vessel operators and owners of the site).

10.4.5. Harbour authorities that commission work with diving companies should:

- ensure that they appoint a diving contractor who is competent to undertake the duties;
- ensure that the site is safe to use;
- identify known hazards to the diving contractor, such as tides, currents, location of sluices and other underwater obstructions and contaminated water; and
- support the diving supervisor and diving contractor in the event of an emergency.

10.4.6. Where the harbour authority is not the client, it is recommended that the harbour master establishes a permit to work system for diving operations that are to be carried out within harbour limits and that this:

- ensures that the diving contractor is aware of known hazards within the diving area (sluices, intakes, ship movements, underwater obstructions, currents and tides etc.)
- requires records of meetings with the diving contractor to be kept;
- follows the guidance on the Diving at Work Regulations contained in the PSO document Port Industry Guidance on the Diving at Work Regulations 1997.

Where the harbour authority is the diving contractor then they must comply with the provisions of the Diving at Work Regulations 1997 and the appropriate ACOP.

10.4.7. N.B. Clearing a foul propeller is considered to be a work activity but the task is sometimes done by a sports diver who claims to receive no payment. This places them outside the scope of the Diving at Work Regulations. However, it is strongly recommended that harbour authorities, whether they are the client or not, mandate that the law and ACOP are followed in these circumstances.

Recreational Diving

10.4.8. The "Recreational Diving Projects" ACOP will apply when at least one of the divers involved in the diving project is at work. An example of this is when an instructor is employed to teach students.

10.4.9. The Diving Regulations apply when at least one diver taking part is at work. At work in this context means as an employee or as a self-employed person.

Moorings

10.4.10. Harbour authorities have powers in byelaws and directions to regulate the mooring of vessels in the harbour. The safety management system should govern the use of these powers. Appropriate use should be made of mooring plans. These should not necessarily be left to the master or pilot: it may be appropriate to promulgate agreed requirements after discussion with users and pilots. Authorities should also ensure that mooring parties meet the industry's competence standards, and have access to appropriate training.

SECTION 11 PROFESSIONAL QUALIFICATIONS AND COMPETENCIES FOR PORT MARINE PERSONNEL

11.1 SUMMARY

11.1.1. This section of the Guide discusses the need for harbour authorities to ensure that everyone, who has responsibilities or is involved with the safety of navigation, is qualified and competent to do the job. Authorities must ensure their staff meet the nationally agreed standards of competence, or alternatively be able to show that their local competency standards are fully equivalent.

11.1.2. The general principles in relation to staff competence and development under the code are:

- **Systems developed by an authority with the aim of making best use of appropriate powers are likely to fail unless those people assigned any role in the system are competent and trained to nationally agreed standards.**
- **The foundation to these standards is an understanding that securing port safety is a team operation demanding an appreciation of the work of other specialists.**
- **Harbour authorities should assess the fitness of all persons appointed to positions with responsibility for the safety of navigation.**
- **Harbour authorities should adopt a training strategy that develops a shared understanding of their safety management systems and promote the involvement of port users in training programmes.**

Overview:

11.1.3. To ensure that ports employ competent personnel, harbour authorities must:

- Use the published national occupational standards (or an equivalent set of standards) as a basis for recruiting and developing staff, as part of their training strategy
- Apply an agreed assessment methodology to enable the standards to be applied;
- Review whether existing staff meet the standard;
- Ensure personnel have the necessary professional qualifications, certificate of competency (or are working towards them);
- Ensure personnel have enough relevant experience (dry and wet-side) to be effective in the post.

Occupational standards

11.1.4. Almost all sectors within industry have developed National Occupational Standards (NOS). NOS identify key job roles within a particular sector, break each

role into its component activities and define the performance, behaviour and knowledge that an employee needs to undertake the activity. The NOS reflect best practice within industry and, as such, provide a useful benchmark against which individual employee performance can be measured. They can therefore be adapted for use as management tools covering a range of employer functions including recruitment, employee development and managing performance.

11.1.5. Ports Skills and Safety (PSS) is the ports industry's organisation for health, safety, skills and standards. They have published national occupational standards for port marine personnel, as well as guidance notes to illustrate some of the ways in which the Ports Sector NOS can be utilised within a port organisation, which cover:

- harbour masters;
- marine pilots; and
- VTS.

11.1.6. PSS have also produced the NOS which form the basis for NVQ/SVQ Level 2 qualifications for the following:

- marine operations
- passenger operations
- stevedoring

11.1.7. The Port Marine Safety Code represents an agreed national standard for the discharge of a harbour authority's legal marine safety functions. Harbour authorities rely on professional people to operate effectively, and depend on the training and skills which those people gain and subsequently apply to their responsibilities. National Occupational Standards specify what port personnel need to do and the associated knowledge and understanding that enables them to perform as required. This is important for:

- The recruitment and selection of new personnel:
- Reviewing whether existing employees meet these standards; and
- Providing a framework for existing personnel interested in career development and advancement.

11.1.8. Assessment against the NOS will then confirm that employees have the required skills and knowledge for their particular role. Qualifications based on the NOS will also help.

11.1.9. Many people, particularly mariners, already have qualifications and it is already widespread practice to require these for port professional positions. The Code does not comment on this practice. However these qualifications, whilst an indicator that some of the skills and knowledge are present, are not in themselves sufficient to meet all the requirements under the NOS. The ports industry is currently developing a qualification framework that will enable providers, such as Higher

Education Institutes, to deliver programmes that educate and train people to meet the requirements of the NOS.

11.1.10. The development of a qualification framework involves PSS in working with key stakeholders, principally employers, professional associations and potential providers of training and education to ensure that the industry's requirements are capable of being delivered. The intention of a framework is to recognise and build upon existing provision, as appropriate. For example, the Nautical Institute currently runs a harbour masters Certificate Scheme, based upon its publication *The Work of the Harbour Master A Practical Guid*e, can articulate its existing provision with the proposed framework to gain recognition of its scheme.

11.2. HARBOUR MASTER

11.2.1. Paragraphs 2.10 – 2.12 of the Code provide details on the appointment of a harbour master.

11.2.2. The harbour masters is a statutory appointment and the harbour authority's powers to appoint them are modelled on section 51 of the Harbours, Docks and Piers Clauses Act 1847. Under the Act the term harbour master includes both the harbour master and any assistants.

11.2.3. A harbour master generally has a mix of statutory and management functions but the way in which this 'mix' is divided differs from port to port. Harbour authorities should pay particular care to the definition of the harbour master's responsibilities and functions in their particular circumstances.

11.3. PILOT

11.3.1. Section 8 of this guide refers to the authorisation of pilots. Harbour authorities have the power to determine the qualifications for authorisation in respect of age, physical fitness, time of service, local knowledge, skill, character and otherwise. The Code says that authorities should establish proper arrangements for assessing competence, in accordance with the national occupational standards developed in parallel to this Code; and for keeping fitness under review. These should be published and available to applicants. Harbour authorities also need procedures for re-validating authorisations at least once every five years.

11.3.2. Harbour authorities should use clear assessment criteria, which set out the minimum standards to be achieved before initial authorisation and subsequent advancement to higher grades. When conducting interviews for pilotage selection and training, it is common practice for a pilot to be on the interview board, as they bring their expertise to the task evaluating the qualities required. These criteria should specify in detail the examinations, assessments, qualifying trips, and other experience required at each stage of a pilot's advancement. Competency, in vessels of the next higher grade, should be assessed before a pilot is advanced to that grade. Harbour authorities need to ensure that no pilot is assigned to conduct pilotage in a vessel or an area for which they are not fully qualified and trained.

11.3.3. Where pilots are themselves used to examine or assess other pilots, consideration should be given to them being accompanied by a person other than a pilot, such as a harbour master, in order to avoid a possible misconception that the process is other than objective and in accordance with defined procedures.

11.3.4. Arrangements should be put in place to monitor the activity patterns of individual pilots to ensure that they are able to maintain the necessary local knowledge and expertise in each part of the pilotage district, and in each type and size of vessel for which they are authorised to undertake an act of pilotage. Arrangements may be needed to ensure that pilots can make good any gaps in their current experience before they are assigned to a vessel, or an act in a part of the district, with which they have become unfamiliar. The practical performance of pilots should also be monitored so that any weaknesses are identified early, and remedial training initiated.

11.3.5. In helping pilots to maintain their skill levels at the highest standard, it is essential that they are given the opportunity to train with others who contribute to safety such as VTS operators and tug crews. Training simulators, where available, can also play a useful and cost-effective role in helping to maintain currency in berthing and ship handling techniques, as well as providing a mechanism for exercising emergency situations. Training in the use of newly developed systems such as transponders; carry aboard and other electronic chart systems should also be considered, where practicable.

11.3.6. If an assessment gives reason to doubt a pilot's continuing competence, prompt arrangements should be made for refresher training. CHAs are advised not to allow pilots to be rostered for work if they have not been actively employed as a pilot within the last six months, unless suitable refresher training has been undertaken. Such training should be followed by a formal assessment of pilotage skills.

11.4. VESSEL TRAFFIC SERVICE OPERATOR

11.4.1. Section 7 of this guide discusses the management of navigation.

11.4.2. Harbour authorities should use various methods to monitor and communicate with vessels using their harbour. It says that these should allow appropriate information, advice and directions to be passed between the harbour master or port and ships in the harbour. Where the formal risk assessment indicates a requirement, a VTS should be established and operated in accordance with internationally agreed guidelines. These services may vary quite properly from port to port.

11.4.3. The IMO STCW 1978 Convention was amended in 1995, including significant changes to include recommendations on VTS training. More recently, IMO Resolution A.857(20) provided guidelines on the recruitment, qualifications and training of VTS operators. The subsequent IALA recommendation V-103 provided detailed standards for the training and certification of VTS personnel. This recommendation also included details of a number of model courses:

Model course V-103/1 - VTS Operators

Model course V-103/2 - VTS Supervisors
Model course V-103/3 - On-the-Job Training
Model Course V-103/4 - On-the-Job Training Instructor

11.4.4. UK VTS certification log is available to VTS operators following a structured MCA approved training programme based on the IALA V103 standard. This is not an entitlement to practice in a particular port as an authorised VTS operator. In all cases, this will be subject to successful completion of the harbour authority's on-the-job training assessment and examination. In all instances it is required that operators should undertake on-the-job training and assessment. The proposed national occupational standards, and related assessment criteria will support this. On successful assessment some harbour authorities now authorise their VTS operators in much the same way as pilots. This is not, of course, a statutory arrangement.

11.4.5. The training log requires an annotation of an annual assessment by the port. In additional, the V103/1 VTS Operators certificate requires to be kept current by attendance at a refresher training course every three years or attainment of an equivalent MCA approved in-house refresher training. This will be checked when logs are submitted to the MCA every 5 years for re-validation.

11.5 MARINE OPERATIVES

11.5.1. An authority should ensure that harbour vessels or craft which are used in the harbour are fit for purpose and that crew are appropriately trained and qualified for the tasks they are likely to perform.

11.5.2. Marine operatives are employed in a wide variety of jobs throughout the ports industry. In deciding what qualifications are required, either as a prerequisite for recruitment, or in subsequent training, harbour authorities should identify the particular tasks the person is to perform. The national vocational qualifications developed by PSS cater for several of these and indicate the scope of training likely to be needed.

11.5.3. Other possible components of marine operative training include:

- basic sea survival;
- boat handling;
- emergency response;
- equipment handling, for example cranes, vehicles, alarms etc;
- first aid;
- information technology;
- personal safety;
- VHF operations and procedures; and
- basic marine engineering skills.

Additionally, the following certificates are available for marine operatives:

- MCA Boat Masters Licence
- RYA Coastal/Yacht Master Licence (with commercial endorsement)

11.5.4. It should be noted that STCW 95, which was brought into effect by the Merchant Shipping (Training and Certification) Regulations 1997 (S.I. 1997/348) on 1 February 2002, has introduced a Certificate for Inshore Craft, namely Inshore Craft - Master Reg 11/3 (restricted).

11.6. TUG CREWS

11.6.1. Training programmes in respect of tug crew have been developed by the British Tugowners Association. Harbour authorities should ensure that tug crew working in their waters meet these standards through the towing guidelines discussed in the previous section.

11.6.2. The certificates listed below will be required as a minimum for tug masters and deck watch keepers aboard tugs over 24m length and to engineers aboard tugs of more than 750kW registered power. Tug personnel with previous certification, and who have opted not to undertake further training, are no longer allowed to operate tugs in their port towage area.

- Inshore Tug Master Reg ll/3 (Restricted)
- Inshore Tug Watchkeeper Reg ll/3 (Restricted)
- Inshore Tug Chief Engineer Reg lll/2 (Restricted)
- Inshore Tug Chief Engineer Reg lll/3 (Restricted)

11.7. HYDROGRAPHIC SURVEYOR

11.7.1. Section 6 of this guide deals with hydrographic surveying. The need for in house hydrographic surveying skills will vary widely from port to port, depending upon the nature and the stability of the seabed and hydrographic regime.

11.7.2. The requirement for recognised hydrographic qualifications depends on a harbour authority's particular circumstances. Qualifications may be unnecessary in cases where a port surveys only to monitor the hydrographic data or charts published by others (e.g. UKHO). However, when it gathers and publishes survey data for use by the general public or inclusion into the official Admiralty chart, the training and qualifications of those who involved should be demonstrably appropriate. Surveys should be conducted to the requirements of the International Hydrographic Office (IHO) SP44.

11.7.3. Professional qualification as a hydrographic surveyor is normally achieved by acquiring chartered status from the Royal Institution of Chartered Surveyors or by completion of an IHO Category A Hydrographic Surveying course. Harbour authorities looking to recruit personnel with a view to them achieving associate membership of the RICS, should bear in mind that a suitable foundation degree e.g. oceanography, marine or land survey, may be helpful. Harbour authorities should

encourage their surveyors to become members of The Hydrographic Society as this offers opportunities for continuous professional development.

11.7.4. The UK Hydrographic Office offers guidance on the qualifications of hydrographic surveyors. Useful guidance is also available from the International Hydrographic Bureau (IHB) in their publication 'Standards of Competence for Hydrographic Surveyors', which it publishes on behalf of the IHO and the Fédération Internationale des Géomètres (FIG). The International Hydrographic Office also publishes information on the training programmes of its member states.

11.8 QUALIFICATIONS FOR HARBOUR MASTERS & PILOTS

11.8.1. Professional qualifications are being developed to ensure that new and existing personnel have the necessary skills and competency for the job. Further work will need to be undertaken by industry to ensure that *certified* training / qualifications are available for;

- existing personnel working in navigational safety, who want to develop their expertise;
- ex-mariners with wet-side qualifications, but lacking dry-side experience and qualifications; and
- new entrants without any maritime experience.

11.8.2. Since the national occupational standards were published, a number of initiatives in developing professional qualifications have started:

- The UK Harbour Masters Association are developing a programme of Continuous Professional Development (CPD) that can be used by existing harbour masters and their deputies. CPD is an established process in various sectors of employment for demonstrating continuing competence (alongside practical assessments) for a particular profession.
- PSS are developing a foundation degree (level 4) qualification for those wishing a career as a VTS operator, pilot, harbour master or work in other marine services. PSS already have a track record in producing formal qualifications for dock side personnel (such as for stevedores).
- Some individual ports and groups have bolstered their own internal procedures – modelled on the NOS – to ensure they training and development takes place.

To make the industry more attractive, the career development paths need to be available for existing personnel, in addition to new entrants.

11.9 DEVELOPMENT AND TRAINING GOOD PRACTICE:

11.9.1. All employees undertaking port marine activity as part of their work must undergo training and assessment to ensure that they are competent to carry out their assigned roles. The training and assessment of employees should be undertaken by

competent people. The learner must not be placed in a position of uncontrolled risk during the training or assessment. In addition, no employee should be expected to undertake duties that might carry risk until they have received suitable and sufficient instruction, information and training in line with the appropriate safety management systems.

11.9.2. All tasks and activities require underpinning knowledge. It is not sufficient to understand what to do, without knowing *why* it is done in a particular way or how it fits into the broader picture of the business activity.

11.9.3. It is good practice for employees to be formally assessed at the end of a course or training period. The test is to ensure that the employee has core knowledge of the working environment and its hazards. An acceptable standard must be agreed (in line with the NOS) and set out in the port's training policy.

- All ports are expected to have a training policy and on-the-job, practical training should take place in line with this policy.
- Training and assessment should cover the content that is relevant to the port and employees' requirements.
- Training and Assessment will either be undertaken by the *local Marine Manager*, or employees designated by them.
- It is good practice if employees receive on-the-job training and are then put forward for formal assessment.
- Employees who have been undertaking the tasks competently for some time, may not require any training before being formally assessed. If however they fail the assessment, they will require further training.

11.9.4 Local records should be kept of all training and assessment conducted for port marine employees. A good example of a training matrix can be found at annex B and an example of a certification record (for on-the-job training) can be found at annex C of this document.

SECTION 12 - HARBOUR REGULATIONS ACCIDENT INVESTIGATION & ENFORCEMENT

12.1 INTRODUCTION

12.1.1 The duties of a harbour authority include an obligation to conserve and facilitate the safe use of the harbour and a duty of care against loss caused by the authority's negligence. Such losses may be caused by accidents or incidents within a harbour authority's area of jurisdiction.

12.1.2. Harbour authorities should hold themselves publicly accountable for the duties they have to the public interest. They should treat these duties as primary. Their Boards are accountable for the standards they set, the resources they allocate to safety and for the effectiveness of systems they choose to adopt. Board members approach to safety will be judged by the decisions they make.

12.1.3. The Code relies upon the principle that duties and powers in relation to marine operations in ports should be discharged in accordance with a Safety Management System. That system should be informed by and based upon a formal risk assessment. The aim is to establish a system covering all marine operations in ports which ensures that risks are both tolerable and as low as reasonably practicable.

12.1.4. It is recognised however, that no matter how informed the risk assessment process and how effective the safety management regime is, accidents and incidents do occur in harbours. Such accidents and incidents may involve death, serious injury, collision, pollution and other undesirable outcomes and they may involve breaches of national or local laws.

12.1.5. It is, therefore, essential that the Safety Management System addresses the potential for incidents to occur and to provide instruction and guidance on any investigations that may be required as a result. The duty holder can be assured that their obligations for compliance have been addressed by ensuring that a robust, rigorous, independent investigation has been carried out.

12.1.6. Investigations of accidents and incidents have two essential purposes:

- To determine the cause of the accident or incident, with a view to preventing a recurrence of that accident or incident; and

- To determine if an offence has been committed: if so, there may be the need on the part of a harbour authority to initiate criminal proceedings in their own right or through the agency of another authority such as the Health and Safety Executive (HSE) or the MCA.

12.1.7. In the first case, the role of the harbour authority is similar to that of the Marine Accident Investigation Branch (MAIB) and it is quite likely that the MAIB will be involved in an investigation. This is explored further in §4 below.

12.1.8. It is also important to recognise that, in the event that an offence has been committed, the police may also have a duty to investigate. The Safety Management System needs to contain a clear statement recognising this and to establish the relationship between the harbour authority, the police, the MCA and the HSE. This statement should establish which authority has primacy for any investigation and the hierarchy of the other agencies.

12.2. DEFINITIONS

12.2.1 In order to provide clarity of direction and purpose to this Guide to Good Practice, the following official definitions are adopted.

Accident

"Accident" means any occurrence on board a ship[3] or involving a ship whereby -

(a) there is loss of life or major injury to any person on board, or any person is lost or falls overboard from, the ship or one of its ship's boats;

(b) a ship-

(i) causes any loss of life, major injury or material damage;
(ii) is lost or presumed to be lost;
(iii) is abandoned;
(iv) is materially damaged by fire, explosion, weather or other cause;
(v) grounds;
(vi) is in collision;
(vii) is disabled; or
(viii) causes significant harm to the environment.

(c) any of the following occur -

(i) a collapse or bursting of any pressure vessel, pipeline or valve;
(ii) a collapse or failure of any lifting equipment, access equipment, hatch-cover, staging or boatswain's chair or any associated load-bearing parts;
(iii) a collapse of cargo, unintended movement of cargo or ballast sufficient to cause a list, or loss of cargo overboard;
(iv) a snagging of fishing gear which results in the vessel heeling to a dangerous angle;
(v) a contact by a person with loose asbestos fibre except when full protective clothing is worn; or
(vi) an escape of any harmful substance or agent,

if the occurrence, taking into account its circumstances, might have been liable to cause serious injury or to cause damage to the health of any person.[4]

Incident

"Incident" means an uncontrolled or unplanned event, or sequence of events, that results in damage, or threat, to the safety of personnel, the vessel, the environment or property.

[3] Ship: presumed to include "every description of vessel used in navigation", as per Harbours Act 1964 definition

[4] MGN 289 [M+F] - Accident Reporting and Investigation, published by the MAIB, April 2005.

Major Injury

"Major injury" means -

(a) any fracture, other than to a finger, thumb or toe;
(b) any loss of a limb or part of a limb;
(c) dislocation of the shoulder, hip, knee or spine;
(d) loss of sight, whether temporary or permanent;
(e) penetrating injury to the eye; or
(f) any other injury –
(i) leading to hypothermia or to unconsciousness, or
(ii) requiring resuscitation, or
(iii) requiring admittance to a hospital or other medical facility as an inpatient for more than 24 hours.[5]

Serious Injury

"Serious injury" means any injury, other than a major injury, to a person employed or carried in a ship which occurs on board or during access which results in incapacity for more than three consecutive days excluding the day of the accident or as a result of which the person concerned is put ashore and the ship sails without that person, unless the incapacity is known or advised to be of three consecutive days or less, excluding the day of the accident.[6]

Hazardous Incident

"Hazardous incident" means any event, other than an accident, associated with the operation of a ship which involves circumstances indicating that an accident nearly occurred.[7]

12.3 INCIDENTS INVOLVING DEATH OR CRIME

12.3.1. When someone dies in a work-related incident, a number of different organisations will require to work together to ensure that the incident is investigated and that the reasons for the death are understood. The police will investigate any incident in the event of death - both in relation to any possible offence (possible homicide - murder or manslaughter) and on behalf of the coroner.

12.3.2. A police investigation may also be necessary to see if other criminal offences have been committed and to consider whether a prosecution should be brought. Different organisations have different but important roles in this process and good co-ordination is vital to ensure that the investigation is as smooth and as seamless as possible. Close liaison with the police, therefore, is essential in such incidents.

12.4 NATIONAL REGULATORY FRAMEWORK

12.4.1. The legal framework for incident investigation is effectively summarised in the Memorandum of Understanding (MOU)[8] between the MCA, the MAIB and the HSE for health and safety enforcement activities at the water margin and offshore:

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[5] Ibid.
[6] Ibid.
[7] Section 2-1 of the Merchant Shipping (Accident Reporting & Investigation) Regulations 2005 [SI 881/2005]
[8] A copy of this MOU can be found on the MAIB website at http://www.maib.gov.uk/resources/index.cfm

- The MCA is responsible throughout the UK for implementing the Government's maritime safety policy.
- The MAIB investigates accidents related to ships and crew.
- The HSE investigates land based accidents, and accidents occurring on offshore installations.

12.4.2. The MOU aims to identify which organisation will take the lead in investigations where they share a common interest, particularly at the ship/shore interface.

12.4.3. Its purpose is to ensure effective co-ordination between those organisations, where their duties for health and safety enforcement and accident investigation overlap at the water margin, offshore and on inland waterways.

12.4.4. The organisations undertake to use their best endeavours to co-operate effectively to enable and assist each other to carry out their responsibilities and functions, and to maintain effective working arrangements for that purpose. Such co-operation should improve the effectiveness of each of the parties and avoid difficulties which may arise from uncoordinated approaches by the organisations.

12.4.5. An MOU also exists between the MAIB and the Association of Chief Police Officers (ACPO). The aim of this MOU is to ensure effective investigation of marine accidents in England, Wales and Northern Ireland, while maintaining the independence of all parties and reinforcing the importance of close co-operation between MAIB and the police.
In summary:

- MAIB investigates accidents related to ships and crew;
- HSE investigates land based and offshore accidents;
- The Police will investigate accidents involving death.

In general, HSE is responsible for enforcing the Health and Safety At Work Act (HSWA) in respect of land based and offshore work activities, including loading and unloading a ship, and for all work activities carried out in a dry dock[9].

12.4.6. The MCA is responsible for enforcing all Merchant Shipping Regulations in respect of occupational health and safety, the safety of vessels, safe navigation and operation (including manning levels and crew competency). Merchant Shipping health and safety regulations extend to all those working on the ship and to all shipboard activities carried out by the crew under the control of the ship's master.

12.4.7. Where there is overlapping legislation, the accident investigation provisions are set out in the appropriate chapter of the MOU, but each organisation is able to call on the expertise of the other as the need arises.

[9] Note: Local Authorities will enforce the Health and Safety at Work etc. Act 1974 for certain marine and leisure activities. See Section 3, paragraph 3.3.2.

12.4.8. It should be noted that there may be situations where there is a duty to report the same accident to both the HSE (under 'RIDDOR' regulations) and the MAIB (under Merchant Shipping Accident Reporting Regulations). In these situations, the person filing the report with one organisation will be advised and the report passed to the other.

12.5 STATUTORY REPORTING REQUIREMENTS

12.5.1. Marine Guidance Note MGN 289 [M+F] "ACCIDENT REPORTING AND INVESTIGATION" is addressed, *inter alia*, to harbour authorities. It explains the reporting requirements of the MERCHANT SHIPPING (ACCIDENT REPORTING AND INVESTIGATION) REGULATIONS 2005[10] - 'the Regulations'. Details of what should be reported are given in Annex A of the Notice and are given in detail in the Guide to Good Practice.

12.5.2. In particular, harbour authorities should report any accident of which they are aware to the Chief Inspector of the MAIB by the quickest means available.[11] Accidents on board ships in ports, with the exception of those involving stevedores or workers ashore, are covered by the Regulations and should be reported. Incidents involving shore-based workers should be reported to the Health and Safety Executive.[12]

12.5.3. The MAIB's Incident Reporting Form (IRF) provides a convenient format for reports but plain narrative giving the above information may be used if the form is not available. As full an account as possible should be given whether or not the form is used; the list of items given in the M Notice is not intended to be limiting and any matter should be included which will help to make the circumstances clear or to show how similar incidents may be prevented. Sketches, plans and photographs of the damaged areas, taken both before and after the event, are often helpful and may be attached to the report.

12.6 LOCAL REPORTING REQUIREMENTS

12.6.1. Notwithstanding the statutory reporting requirements outlined above, the Safety Management System should also define the requirements for local [internal] reporting of accidents and incidents. It is not sufficient for a harbour authority to only consider accidents and incidents that require statutory reports: the process of continual improvement envisaged by the Code cannot be achieved if there is not a mechanism by which non-compliance with the objectives of the Safety Management System - for example, as a result of an accident or incident - is identified, analysed and steps are taken to mitigate such non-compliances.

12.6.2. In particular, it is essential that there is an effective system for reporting of near misses. It is possible that a near miss incident did not become a more significant event as a result of last minute action by one of the parties involved who realised that immediate action was necessary. However, the fact that a near miss incident did occur may be symptomatic of a systemic weakness in the Safety Management System.

[10] SI 881 / 2005
[11] MGN 289, para. 13
[12] MGN 289, para. 21

12.6.3. Such incidents, therefore, need to be reported and to be investigated at an appropriate level.

12.7 HARBOUR AUTHORITY INVESTIGATIONS

12.7.1. Harbour authorities have a responsibility to investigate marine incidents in harbour waters and the Safety Management System should contain clear guidelines on the levels and purposes of accident and incident investigations that will be expected of a harbour authority. Those guidelines should also identify who will be responsible for carrying out the investigations.

12.7.2. For example, in the event of a collision between two vessels in the approaches to the port with one vessel under compulsory pilotage and the other under control of a PEC holder, there will be a need to ensure that the investigating officer is independent of the incident. In a small port where the harbour master is also the authorised pilot, it would be inappropriate for him to carry out the investigation.

12.7.3. It may be desirable to identify the need to engage external resources to carry out an investigation. This may be by contractual arrangements with an external contractor or by agreement with a (neighbouring) larger port which may have sufficient resources. It should be remembered that other bodies such as MAIB may rely upon investigations undertaken by harbour authorities.

12.8 PURPOSE OF MARINE INCIDENT INVESTIGATIONS

12.8.1. A harbour authority's Safety Management System should carry clear guidelines on the procedures to be adopted with respect to accident and incident investigation. Those guidelines should provide clear indicators to the authority's officers on how to determine, at an early stage, whether the purpose of the investigation is either for safety purposes or for enforcement purposes.

12.9 CONDUCT OF AN INVESTIGATION

12.9.1. Harbour authorities should establish and maintain procedures for a consistent approach to safety and environmental accidents, incidents and breaches of regulations. Such procedures should clearly establish the requirements for

- reporting;
- investigating;
- analysing; and
- documenting

such incidents and they should include provisions for reporting significant near misses (as defined in 12.2.1 above).

12.9.2. A reported incident should be investigated as soon as possible so that essential facts are not overlooked or the evidence destroyed by other activities. The initial stage of fact gathering will often take place under time and resource pressures. It is essential that as much factual detail about the accident is obtained as soon as possible.

12.9.3. Whatever the purpose of an investigation - i.e., is it to determine cause and to prevent recurrence or is it to determine if an offence has been committed ? - the investigation should be carried out in a robust and rigorous manner such that all possible aspects are covered.

12.9.4. Where it becomes appropriate to carry out an accident or incident investigation to determine if an offence has been committed, a harbour authority may need to initiate criminal proceedings, either in their own right or through the agency of a prosecuting authority such as the police, the MCA or the HSE. The involvement of these agencies will be determined, in part, by the statutory requirements for reporting accidents and incidents. Under these circumstances it may become necessary to determine which authority will take the lead, also known as primacy.

12.9.5. Not all investigations undertaken for enforcement will result in further action. If the regulator or prosecuting authority decides that it is not appropriate to continue with an investigation or that a prosecution is inappropriate, harbour authority may decide after conclusion of the investigation, that a written warning will be a sufficient response.

12.9.6. Alternatively, or additionally, it may become apparent that there is a need for some form of disciplinary action against a harbour authority employee. All harbour authorities should prepare, adopt and publish an enforcement manual detailing the port's policy and procedures for accident and incident investigation. The investigation should be carried out in an independent manner - as noted above, it would be inappropriate for the harbour master / duty pilot to carry out an investigation into his own incident.

12.9.7. The IMO adopted an Assembly Resolution A.849 (20) - CODE FOR THE INVESTIGATION OF MARINE CASUALTIES AND ACCIDENTS. The aim of this Code is "*to promote a common approach to the safety investigation of marine casualties and incidents.*"[13] The Annex to the Resolution provides the detail of the Code and the Appendix gives 'Guidelines to assist investigators in the implementation of the Code'.

12.10 PUBLISHING INFORMATION

12.10.1 Where a harbour authority determines that an Accident Investigation will be carried out to determine the cause of the accident or incident, with a view to preventing a recurrence of that accident or incident, it is important to ensure that appropriate results of the investigation are made widely available to the employees of the Authority as soon as possible. It may also be appropriate to make these results available to the public.

12.10.2. The causes of the accident and the recommendations and requirements for further accident prevention should be clearly identified. The harbour authority's Safety Management System should contain clear guidelines on how this information is disseminated and the measures to be adopted to ensure that the recommendations are adopted and implemented.

[13] Extracted from IMO Res. A.849(20), para. 1.2

12.10.3. Where a harbour authority determines that an Accident Investigation will be carried out to determine if an offence has been committed, it may be desirable to publish the findings with respect to cause at an early stage but the details with respect to possible breaches of legislation should not be published until any and all legal proceedings have taken place.

12.10.4. In order to promote best practice in the ports industry, it is also desirable to develop a mechanism by which accident and incident investigation reports are circulated throughout the industry. Where an investigation has been carried out to identify cause and to promote actions to prevent recurrence, the investigation report is not of value only to the commissioning harbour authority. It is quite probable that other harbour authorities will face, or will have faced, similar incidents and the recommendations of the report, therefore, have a wider value in the ports industry.

12.11 TRAINING

12.11.1 Accident and Incident Investigation requires a level of skills that will not generally be available to the majority of employees of a harbour authority. A harbour authority should consider who may be required to carry out an investigation and to ensure that appropriate and effective training programmes are available to those personnel.

12.11.2 It may be appropriate to ensure that this training reaches as wide an audience as possible and that it is not restricted to a small number of personnel. In the event of an accident or incident that requires investigation, if the training is limited, the trained personnel may not be available due to involvement in the incident or, perhaps, due to roster or leave commitments, for example.

12.11.3. Training programmes should be based around, but not limited to, the following:

1. PMSC
2. Guide to Good Practice.
3. The IMO Code for the Investigation of Marine Casualties and Incidents - A.849(20)
4. Amendments to the Code for the Investigation of Marine Casualties and Incidents (IMO Resolution A.849(20) - A.884(21)
5. MAIB Handbook
6. HSE Enforcement Guide

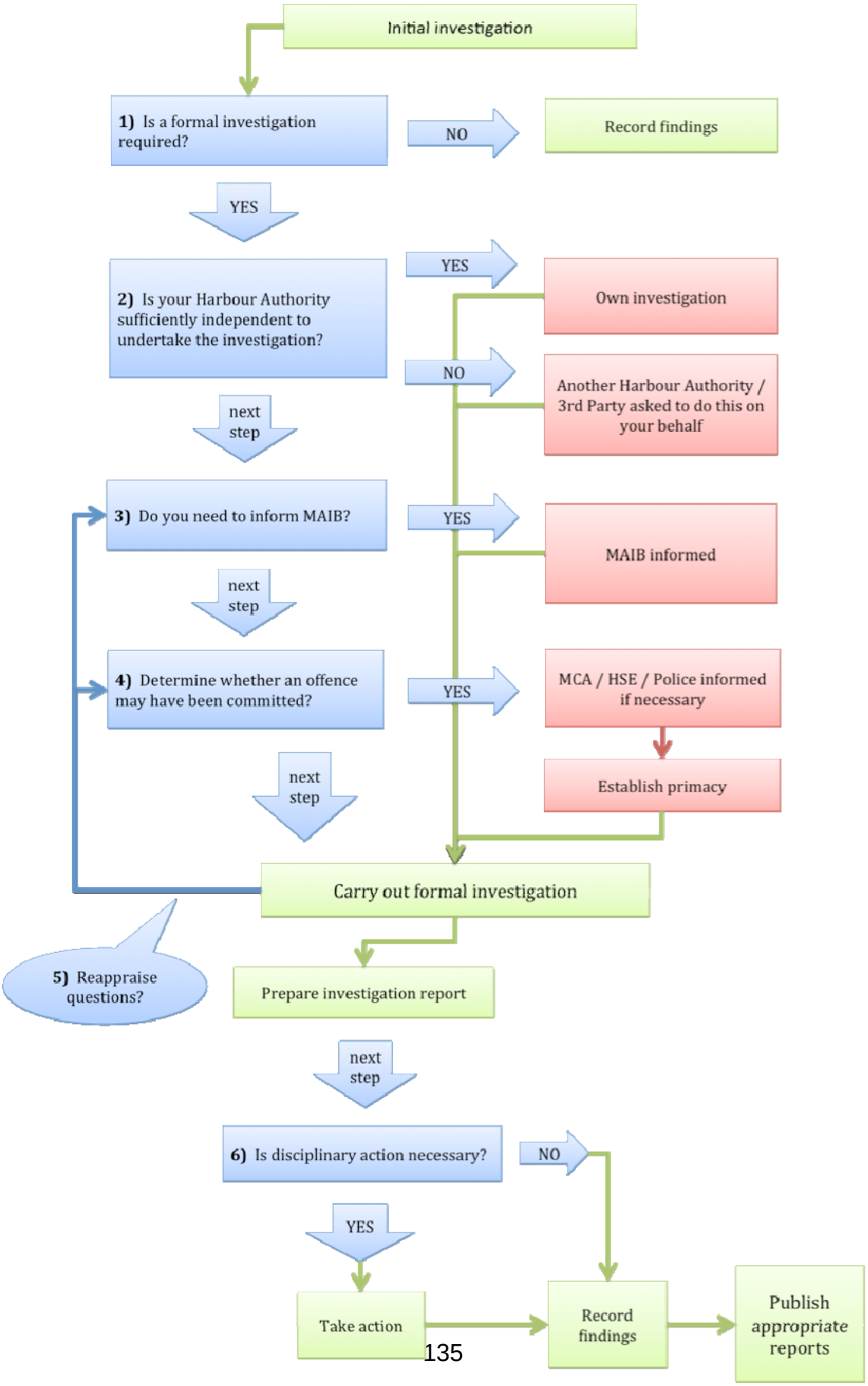
12.11.4. The **AIMS** of the course should be to provide harbour authorities' staff with a full understanding of their statutory duties and obligations to report and to investigate accidents and serious occurrences, as well providing them with an understanding of the processes involved in applying and enforcing those duties and obligations. The **OBJECTIVES** of the course should be that, at the end of the course, delegates will:

- be able to apply their understanding of their responsibilities and obligations to investigate accidents and to make appropriate recommendations to prevent or minimise future occurrences;

- have gained an insight into the most common accidents that have occurred, along with an understanding of their possible causes - the possible connection between human behaviour and the organisational culture of the company;
- understand how to interview witnesses;
- understand how to obtain evidence; and
- how to analyse that evidence to provide effective and achievable recommendations to prevent recurrence.

12.11.5.Consideration should be given to appropriate International and UK LEGISLATION, guidance provided by Flag States, Classification Societies and P&I Clubs with respect to RISK ASSESSMENTS and to ACCIDENT INVESTIGATION AND REPORTING. The course should include references to the harbour authority's SAFETY MANAGEMENT SYSTEM.

FLOWCHART


Initial investigation
1) Is a formal investigation required?
NO
Record findings
YES
2) Is your Harbour Authority sufficiently independent to undertake the investigation?
YES
Own investigation
NO
Another Harbour Authority / 3rd Party asked to do this on your behalf
next step
3) Do you need to inform MAIB?
YES
MAIB informed
next step
4) Determine whether an offence may have been committed?
YES
MCA / HSE / Police informed if necessary
Establish primacy
next step
Carry out formal investigation
5) Reappraise questions?
Prepare investigation report
next step
6) Is disciplinary action necessary?
NO
YES
Take action
Record findings
Publish appropriate reports

Annex A

Components of a Marine Safety Management System

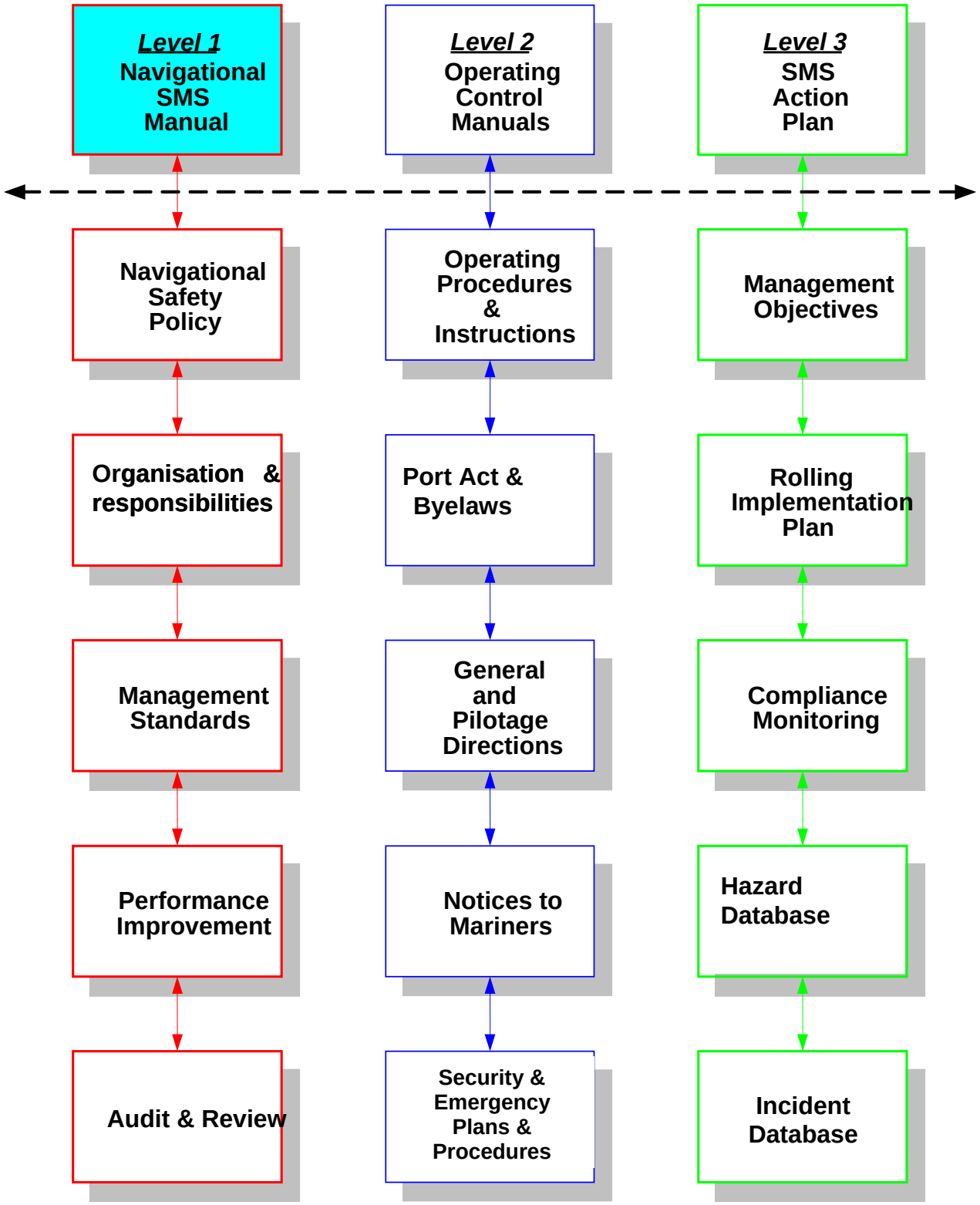


Figure 1

Overview of Navigational SMS components – based on Port of London Authority's SMS

SMS manual contents list – example based on Port of London Authority

CONTENTS

Annex C – Marine Delegation of Authority
Annex D – SMS Information Notes

ABP Port Marine Training Matrix

Notes:

- **Each Port is required to produce a local version of the following table to submit to the Marine Advisor for approval.** The table will include all of the port marine job types at the port and will identify all of the training modules required for the post.
- Each Port/Port Group is responsible for recording training and certification and meeting port marine employee training requirements.
- Off-job courses are indicated by © symbol. See references at the end of this Appendix for recommended provision level/providers.

E = Essential D = Desirable[1] S = Essential in Specific Cases STCW = STCW Certificate of Competency TBD = to be developed © = Off-Job Course	• LINESMAN • LOCKGATE MAN • BOATMAN • MARINE/PORT OPERATIVE • DECKHAND	• COXWAIN	• PILOT	• LOCKGATE FOREMAN • MARINE SUP/SUPT. • MARINE OFFICER • BERTHING MASTER	• VTS OFFICER • VTS ASSISTANT	• DEPUTY HM • DEPUTY DM • PIER MASTER • ADM • AHM	• HARBOUR MASTER • DOCK MASTER • MARINE OPERATIONS MANAGER
Port Marine Induction Module ©	E	E	E	E	E	E or TRAINER	E or TRAINER
VHF Operator ©	D	E or STCW	E or STCW	E or STCW	E or STCW	E or STCW	E or STCW
PPE (Donning and pre-ware safety checks)	E	E	E	E	E	E	E
Lifejackets (Donning and pre-ware safety checks)	E	E	E	E	E	E	E
Safe Systems of Work (Local)	E	E	E	E	E	E	E
Basic Sea Survival ©	D	E	E or STCW	D	D	D	D
Basic Ship Manoeuvring Theory – TBD	D	E	E or STCW	D or STCW	E or STCW	E or STCW	E or STCW
Manual Handling ©	E	E	E	E	E	E	E

[1] Generally likely to be of value in many cases, but not a requirement in all locations.

E = Essential D = Desirable[1] S = Essential in Specific Cases STCW = STCW Certificate of Competency TBD = to be developed © = Off-Job Course	• LINESMAN • LOCKGATE MAN • BOATMAN • MARINE/PORT OPERATIVE • DECKHAND	• COXWAIN	• PILOT	• LOCKGATE FOREMAN • MARINE SUP/SUPT. • MARINE OFFICER • BERTHING MASTER	• VTS OFFICER • VTS ASSISTANT	• DEPUTY HM • DEPUTY DM • PIER MASTER • ADM • AHM	• HARBOUR MASTER • DOCK MASTER • MARINE OPERATIONS MANAGER
Oil Spill Level 2P ©	D	E	D	E	D		
Oil Spill Level 4P ©				D		E	E
Oil Spill Level 5P ©						S	S
STCW Class 1 (or equivalent)						D	D
STCW Cert of Competency, N Institute HM1 or equiv ©			D	D	D	E	E
Training for authorisation as a Pilot			E				
Basic Hydrographic (Theory) – TBD	D	D	E	E or STCW	E or STCW	E or STCW	E or STCW
Basic Conservancy (Theory) – TBD	D	D	E	E or STCW	E or STCW	E or STCW	E or STCW
Basic Dredging (Theory) – TBD	D	D		D or STCW	D or STCW	E or STCW	E or STCW
NVQ2 Introductory Cert in Supervision (or higher) ©		D		E	D	D	D
Management/Leadership Training NVQ3 (or higher) ©						D	E
ABP Environmental Induction (new starters) ©	E	E	E	E	E	E	E
Managing Safely ©				E	D	E	E

E = Essential D = Desirable[1] S = Essential in Specific Cases STCW = STCW Certificate of Competency TBD = to be developed © = Off-Job Course	• LINESMAN • LOCKGATE MAN • BOATMAN • MARINE/PORT OPERATIVE • DECKHAND	• COXWAIN	• PILOT	• LOCKGATE FOREMAN • MARINE SUP/SUPT. • MARINE OFFICER • BERTHING MASTER	• VTS OFFICER • VTS ASSISTANT	• DEPUTY HM • DEPUTY DM • PIER MASTER • ADM • AHM	• HARBOUR MASTER • DOCK MASTER • MARINE OPERATIONS MANAGER
Working Safely or CHiP[2] ©	E	E	E		E		
Restricted GMDSS Certificate ©			D	D	D	D	D
Port Facility Security Officer ©						S	S
Explosives Security Officer ©						S	S
Radiation Protection Supervisor ©						S	S
IMDG Code ©					D	S	S
Emergency Management ©						D	E
VTS V/103 Operator ©					E		
Media Training ©							S
Presentation Skills ©						D	D
Control of Contractors ©				D		E	E
Risk Assessment and Safe Systems of Work ©	D	D	D	D	D	E	E
Accident Investigation © - TBD				D		E	E

[2] Requirement for Working Safely or CHiP is superseded if the employee is in certification for Managing Safely

E = Essential D = Desirable[1] S = Essential in Specific Cases STCW = STCW Certificate of Competency TBD = to be developed © = Off-Job Course	• LINESMAN • LOCKGATE MAN • BOATMAN • MARINE/PORT OPERATIVE • DECKHAND	• COXWAIN	• PILOT	• LOCKGATE FOREMAN • MARINE SUP/SUPT. • MARINE OFFICER • BERTHING MASTER	• VTS OFFICER • VTS ASSISTANT	• DEPUTY HM • DEPUTY DM • PIER MASTER • ADM • AHM	• HARBOUR MASTER • DOCK MASTER • MARINE OPERATIONS MANAGER
Financial Awareness ©						S	S
Membership of UKHMA CPD program						D	E
General Security Induction/ Awareness © – TBD	E	E	E	E	E	E	E
Detention and Prosecution ©						D	E
ABP Harbour Master's Workshop - TBD ©						D	E
ABP Manager's Toolkit ©			D	D	D	E	E
Permits to Work (Non-Electrical) ©		D	D	E		E	E
Local Port Emergency Plan (briefing to employees)	E	E	E	E	E	E	E
Drug and Alcohol Policy Training ©			D	E		E	E
First Aid ©	S	S	S	S	S	S	S
Port Waste Management Training ©						S	S
Further Task Specific Training appropriate job[3]	E	E	E	E	E	E	E

[3] Additional needs to be assessed, met and recorded, taking into account: employees' duties, commercial requirements, ABP policies and statutory obligations

Annex C

Port Marine Training, Assessment and Certification Record Sheet"

Candidate Name: _____

General Port Marine:

Element	**GENERAL PORT MARINE** In accordance with operating instructions/SSOW and commercial considerations, the candidate:	Trainer Signature	Date	Assessor Signature	Date
1.1	Can describe local Port Marine Management Structure and how it relates to ABP Group Management structure				
1.2	Has seen and read local Port Marine Operations Manual				
1.3	Can identify the main parts of the Dock(s)/Berth(s) and can describe the functions of the main working areas				
1.4	Can describe the layout of the lock(s) at the port (where applicable)				
1.5	Can describe the layout of the lock(s) sluices at the port (where applicable)				
1.6	Can describe the basic principles of lock operation (where applicable)				
1.7	Can describe the basic ship types, layouts and propulsion systems of main vessel groups using the port				
1.8	Can explain and correctly use relevant nautical terms and parts of a ship i.e. Port Quarter/Starboard Quarter				
1.9	Can describe the tidal patterns and water conditions in the harbour/surrounding area				
1.10	Can describe the effect of tidal patterns/ water conditions on vessel operations and port safety				
1.11	Can give the names of different ropes and describe the function they perform				
1.12	Can describe the risks associated with mooring ropes/wires and warning indications of breaking				
1.13	Has seen and read local SSOW/RA, can explain their purpose and where and when they should be referred to				
1.14	Has received a set of current Working Instructions for tasks relating to their duties				
1.15	Can explain the process for reporting of potentially dangerous situations/near misses/unsafe practices				
1.16	Can identify the general hazards of their working areas (e.g. moving vehicles,				

Element	**GENERAL PORT MARINE** In accordance with operating instructions/SSOW and commercial considerations, the candidate:	Trainer Signature	Date	Assessor Signature	Date
	overhead cranes, slips/trips etc)				
1.17	Can identify specialised hazards associated with particular work areas (e.g. chemical, petroleum jetties, explosives)				
1.18	Can point to/describe the locations of fire fighting equipment in the main work areas				
1.19	Can describe the types of fire for which each piece of fire equipment is suitable				
1.20	Can point to/describe the locations of life saving equipment (life buoys, dock ladders) on quays, lock and dock jetties				
1.21	Can describe the main categories of potential marine emergencies and explain the appropriate action in the event of each				
1.22	Can point to/describe the locations of First Aid equipment and explain how to contact a First Aider				
1.23	Can point to/describe the location of oil spill equipment locker and explain what equipment is stored there				
1.24	Communicated using a VHF radio				
1.25	Took a reading and recorded dock water levels				
1.26	Accurately read draughts				
1.27	Reported a fault/damage, or described the process for doing so				
1.28	Completed a damage form and obtained a witness statement or described the process for doing so				
1.29	Marked damage or described the process for doing so				
1.30	Correctly issued a Permit-to-Work				
1.31	Correctly issued a Permit-to-Dive				

MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

For Official Use
Ref

Incident Report Form

The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 require Masters, Skippers and Owners of vessels to report accidents. In addition, this duty to report accidents to the MAIB now extends to harbour authorities, inland waterway authorities, and the Maritime and Coastguard Agency. The reporting of hazardous incidents is also encouraged.

The terms are explained in the Regulations and in the Merchant Shipping Notice on accident reporting (MGN 289) both of which are available at www.maib.gov.uk

One form should be completed for each incident.

Please return the completed form to:

Marine Accident Investigation Branch
Mountbatten House,
Grosvenor Square,
Southampton,
SO15 2JU,
United Kingdom

Completing and signing this form does not constitute an admission of liability of any kind, either by the person making the report or any other person.

Section A

Date of Incident:

Time of incident *(UTC or Local time?)*:

Name of Vessel:

Location of incident *(e.g. Lat/Long, name of port or other geographic reference)*:

Natural Light		Visibility		Sea State		Wind Force (Beaufort)	
Light		Good (>5nm)		Sheltered waters		Force 0–3	
Semi dark		Moderate (2–5nm)		Calm		Force 4–6	
Dark		Poor (1000m–2nm)		Moderate		Force 7–9	
Unknown		Fog – if <1000m please specify:		Rough		Force 10–12	
				Other		> Force 12	
Did the incident occur within the operational limits of a port? ☐						Wind Direction:	

Consequences of Incident *(tick as many boxes as apply)*:

☐ Fatal Injury ☐ Non-Fatal Injury ☐ No injury or damage

☐ Vessel damaged ☐ Vessel lost or abandoned

☐ Pollution ☐ No pollution

Section B: Vessel Details

IMO Number (if applicable):		Call sign:	
Fishing vessel port letters and numbers *(if applicable)*:		RSS/SSR number:	
Length of vessel *(State whether LOA, Registered length)*:		Year of build *(if known)*:	
If applicable, type of fishing vessel:		Hull material:	
Number of crew onboard:		If applicable, number of passengers onboard:	
Date and time of departure from last port:		Voyage from: to:	

If applicable, extent of damage sustained to your vessel/pollution caused:

Name & address of manager or owner: Tel. No: Email:	If applicable, name & port of registry or flag of **any other vessel** involved:

Section C: Details of person(s) killed, missing or injured

(This section should be completed if any person has been killed or injured)

How many person(s) suffered injuries preventing performance of normal full range of duties for 3 days or more after the day of the accident?		How many person(s) killed or missing?	

Position (e.g. rank, rating, passenger)	Gender (M/F)	Age	What was injured? (e.g. left leg, finger)	Kind of injury (or enter "fatal" or "missing" if appropriate)	Place on vessel where injury sustained	Did injury mean 3 days or more off work or greater than 24 hrs in hospital? (Y/N)	On duty (Y/N)*	Hours on duty prior to accident*	Duration of last off duty period*	Days since last leave (days at sea for FVs)*

If more than 5 persons suffered reportable injuries please continue on page 4

* For operational staff only

Section D

Please give a brief description of the sequence of events leading to the incident.

(Please continue on page 4 or a separate sheet if required)

Section E

1. Please state why you think the incident happened.

2. Has any action been recommended by you or anyone else as a result of this accident and if so, what and by whom?

3. Has any action been taken and if so what, by whom and when?

(Please continue on page 4 or a separate sheet if required)

Section F

Person completing form	To be completed by ship's safety officer (if applicable)	Designated person (if applicable)
Name:	Name:	Name and address:
Position:	Signed:	
Signature:	Date:	
Date:		Tel No: Email:

Section G

For completion by **Safety Representative** *(if applicable)*

If the incident involved a reportable personal accident and there is an elected **Safety Representative** on board the vessel, they must be shown the completed report and allowed to write in this section any comments which they may wish to make. If the injured persons are represented by different Safety Representatives, each may make additional comments if desired in the space below but in any event, they should all sign the form

Signed

Safety Representative

Name

Date

This space may be used as an extension of Sections C, D, E and G. **Please state clearly which sections are being expanded**

If there is insufficient space in any part of this form for your answers or comments, please use a blank sheet of paper as a continuation sheet and fasten it securely to this form. Please indicate in the box below the number of sheets used.

Number of continuation sheets

[i] Section 53 of the Harbours, Docks and Piers Clauses Act 1847

[ii] Section 7(5) of the Pilotage Act 1987