



Broads Authority

The Broads - a member of the
National Park family

**PORT MARINE SAFETY CODE
SAFETY MANAGEMENT SYSTEM**

REPORT NUMBER 31006/E0018

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DATE April 2007

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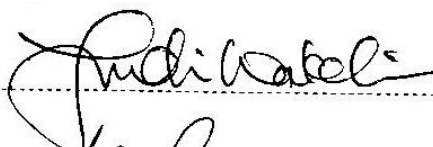
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REPORT AUTHORISATION

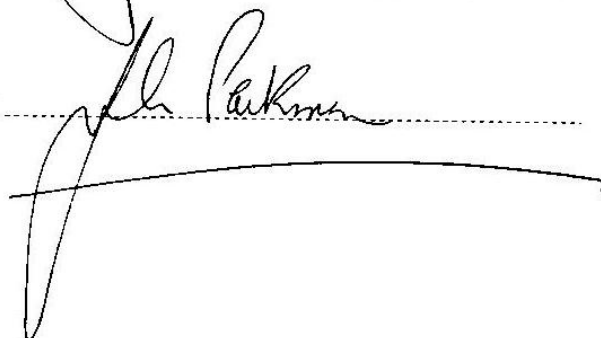
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EXECUTIVE SUMMARY

The Port Marine Safety Code (PMSC) was published by the Government in March 2000. The Code establishes an agreed national standard for port marine safety, and formalises the duties and responsibilities for safety and environmental protection within UK ports and harbours. The Code is applicable to all harbour authorities, and compliance is not optional.

The Code requires that all harbour authorities base their powers, policies, plans and procedures on a Formal Safety Assessment (FSA), and that they maintain a Safety Management System to control the risks that are identified to a level which is as low as reasonably practicable (ALARP).

The Broads Authority (Pilotage Powers) Order 1991 confirms that the Broads Authority is a "Competent Harbour Authority" as defined the Pilotage Act 1987, and as such the Authority falls under the requirements of the Port Marine Safety Code.

Unlike a port, the Broads Authority is designated a "Special Statutory Authority", affording the same level of protection as National Park status, but with tailor-made legislation relating to navigation. The Authority therefore balances the navigational duties and powers of a harbour authority with the conservation and recreational duties and powers of a National Park authority. These duties and powers are principally set out in the Norfolk And Suffolk Broads Act 1988.

This Safety Management System (SMS) documents the arrangements put in place by the Broads Authority to ensure, as far as is reasonably practicable, the safety of those working on, visiting or using the Broads.

The SMS makes recommendations for further development, which will enable the system to be strengthened. It also lists areas where there is currently a non-compliance with the Code. These are:

- There is at present no formal training / testing requirement for the Mud Pilot, who is considered to be qualified by experience. To comply with PMSC 2.5B, such a regime is required, if the Authority is to continue to employ its own Pilot.

However the Broads Authority is committed to the further development of the Safety Management System and proposes to implement all shortfalls and recommendations with the system by mid 2007.

The Broads Authority would like to acknowledge BMT Isis Ltd, 210 Lower Bristol Road, Bath, BA2 3DQ for their work on the initial preparation and subsequent formal issue of this document.

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1 INTRODUCTION

1.1 Background

- 1.1.1 The Broads is Britain's largest nationally protected wetlands, comprising rivers, broads, marshes, fens and carr woodland. There are over 200km of navigable waterways and over 25% of the area has a European designation, Special Area of Conservation or Special Protection Area, incorporating many National and Local Nature Reserves and Sites of Special Scientific Interest. The Broads is listed under the Ramsar Convention on Wetlands of International Importance, and are home to a diverse variety of rare birds, animals and plants.
- 1.1.2 The Broads Authority ("The Authority") was established as a non-statutory body in 1978 following a report by the Nature Conservancy Council regarding degradation of the Broads.
- 1.1.3 The Broads Authority was formalised as a statutory authority by the Norfolk and Suffolk Broads Act 1988 (Reference 1), ("The Broads Act"), and began operating as such in 1989, for the purpose of conserving and enhancing the natural beauty of the Broads, promoting the enjoyment of the Broads by the public, and protecting the interests of navigation.
- 1.1.4 The Authority is designated a "Special Statutory Authority", affording the same level of protection as National Park status, but with tailor-made legislation relating to navigation. The Authority therefore balances the duties and powers of a harbour authority with those of a National Park authority.
- 1.1.5 The Authority is funded by central government through National Park Grant, as well as tolls paid by users of the Broads.

1.2 The Port Marine Safety Code

PORT
MARINE
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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.

Paragraph 1.2 A

- 1.2.1 The Port Marine Safety Code (Reference 2) was published by the Government in March 2000. The Code establishes an agreed national standard for port marine safety, and formalises the duties and responsibilities for safety and environmental protection within UK ports and harbours. The Code requires that all harbour authorities base their powers, policies, plans and procedures on a Formal Safety Assessment (FSA), and that they maintain a Safety Management System to control the risks that are identified to a level which is as low as reasonably practicable (ALARP).

1.2.2 The Port Marine Safety Code is supplemented by a Guide to Good Practice (Reference 3) providing further supporting information and advice.

1.3 Purpose and Scope of this Safety Management System

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Every harbour authority has a statutory duty to manage safety, and should have a safety management system for marine operations in its waters, developed after a formal risk assessment.

Paragraph 2.2.1 A

1.3.1 The purpose of this Safety Management System (SMS) is to document the arrangements put in place by the Broads Authority to ensure, as far as reasonably practicable, the safety of those using or working on the Broads.

1.3.2 The Broads Authority, as Duty Holder for the Broads, has developed this SMS in accordance with the requirements of the Port Marine Safety Code (Reference 2), taking cognisance of the advice in the Guide to Good Practice (Reference 3). Noting the status of the Authority as a Special Statutory Authority, a pragmatic approach has been taken to the application of the Port Marine Safety Code.

1.3.3 As the SMS develops, a wide variety of stakeholders will be consulted with the aim of achieving a SMS, which is practical, workable and supported.

1.3.4 The Port Marine Safety Code relates to "marine operations", which are defined in paragraph 7 of the introduction to the Code as "those which facilitate the safe use of the harbour by vessels." The code does not apply to areas already regulated by another body, such as the Health and Safety Executive (HSE), or the Maritime and Coastguard Agency (MCA).

1.3.5 As such, this SMS relates to marine and navigational safety. It does not address safety on land (except insofar as this has a direct link with marine operations - e.g. embarking from a mooring), nor health & safety issues for Broads Authority premises.

1.3.6 The SMS covers members of the public using hired or privately-owned craft, as well as Broads Authority employees when working on the water.

1.3.7 In this SMS, the following convention applies to the text of the document:

- a. Blue text in a blue box represents a direct quote from the Port Marine Safety Code;
- b. *Red italicised* text indicates a current non-compliance with the Code;

- c. **Orange bold** text indicates a recommendation for future development or consideration.

1.4 Interfaces

- 1.4.1 The Broads Authority's area of jurisdiction has boundaries with two other authorities, as described below. The details of each boundary are discussed in section 3.2.
 - a. **Great Yarmouth Port Authority:** The Safety Management Manual of the Great Yarmouth Port Authority (Reference 4) describes their response to the PMSC. It should be noted that the Manual does not define the geographical limits of Great Yarmouth Port Authority's jurisdiction, or identify an interface with the Broads Authority;
 - b. **Associated British Ports Lowestoft:** The Port Marine Safety Code Policy and Plans (Reference 5) describes their response to the PMSC. It should be noted that it has not been possible to obtain a copy of this document during the development of the SMS.

1.5 Legislative Duties and Powers of the Broads Authority

- 1.5.1 The duties and powers of the Broads Authority are derived principally from the provisions of two Acts of Parliament. An additional Act is planned, and is currently in the form of a Bill.

Norfolk and Suffolk Broads Act 1988

- 1.5.2 The Norfolk and Suffolk Broads Act 1988 (c.4) (Reference 1) established the Broads Authority as the statutory harbour and navigation authority for the navigation area, as well as the planning authority for the area. It gave the Broads Authority the duty to manage the Broads for the purpose of:
 - a. Conserving and enhancing the natural beauty of the Broads;
 - b. Promoting the enjoyment of the Broads by the public;
 - c. Protecting the interests of navigation.
- 1.5.3 It also gives the Authority power to "do anything which is necessary or expedient for the purpose of enabling it to carry out its functions." Specifically, the Authority have the power to raise tolls for the use of the Broads by members of the public and by commercial shipping. The Authority also has the power to raise Byelaws, subject to a process of consultation and parliamentary approval. The Act does not give the Authority power to exclude a boat or person from the public waterways, providing their toll has been paid.

The Act also defined the composition of the Broads Authority, at the time this consisted of 35 members. This was later revised by the Alteration of Constitution of the Broads Authority Order 2005 (Reference 6), reducing membership from 35 to 21, in accordance with Department for Environment, Food and Rural Affairs (Defra) recommendations. The current composition of the Authority is described in Section 2.1.

Pilotage Act 1987

- 1.5.4 The Pilotage Act 1987 (Reference 7) describes the duties and powers of a "competent harbour authority" with respect to the provision and authorisation of pilots. The Act states that a competent harbour authority is required to keep under consideration what pilotage services should be provided to ensure the safety of ships navigating in the harbour, and whether such pilotage should be made compulsory.
- 1.5.5 The Broads Authority (Pilotage Powers) Order 1991 (Reference 8) confirms the Broads Authority's status as a "competent harbour authority".

The Broads Bill

- 1.5.6 A Bill is currently undergoing public consultation and additional powers sought in the Broads Bill include the power to:
- a. Give general directions to vessels;
 - b. Give special directions to particular vessels;
 - c. Impose a compulsory third-party insurance requirement on vessels registered with the Authority;
 - d. Impose construction and equipment standards on vessels for the purposes of safety management;
 - e. Regulate and give directions to water skiers;
 - f. Take responsibility for the Breydon Water and Lower Bure areas, currently the responsibility of Great Yarmouth Port Authority.

1.6 Other Relevant Legislation

Natural Environment and Rural Communities Act

- 1.6.1 The Natural Environment and Rural Communities (NERC) Act 2006 (Reference 9) establishes a body known as Natural England, to replace the Countryside Agency and English Nature.

- 1.6.2 It also establishes the Inland Waterways Advisory Council, with the purpose of “providing the Secretary of State and navigation authorities with such advice as appears to the Council appropriate about matters relevant to inland waterways in England and Wales.”
- 1.6.3 The Act modifies the first two purposes of the Broads Authority as follows (the modification is in *italics*):
- a. Conserving and enhancing the natural beauty, *wildlife and cultural heritage* of the Broads;
 - b. Promoting *opportunities for the understanding and enjoyment of the special qualities of the* Broads by the public;

Health and Safety at Work Act

- 1.6.4 Under the Health and Safety at Work Act 1974 (Reference 10), employers have a duty to ensure, so far as is reasonably practicable, the health and safety of its workers and other persons who may be affected by the activities of the Authority.
- 1.6.5 In addition, the Management of Health and Safety at Work Regulations (1999) (Reference 11) require every employer to make a suitable and sufficient assessment of all the risks to the health and safety of workers and others arising at or from a work activity.

Byelaws

- 1.6.6 The Broads Act gives the Broads Authority the power to make Byelaws in respect of areas which are owned by the Authority, or to which the general public have a right of access. The Authority is required to obtain the approval of the Secretary of State in order to make Byelaws, and must consult with the Countryside Agency for Byelaws relating to the use of land.
- 1.6.7 Four sets of Byelaws have been made, covering Navigation, Vessel Registration, Vessel Dimensions and Speed Limits. A fifth, formalising the National Boat Safety Scheme have been submitted to the Department for Transport. These are discussed in greater detail in Section 6.3.
- 1.6.8 A byelaw was made by the East Suffolk and Norfolk River Authority in 1967 relating to control of pollution in the Broads by sanitary appliances on boats. In 1989, with the formation of the Broads Authority and the establishment of the Water Act, the continuing authority of this byelaw was confirmed by a Statutory Instrument (Reference 12).

1.7 Navigation Safety Policy

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Each Harbour Authority should make a clear published commitment to the standard of marine safety required to comply with the Code.

Paragraph 1.5.1 B

- 1.7.1 The Broads Authority has developed a Navigation Safety Policy outlining the steps the Authority will take in compliance with the Code. The policy is stated in Figure 1-1 overleaf.
- 1.7.2 The Broads Authority has published the Navigation Safety Policy on the Authority's Website.

Broads Authority Navigation Safety Policy

As part of its commitment to facilitating the safe navigation and operation of vessels within the Broads, the Broads Authority has developed a Navigation Safety Policy. It is the Broads Authority policy that it shall:

- a. Develop and maintain an effective Safety Management System to enable the Broads Authority to undertake and regulate marine operations in a way that safeguards the Broads, its user, the public and the environment;
- b. Use risk assessment techniques to identify hazards and risks within the Broads and put in place suitable risk control measures to ensure that the risks identified are As Low As Reasonably Practicable, and that the appropriate emergency plans are in place and well practiced;
- c. Monitor and manage the navigation of vessels within the Broads limits;
- d. Consult widely with the employees, Broads users and other relevant stakeholders in respect of navigational safety issues;
- e. Ensure that an efficient, safe and appropriate level of Pilotage is available in accordance with the Pilotage Act 1987;
- f. Undertake hydrographical surveys and maintenance dredging to ensure that the hydrographic regime is protected;
- g. Place and maintain navigational marks where they will be of best advantage to vessels;
- h. Disseminate any relevant navigational safety information to Broads users;
- i. Regularly review the effectiveness of the Broads Authority legal powers, byelaws and directions in respect of navigational safety;
- j. Evaluate the safety performance of the Broads Authority through reporting systems contained within the Safety Management System;
- k. Employ suitably qualified personnel and provide the necessary training to ensure that they are competent within the roles they are required to perform, and ensure sufficient resources are available to implement procedures and systems effectively;
- l. Ensure the craft used within the Broads Authority have the required certification and are fit for the purpose, and the crew are appropriately trained and qualified for the tasks they are likely to perform.

This policy will be reviewed on an annual basis with due consideration given to any changes to the operating environment, the organisation and legislation.

Figure 1-1: Navigation Safety Policy

2 ROLES AND RESPONSIBILITIES

2.1 The Broads Authority

2.1.1 The Broads Authority is composed of 21 appointed Members, in accordance with the Broads Act Order 2005 (Reference 6), including representatives from local councils and Defra. The allocation of members is shown in Table 2-1 below.

2.1.2 One Member is nominated as the Chair, and he is supported by a vice-chair. Collectively and individually, the Board has responsibility as “**Duty Holder**” as defined by the Port Marine Safety Code.

2.1.3 Although the Duty Holders may (and indeed do) delegate the operation of the harbour, including implementation of the SMS, to appropriate professional personnel, they may not delegate or abdicate their accountability for marine safety under the Port Marine Safety Code.

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Each harbour authority is accountable for managing operations within the port safely and efficiently, and its board members should hold themselves responsible for ensuring that it does so. Members are collectively and individually responsible for the proper exercise of their Authority's legal duties. *Paragraph 1.5.1 A and 1.5.3*

Body to be represented	Members
Defra	10
Norfolk County Council	2
North Norfolk District Council	1
Waveney District Council	1
South Norfolk Council	1
Broadland District Council	1
Norwich City	1
Suffolk County Council	1
Great Yarmouth Borough Council	1
Appointed from Navigation Committee	2

Table 2-1: Composition of Broads Authority

2.1.4 Members also sit on one or more of three Committees, which report directly to the Broads Authority. See section 2.4 for more details of the Committees.

Committee	Authority Members	Appointed Members
Navigation	5	8
Planning	10	0
Standards	2	3

Table 2-2: Membership of Committees

2.1.5 The Navigation Committee gives advice on waterways management and navigation issues, including safety. The eight appointed members represent relevant interests such as hire boat owners, private owners and passenger boat owners.

2.1.6 The relationship between these committees, and other groups and fora, is shown in Figure 2-1 below.

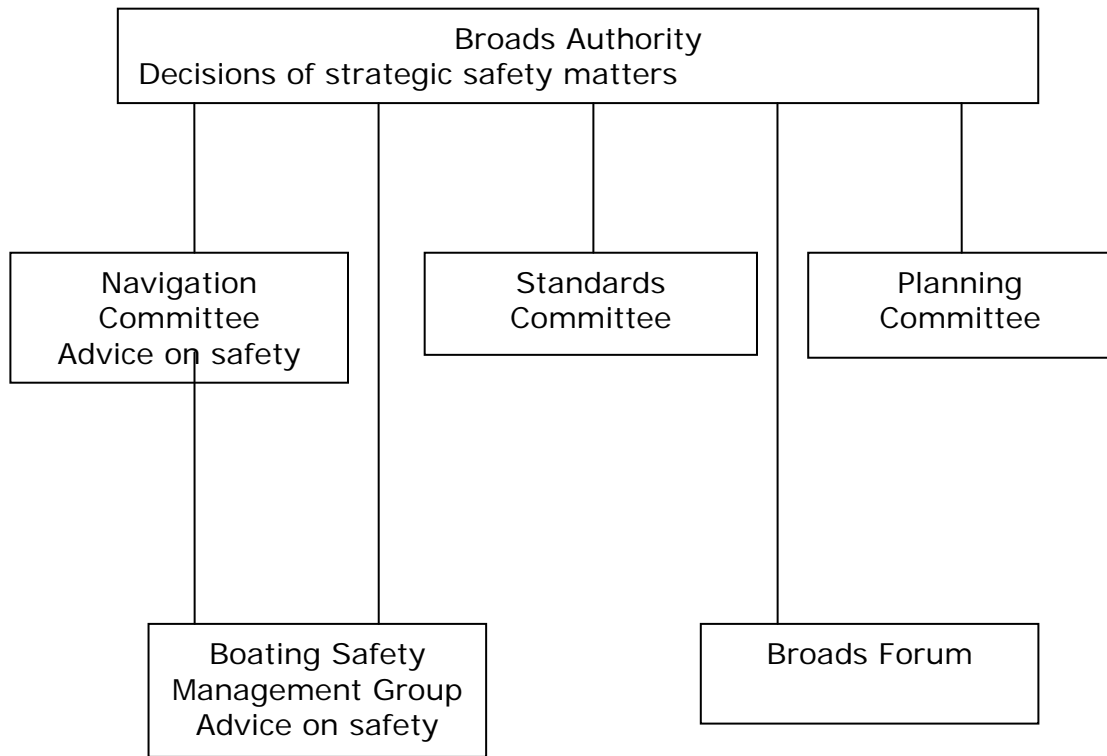


Figure 2-1: Broads Authority Committee Structure

2.2 Executive Structure

- 2.2.1 The Chief Executive (CE) has overall responsibility for operational matters following the strategic direction set by the Members of the Broads Authority. The CE is supported by four directors, and together with the Conservation Manager comprise the Management Team.
- 2.2.2 The Management Team is shown in shown in figure 2.2 below.

2.3 The Director of Waterways

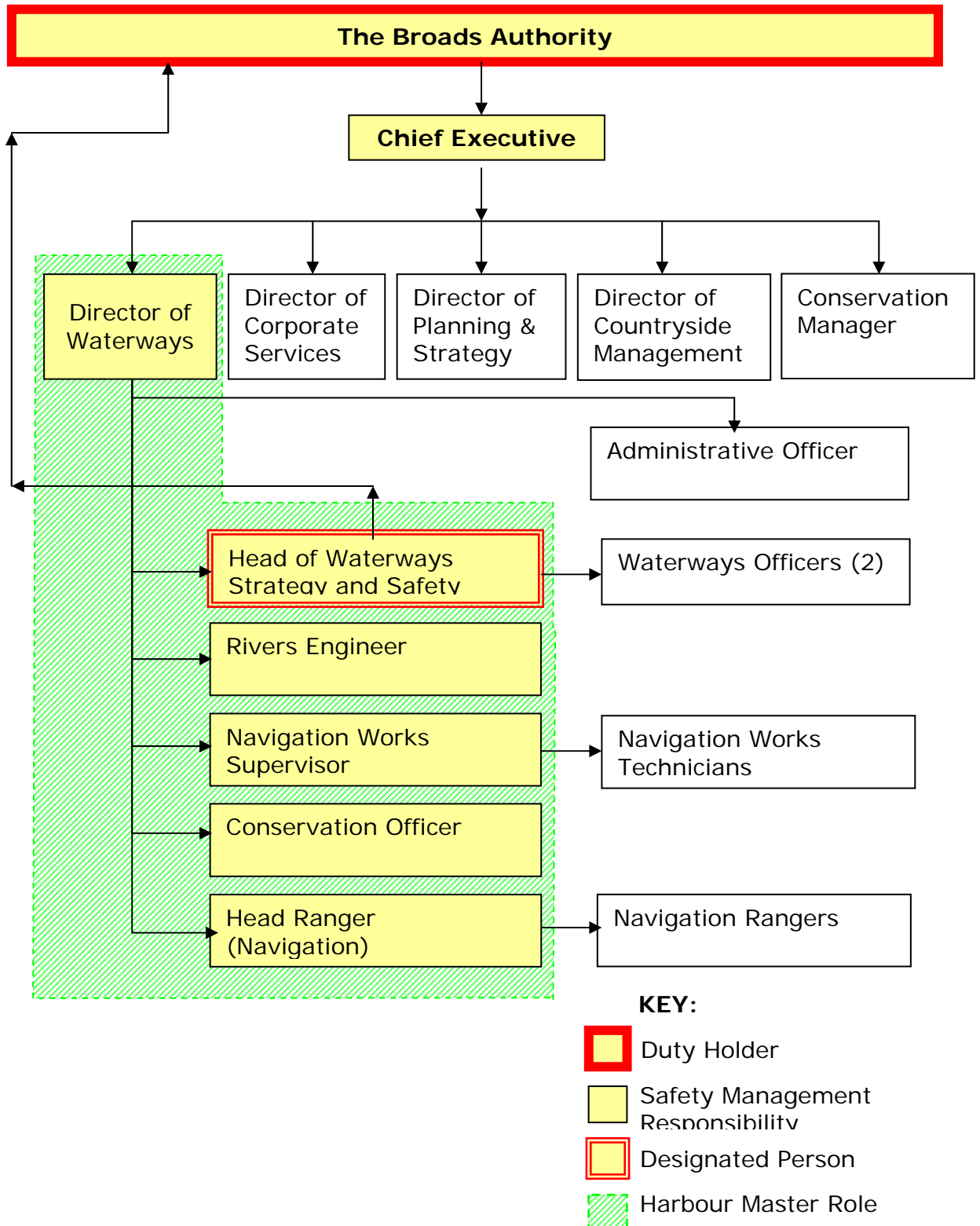
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Harbour Authorities must have a “**designated person**” to provide independent assurance about the operation of its marine safety management systems, who has direct access to the Board.

Paragraph 1.5.1 A

- 2.3.1 The Director of Waterways has responsibility for navigational safety across the Broads. The Director is supported by the Head of Waterways Strategy and Safety and the Navigation Officer appointed as required by the Broads Act Part 2 Section 10(7), whose functions are set out in Schedule 5 Part 2 Sections 17, 18 and 19.
- 2.3.2 The Chief Executive has nominated the Head of Waterways Strategy and Safety to act as the “**Designated Person**” as defined by the Port Marine Safety Code. This person is responsible for managing safety in accordance with the SMS, and providing assurance to the members (as Duty Holder), via the Boating Safety Management Group, that the SMS is working effectively. The nomination as Designated Person is formalised in the post holders Job Description (see section 2.4). The Head of Waterways strategy and Safety is supported by two Waterways Officers.
- 2.3.3 The Director of Waterways is also responsible for the Navigation Works team, Navigation Rangers, the Conservation Officer and the Rivers Engineer, all of whom have an impact on safety. The structure of the section is shown in figure 2-2 below.

**Figure 2-2: Management Team Structure and Waterways
Directorate**



2.4 Job Descriptions

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Executive and operational responsibilities for marine safety must be clearly assigned, and those to whom they are entrusted must be held accountable for their performance.

Paragraph 1.5.1 D

2.4.1 The following paragraphs provide the safety-related aspects of the job descriptions of the personnel defined above, including allocation of responsibilities under the Port Marine Safety Code.

2.4.2 Comments have been added where necessary, [*bracketed and in italics*] to provide clarification. Such comments do not form part of the job descriptions.

Director of Waterways

- a. To be responsible for the strategic planning, management and integrated development of the waterways, actively working with private users and commercial concerns to enhance their sustainable use and to ensure that their use is as safe as is reasonably possible;
- b. **To be responsible for the development and regular audit of a Safety Management System for the Broads, pursuant to the Port Marine Safety Code;** and to be responsible for the development and regular review of an Oil Spill Contingency Plan for the Broads;
- c. To manage Waterways staff for the good management of the waterways, in particular safety matters and the enforcement of byelaws;
- d. To develop and manage the Authority's river works programme, including formulation of the Navigation budget, to ensure that the Navigation area is adequately and safely maintained.

Head of Waterways Strategy and Safety

- a. To support the Director of Waterways in the strategic planning and development of the waterways in the Broads, working with private users and commercial concerns to ensure sustainable and safe use as far as is reasonably practicable;
- b. **To undertake the role of "Designated Person" with responsibility for the development and regular audit of a Safety Management System for the Broads, pursuant to the Port Marine Safety Code;**

- c. To be responsible for the development and regular review of an Oil Spill Contingency Plan for the Broads including involvement in the deployment and operation of oil spill clean-up equipment and materials;
- d. To be responsible for the introduction of the National Boat Safety Scheme appropriate to the Broads which includes providing advice and assistance to interested parties concerning technical and interpretation enquiries, and as qualified boat safety examiner responsible for training and support of staff engaged in licensing and enforcement;
- e. To support the Director of Waterways in the development of integrated and holistic policies for the management of the Broads and its water based recreational activities, and prepare practical guidance as appropriate;
- f. To investigate, report and, where appropriate, make recommendations to the Authority on incidents in the Broads which relate to boating safety, including fires, explosions, personal injuries or accidents on or around boats, serious navigational incidents and drowning;
- g. To prepare the Authority's response to consultation papers from Government on navigation and boat safety;
- h. To liaise with other organisations/individuals concerned with the use of the waterways, particularly in connection with technical, operational and general safety matters, and represent the Authority as appropriate at local and national level;
- i. To be aware of current and evolving health and safety waterways and environment legislation, regulations and best practice and ensure that the Authority fully and properly discharges its responsibilities in the context of its marine operations and its regulatory functions;
- j. To research, report developments in, and promote environmentally friendly and sustainable boating;
- k. As appropriate, to be included in the emergency call-out list provided to police, coastguard and emergency services and, in the event of an incident, to attend and help mobilise the Authority's response.

Head Ranger (Navigation)

- a. To ensure the safe, orderly and environmentally sustainable use of the Broads waterways;
- b. To ensure that proper practices of safe navigation are observed and that the Authority's byelaws and navigational regulations are observed and where appropriate enforced;
- c. To provide on behalf of the Authority leadership and the assumption of responsibility in incident or emergency situations including oil spill incidents;
- d. To provide an out of hours first contact with the emergency services and the Environment Agency;
- e. To undertake the duties and responsibilities of Navigation Officer as defined in the Broads Act 1988. *[Note: This consists of the ability to give directions to specific vessels in relation to navigation, mooring, loading/unloading, etc. Broads Act, Schedule 5, Paragraph 18];*
- f. To assume the role of designated person under the OPRC regulations and to work with the Head of Waterways strategy to develop and review the Authority Oil Spill Contingency Plan. *[Note: This is not to be confused with the "Designated Person" identified by the Port Marine Safety Code.]*

Waterways Officers

- a. To contribute to the planning, management and development of the sustainable and safe use of the waterways in the Broads in consultation with user groups, relevant agencies and other interested parties;
- b. To coordinate stakeholder consultation on matters that impact on the waterways and their users, such as waterskiing, the structure and level of tolls, and the distribution of 24-hour moorings;
- c. To support the Director of Waterways and Head of Waterways Strategy and Safety in the development and implementation of policies, projects and other initiatives that enhance the sustainable and safe use of the waterways;
- d. To manage the boat census and maintain other records relating to the use of the waterways, including boating accidents.

2.5 Training Cycle

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Harbour Authorities should assess the fitness of all persons appointed to positions with responsibility for the safety of navigation. If they do not use the competence standards associated with this Code, they should be able to show that theirs are fully equivalent. *Paragraph 2.1.15*

- 2.5.1 The Port Marine Safety Code refers to the National Occupational Standards for Port Marine Operations (Reference 13), and states that the training and competence of officers with safety duties should be in compliant with these standards, or demonstrably equivalent to them.
- 2.5.2 The Authority has a Training and Development Policy, which demonstrates the Authority's commitment to identifying and providing an appropriate level of training and development for all staff employed by the Authority. The Policy can be found at Annex B.
- 2.5.3 The Authority has a Marine Operations Training Policy which details training needs following a formal skills matrix analysis of both safety management personnel, field personnel and those personnel with direct responsibility from their collective roles as Harbourmaster. This policy allows for the review of compliance and equivalence qualifications or experience with the National Occupational Standards for Port Marine Operations, Reference 13. The Policy is detailed in Annex L
- 2.5.4 The Authority has also published a Health and Safety Policy, which can be found at Annex C. Its objective is as follows:

"The Broads Authority recognises and accepts its responsibility as an employer for providing a safe and healthy workplace and working environment for all its employees and others affected by its actions. The Authority will take such steps as are reasonably practicable to meet this responsibility, including the provision of funds and resources, paying particular responsibility to the provision and maintenance of:

- a. plant, equipment and systems of work that are safe and without risk to health;*
- b. safe arrangements for the use, handling, storage and transport of articles and substances;*
- c. sufficient information, instruction, training and supervision to ensure that all employees are aware of the hazards to their own health and safety at work, and of the necessary measures which should be taken to protect against these hazards and which would contribute positively to their own health and safety at work;*
- d. a safe place of work, and safe access to and egress from it;*
- e. a healthy working environment;*

2.6 Planning and Implementing

- 2.6.1 As required by the Broads Act, the Authority has produced a five-year plan, known as the "Broads Plan" (Reference 14). The Plan sets out a vision for the Broads, supported by both long-term (20 year) aims and short-term (five year) objectives.
- 2.6.2 Chapter 6 of the Plan (Tourism and Recreation) identifies one aim and two objectives (TR5 and TR7) related to safety management. The Broads Plan 2004 5-year Action Plan (Reference 15) breaks each objective down into three sub-objectives.
- 2.6.3 The safety aims and objectives are described in Figure 2-3 below.

20-year aim: Provisions to ensure the effective safety management of the navigation and the technical safety of boats will be in place in accordance with best modern practice.

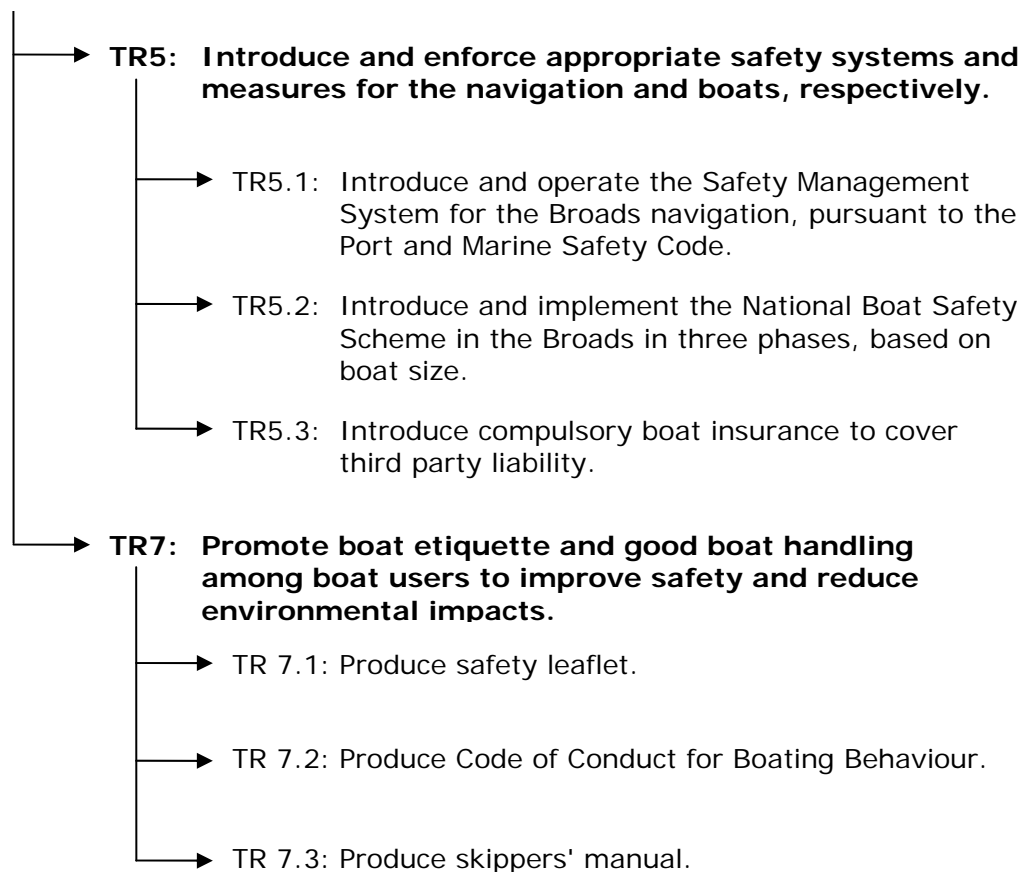


Figure 2-3: Safety aims and objectives from Broads Plan 2004

Progress against objectives

2.6.4 This document has been introduced in response to objective 5.1 from the Broads Plan. The current status of the other actions is listed for completeness in below.

Objective	Current Status
TR 5.1	This document describes the Safety Management System being introduced pursuant to the Port Marine Safety Code.
TR 5.2	The Boat Safety Scheme (BSS) is being introduced via Byelaws, prior to primary legislation (see paragraph 1.5.6).
TR 5.3	It is intended to introduce compulsory third party insurance under the powers sought in the Broads Bill (see paragraph 1.5.6).
TR 7.1	The safety leaflet has been prepared, and is awaiting publication.
TR 7.2	The code of conduct has been prepared and is awaiting publication.
TR 7.3	A skipper's manual has yet to be prepared. Traditionally, manuals/guidance information are placed in hire boats by the boatyard, not by the Authority. The Authority issues a variety of safety related publications to boatyards for inclusion in their skippers Manuals

Table 2-3: Status of Action Plan Objectives

3 A NAVIGATION AREA OVERVIEW

PORT
MARINE
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CODE

Statutory powers are exercisable within the limits of jurisdiction prescribed in the harbour authority's local legislation, generally geographically.

Paragraph 1.4.4

3.1 Introduction

3.1.1 This section of the SMS defines the geographical boundaries of the navigation area and the limits of jurisdiction of the Broads Authority, identifies channels and berths within the area, describes meteorological data relevant to the navigation area, and identifies sites subject to various environmental designations.

3.2 The Navigation Area

3.2.1 The navigation area under the responsibility of the Broads Authority is defined in Section 8 of the Broads Act.

3.2.2 The Broads Act defines the navigation area as all navigable stretches of the rivers Bure, Yare and Waveney and their tributaries (rivers Ant, Thurne and Chet), including Oulton Broad, Haddiscoe New Cut, and the navigable part of the river Wensum in Norwich upstream of its confluence with the Yare.

Interface with Great Yarmouth

3.2.3 The Broads Act excludes those areas which are the responsibility of the Great Yarmouth Port Authority under the Great Yarmouth Port and Haven Acts and Orders 1866 to 1986.

3.2.4 At the time of publication, Breydon Water and the lower reaches of the Yare, Bure and Waveney are the responsibility of Great Yarmouth Port Authority. Vessels navigating from the North Broads to the South Broads (or vice versa) must cross Breydon Water and hence pass temporarily into the jurisdiction of Great Yarmouth Port Authority.

3.2.5 The Draft Broads Bill will if enacted in its present form allow for the transfer of responsibility for the navigation of these areas to the Broads Authority. This will result in the new boundary of the Broads navigation area being upstream of Haven Bridge on the river Yare. This point is also the current limit of navigation for hire craft. Although there is agreement in principle between the two authorities, the date for implementation will depend on the progress of the Broads Bill and detailed negotiations on the terms for the transfer between the two authorities.

3.2.6 The Broads Authority is already heavily involved in patrolling and management of Breydon Water, and therefore this SMS includes the area.

Interface with Lowestoft

- 3.2.7 At Lowestoft, Mutford Lock, at the eastern end of Oulton Broad, marks the boundary with Associated British Ports Lowestoft. Mutford Lock is operated by Waveney District Council on behalf of the Broads Authority. The lock is used almost exclusively by private craft - there is little commercial traffic, and hire craft are not permitted to pass through the lock.
- 3.2.8 The navigation area is summarised in Figure 3-1 below. The Limits of the Broads Authority's navigational responsibility are marked by red bars.



Figure 3-1: Map of the Broads

3.3 Principal uses

3.3.1 Unlike a commercial port, the Broads is home to a wide variety of river traffic. Commercial freight traffic is almost non-existent. The following represents the principal uses of the Broads:

- a. Day hire craft (self-drive);
- b. Larger hire craft, typically hired out for a week (self-drive);
- c. Guided tour boats - approximately 15 MCA-certified passenger craft offering guided excursions;
- d. Small passenger boats (less than twelve passengers);
- e. Private motor boating;
- f. Sailing - including hire self drive, private and tuition;
- g. Water skiing - in specific areas and at specific times as designated in the Speed Limit Byelaws;
- h. Rowing;
- i. Power Boat racing (Oulton Broad only);
- j. Angling, either from the bank or from a moored craft;
- k. Delivery of Heavy Fuel Oil to the sugar beet factory at Cantley by Coaster (infrequent).

3.3.2 These activities are mostly seasonal, with the majority of activity taking place between April and October, however there remains a lower level of activity over the winter months.

3.4 Meteorological Data

PORT
MARINE
SAFETY
CODE

Harbour authorities should 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 weather and the way the harbour is used.

Paragraph 2.3.5

- 3.4.1 The Code recommends that the authorities should make available information about current and forecast meteorological conditions. Although the effects of the weather are likely to be less significant on an inland waterway than a port, there can be an impact, especially on large bodies of water such as Breydon Water.
- 3.4.2 Some harbour authorities have dedicated weather stations, or purchase customised weather information from the Met Office. Given the sheltered inland nature of the Broads and the geographic spread of the area, it is suggested that this level of detail would be inappropriate for the Broads.
- 3.4.3 Publication of forecast tidal information is currently carried out by the Authority (annually in a booklet, and weekly on the website).
- 3.4.4 The authority have developed a weather forecast policy See figure 3-2 over.

Figure 3-2: Broads Authority Weather Forecast Policy

BROADS AUTHORITY WEATHER FORECAST POLICY

In accordance with the Port Marine Safety Code, the Broads Authority has a duty to make available timely information on prevailing and forecast meteorological conditions.

It is the Authority's policy that it will:

- a) Maintain a link to a nationally recognised weather forecasting agency, from the Broads Authority Website, the forecast from the link will include general weather conditions, wind speed and direction including weather warnings for the local area.
- b) Maintain forecast weather data information via the Broads Authority website, at yacht stations, Broads Authority visitor centres and Navigation Rangers.
- c) Keep this policy under review as part of the planned monitoring and auditing of the Safety Management System Action Plan;
- d) Act in a proportionate and timely manner to address any perceived shortfalls in this policy.

3.5 Navigation Channels and Berths

- 3.5.1 Several areas are currently marked, either by posts or buoys, and these are regularly checked by the Navigation Rangers. A report is issued when works are required, and this is then programmed in, either using the river works team or contractors as appropriate.
- 3.5.2 The Broads Authority is developing a Geographic Information System (GIS) based Navigation Asset Management System to regulate the management of navigation channels. The system will flag up planned regular maintenance as it becomes due, and will also provide a means for Navigation Rangers to record observed problems with navigation channel markings.

- 3.5.3 The only commercial berth within the navigation area is the quay at the sugar beet factory at Cantley. This quay is owned and managed by British Sugar. There are many staithes around the Broads system, the historic use of these staithes was for loading and unloading of goods to service local communities, however very few of these staithes are now used for this purpose.
- 3.5.4 There are a large number of public and private moorings throughout the Broads. Moorings are discussed under section 8.3.

3.6 Traffic Monitoring

- 3.6.1 Given the large and geographically dispersed nature of the Broads, there is no Vessel Traffic System (VTS) or similar traffic monitoring system. Traffic is monitored on a daily basis by the Head Ranger (Navigation) and his team of Navigation Rangers, who maintain regular patrols across the area, using Broads Authority launches.
- 3.6.2 Some private vessels and the larger trip boats communicate by VHF radio. Hire boats and small vessels do not have radios. Hirers will generally call on mobile phone if necessary, e.g. for bridge opening, problems with their boat, or to contact the emergency services.

3.7 Environmentally Sensitive Sites Within The Broads

- 3.7.1 The Broads is one of Europe's finest and most important wetlands for nature conservation. It includes designated sites for nature conservation, including 28 Sites of Special Scientific Interest (SSSIs), which cover 24% of the Broads executive area. One-third of SSSIs are designated National Nature Reserves (NNRs) (Figure 3-3). Virtually all SSSIs also have international designation under European Habitats and Birds Directives and Ramsar Convention on Wetlands (Figure 3-4). For more on the legislation see section 3 in this Appendix.
- 3.7.2 The Broads, apart from having many designated sites for nature conservation, is also important for wildlife throughout its area, with land and water managed for both biodiversity and landscape. Often, hydrological connections between the waterways, fens and grazing marsh dykes will result in pollution in one part of the wetland affecting a wide area.
- 3.7.3 Biodiversity Action Plans, derived from the UK's ratification of the Convention on Biological Diversity, give guidance and targets for species and habitat management and protection.
- 3.7.4 The Water Framework Directive establishes a framework for protection of surface water, groundwater, and coastal and transitional waters. Targets are set to protect and improve the ecological status of the waterbodies.

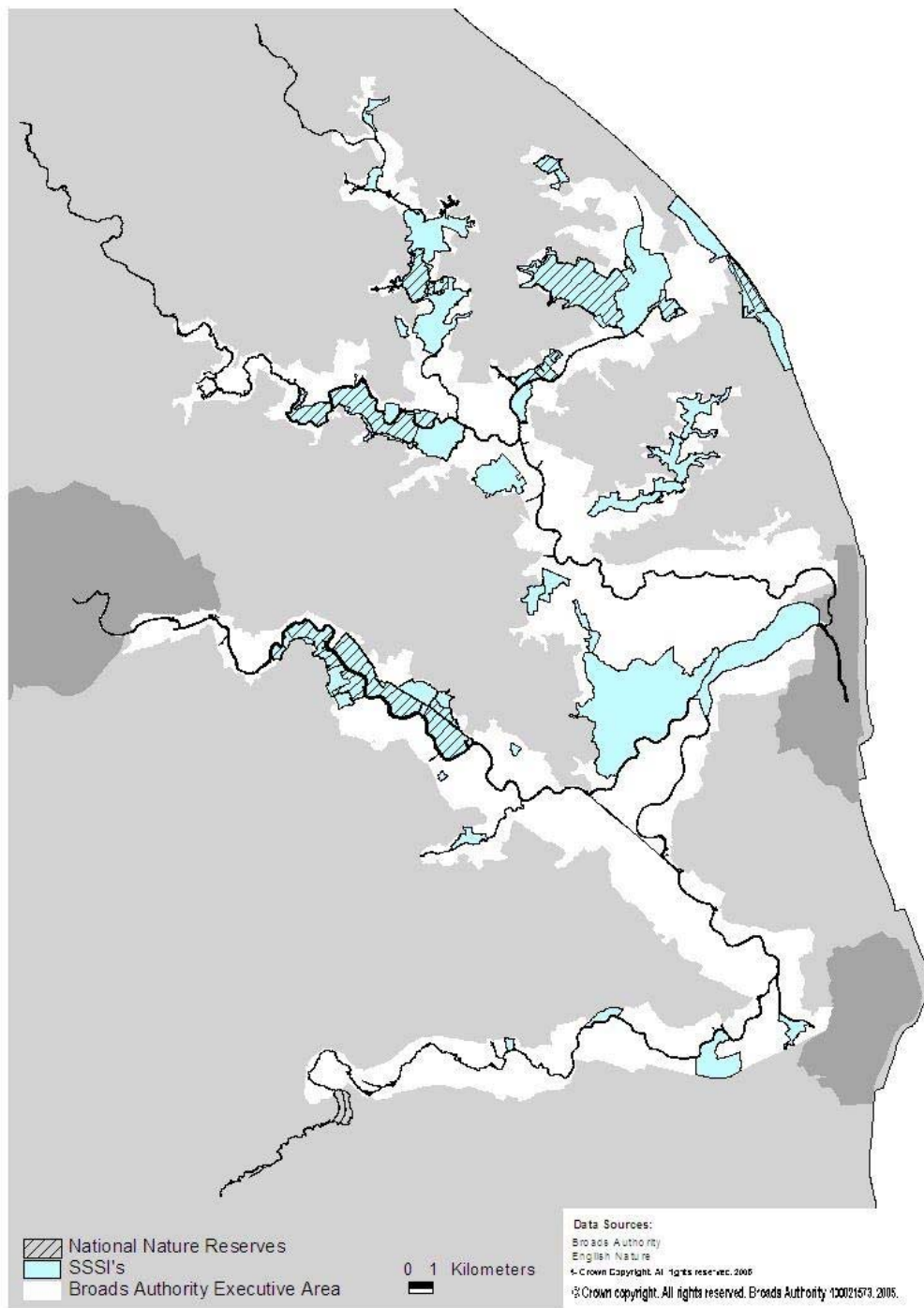


Figure 3-3: Network of SSSIs and NNRs in the Broads

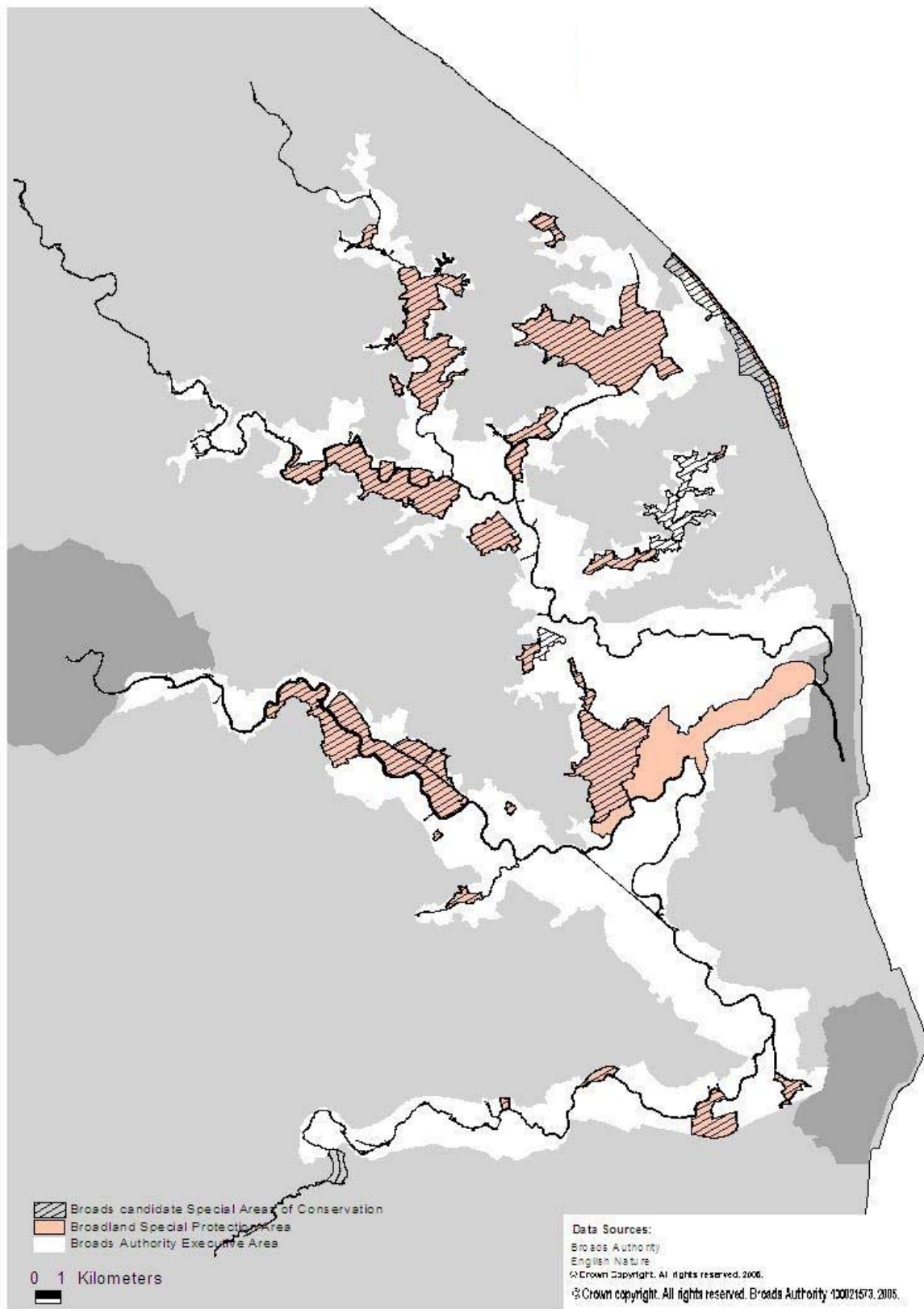


Figure 3-4: SSSIs that are also of European Importance

4 CONSULTATION

PORT
MARINE
SAFETY
CODE

A safety management system is only effective if the authority responsible takes active measures to involve and secure the commitment of all concerned. Harbour authorities should consult as appropriate among those likely to be involved in, or affected by, the Safety Management System they adopt.

Para 2.2.13-14

4.1 Introduction

4.1.1 The implementation of the Safety Management System will affect a wide variety of stakeholders.

4.1.2 This section of the SMS describes the mechanisms in place for consultation, and how, in particular, consultation will be handled for this SMS.

4.2 Navigation Committee

4.2.1 The role of the Navigation Committee is to reflect the position as set out in the Broads Act. Its purpose is to comment on and advise the Authority on matters relating to the strategic management of the waterways. The Navigation Committee is the statutory consultation forum for issues relating to protecting the interests of navigation, which includes safety issues.

4.2.2 Members of the public have the opportunity to attend and give notice to raise questions at meetings of the Navigation Committee, or at any of the Authority's formal committee meetings (see 2.1.4).

4.2.3 The membership of the Navigation Committee is defined in the Broads Act, and consists of thirteen members as follows:

- a. Five members of the full Authority;
- b. Two persons representing the interests of hire boat owners;
- c. One person representing the national interests of private boat owners;
- d. One person representing the local interests of private boat owners;
- e. Two persons representing the interests of passenger and goods shipping;
- f. One person representing other interests.
- g. One person appointed by the Great Yarmouth Port Authority

4.2.4 The Committee receives advice from officers of the Authority who also attend.

4.3 Boating Safety Management Group

- 4.3.1 The Boating Safety Management Group was established to evolve in detail the policy and processes on which the SMS is to be based.
- 4.3.2 The Group is chaired by a member of the Authority (as a representative of the Duty Holders), with membership including the Director of Waterways, the Head of Waterways Strategy and Safety (“Designated Person”), Waterways Officers, Head Navigation Ranger, the Chairman of the Navigation Committee and a member of the Navigation Committee representing industry interests.
- 4.3.3 The Group reports directly to both the Full Authority and the Navigation Committee on a regular basis.
- 4.3.4 The Terms of Reference for the Group have been approved by the Authority, and provide the formal nomination of the “Designated Person”. The Terms of Reference for the Group are attached at Annex A.
- 4.3.5 The Group has a supervisory role, in consultation with relevant interests, for the development, implementation and maintenance of this Safety Management System.

4.4 Broads Forum

- 4.4.1 The Broads Forum is a consultative forum, which acts as a reference group to offer advice and comment on the Broads Authority's strategic aims and objectives. It promotes closer liaison and understanding between the various interest bodies and organisations, which have an interest in the Broads and its wider catchment area.

4.5 SMS Potential Stakeholders

- 4.5.1 Table 4-1 below represents a proposed list of stakeholders who should be consulted about various elements of the SMS. The list is not necessarily exhaustive, and it is not proposed that all stakeholders should comment on all aspects of the System.

OTHER HARBOUR AUTHORITIES
Great Yarmouth Port Authority
AB Ports – Lowestoft
STATUTORY / LEGISLATIVE BODIES
Environment Agency
Defra
Natural England
Maritime and Coastguard Agency
Association of Inland Navigation Authorities
SPECIAL INTEREST GROUPS
Broads Hire Boat Federation
British Water Ski
British Marine Federation

Inland Waterways Association
Association of Pleasure Craft Owners
Norfolk and Suffolk Boating Association
Royal Yachting Association
LOCAL COUNCILS
Norfolk County Council
Suffolk County Council
North Norfolk District Council
Waveney District Council
Broadland District Council
Great Yarmouth Borough Council
South Norfolk Council

Table 4-1: SMS Stakeholders List

4.6 Consultation Process

- 4.6.1 The Authority has published a "Statement of Community Involvement" (Reference 16) as part of the Broads Local Development Framework.
- 4.6.2 Whilst this statement principally relates to planning matters, the sections on consultation (Chapters 5 and 6 of the Statement) may be applied to consultation on any subject. These describe the Authority's approach to consultation, identification of hard-to-reach groups who may require to be consulted, and the means by which the consultation will be publicised.
- 4.6.3 The Authority's commitment to stakeholder engagement is laid down in the Broads Plan (Reference 14), as follows:
- The Broads Authority will work with relevant organisations, interest groups and local communities to fulfil its statutory duties, enabling its stakeholders to take a leading role or partnership role as appropriate.*
- 4.6.4 The Authority is signed up to the Norfolk COMPACT (Reference 17), an agreement between organisations in the public sector and those in the voluntary and community sectors. Its purpose is to provide a framework for good practice and productive relationships between organisations in these sectors. This agreement includes a Code of Practice on Consultation.
- 4.6.5 It is proposed that the guidelines in Chapters 5 and 6 of the Statement of Community Involvement are followed in the consultation regarding the development of this Safety Management System.

5 CONSERVANCY

PORT
MARINE
SAFETY
CODE

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.

Para 2.3.1A

5.1 Introduction

5.1.1 This section of the SMS describes the issues relating to conservancy of the navigation area of the Broads, and describes the Authority's approach to managing these issues.

5.2 Responsibilities

5.2.1 The Port Marine Safety Code states that the harbour authority has a duty to conserve the harbour so that it is fit for use.

5.2.2 The Broads Act gives the Authority the duty to maintain the navigation area for the purposes of navigation to such standard as appears to it to be reasonably required, and take such steps to improve and develop it as it thinks fit.

5.3 Management of Hydrography

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MARINE
SAFETY
CODE

Harbour authorities have a duty to find, mark and monitor the best navigable channel or channels in the harbour. They should include in their policies a statement of the measures adopted for this purpose. Authorities should have effective arrangements to publish appropriate hydrographic information.

Paras 2.3.2 - 3

5.3.1 A comprehensive hydrographic survey of all areas of the Broads (with the exception of Breydon Water) was conducted for the Broads Authority by Broadland Environmental Services Ltd (BESL) during October 2005.

5.3.2 An agreement has been established with BESL for continued hydrographic monitoring whilst their works continue. This monitoring covering the lower reaches every two years, and the other areas no less than every five years.

5.3.3 A Waterways Specification (Reference 18) has been drawn up identifying the recommended channel depths and widths for all areas of the Broads. The survey revealed that many areas do not currently meet this specification. A Sediment Management Strategy has been produced, which established a regime of dredging across the Broads. Areas will be prioritised according to a range of criteria, including need. This strategy is attached to the SMS as Annex E.

5.3.4 The Navigation Rangers respond to specific instances of sedimentation or shoaling reported by users of the Broads, and will mark shallow areas with buoys or posts.

5.4 Tidal Heights and Streams

- 5.4.1 The Rivers Yare, Bure and Waveney empty directly into the sea at Great Yarmouth, and are strongly tidal. At Great Yarmouth itself, the difference between high and low tide can be as much as 2.2m, with strong tidal currents flowing.
- 5.4.2 The strong tidal flow introduces hazards for navigation, for example on the approach to obstacles such as bridges, especially for inexperienced helmsmen, and the tidal range means that certain areas are only navigable at certain states of tide. Areas such as the mud flats of Breydon Water are under water at high tide but not navigable at any time, resulting in the risk of grounding.
- 5.4.3 To mitigate this risk, the Broads Authority maintains channel markings in certain areas. Examples are Rockland Broad, Barton Broad and Hickling Broad, as well as the lower reaches of the rivers Yare and Bure.
- 5.4.4 The Authority also publishes tide tables, in the form of an annually-published booklet, and monthly tide tables are placed on the Broads Authority website.
- 5.4.5 Information is also published, both online and in "The Broadcaster" visitor leaflet, providing advice on navigating the strongly tidal area upstream of Great Yarmouth.

5.5 Management of Aids to Navigation

- 5.5.1 In certain areas of the Broads, aids to navigation have been put in place, including marker posts and buoys. These mark safely navigable channels in accordance with the Waterways Specification across shallow Broads, examples being Rockland Broad, Hickling Broad and Breydon Water.
- 5.5.2 The Authority is in the process of establishing a GIS-based inspection system for all navigation assets. This will set out frequency and responsibility of inspections, and be used to produce annual maintenance programmes.

It is proposed that the GIS inspection system for aids to navigation is introduced, and its use documented in a formal procedure. This procedure can then be referenced in a future issue of the SMS.

Figure: 5-1_Broads Authority Hydrographic Policy

BROADS AUTHORITY HYDROGRAPHIC POLICY

In accordance with the Port Marine Safety Code, the Broads Authority has a duty to maintain safe navigable channels throughout its area of operation.

It is the Authority's policy that it will:

- a) Maintain a 5 year programme of hydrographic surveys, conducted in accordance with Broads Authority specification, of the navigation area, covering the navigable extents of the Broads;
- b) Use the outcome of the surveys to prioritise and inform the dredging programme detailed in the Sediment Management Strategy Action Plan, in accordance with the waterways specification;
- c) Mark safe channels in areas of particular danger, but with due regard for conservation of the natural beauty of the area;
- d) Ensure that those conducting hydrographic surveys, whether Broads Authority employees or third party contractors, are appropriately equipped, trained and competent to undertake the work;
- e) Maintain forecast tidal data information via the Broads Authority website, and at yacht stations and visitor centres;
- f) Keep this policy under review as part of the planned monitoring and auditing of the Safety Management System Action Plan;
- g) Act in a proportionate and timely manner to address any perceived shortfalls in this policy.

6 MANAGEMENT OF NAVIGATION

PORT
MARINE
SAFETY
CODE

Harbour authorities have a duty to make proper use of powers to make byelaws, and to give directions to regulate vessel movements in their waters. These powers should be exercised in support of the policies and procedures developed in the authority's Safety Management System.

Para 2.4.1B/C

6.1 Introduction

6.1.1 This section of the SMS describes the Broads Authority's approach to the management of navigation. This includes the use of legally-granted powers, byelaws, policies, procedures, codes of practice and guidance.

6.2 Responsibilities

6.2.1 Under the Broads Act, the Broads Authority is the navigation authority for the Broads navigation area. The Pilotage Act also designates the authority as a "competent harbour authority", with the power to make Pilotage Directions.

6.2.2 The Authority also has many other responsibilities including promoting the enjoyment of the Broads by the public. The Authority aims to strike a balance between these responsibilities.

6.3 Byelaws

6.3.1 In accordance with the Broads Act, Byelaws relating to the use of land are made in consultation with the Natural England, and all Byelaws are confirmed by the Secretary of State for the Environment.

6.3.2 The Broads Authority has made four sets of Byelaws relating to the use of the Broads, under the provisions of the Broads Act. They are as follows:

- a. Navigation Byelaws, 1995. These are general byelaws covering Steering & Navigation, Lighting, Signals, Mooring & Anchoring etc.
- b. Vessel Dimension Byelaws, 1995. These specify the maximum length and beam of vessels which are permitted to navigate within the Broads. These dimensions vary for different areas of the Broads.
- c. Speed Limit Byelaws, 1992. These specify the maximum speed limits applicable within the Broads. The speed limit varies between 3 and 6 miles per hour, and was introduced principally to limit the effect of wash on other vessels, and reduce erosion of the banks, however the limits also enhance safety. The Byelaws also identify zones where water-skiing may take place, during which activity the speed limits may be legally exceeded.

- d. Vessel Registration Byelaws, 1997. These byelaws govern the registration of vessels, and the payment of dues to the Broads Authority.
- 6.3.3 A fifth Byelaw has been developed, which will formalise the requirement to comply with the national Boat Safety Scheme within the Broads, and is currently with Department for Transport (DfT) lawyers. When the Broads Bill is enacted, this Byelaw will then be repealed. See Section 6.8 for details.
- 6.3.4 A byelaw was made by the East Suffolk and Norfolk River Authority in 1969 relating to control of pollution in the Broads by sanitary appliances on boats. This byelaw remains in force.

6.4 Directions

- 6.4.1 The Authority has the power to make Specific Directions to a particular vessel, however it does not currently have powers to make General Directions. These powers will be granted by the Broads Bill, should it be enacted.

6.5 Policies

- 6.5.1 The Authority has set out a formal Navigation Safety Policy, which has been endorsed by the members of the Authority. This policy is given in full in section 1.6.8 of this SMS.
- 6.5.2 The Broads Authority has a policy regarding the bringing of prosecutions against offenders when it is appropriate to do so. The policy is attached in Annex B.
- 6.5.3 The Broads Authority has a policy regarding the towing of vessels. The policy is given in full in section 8.5.
- 6.5.4 The Broads Authority has a policy regarding the publication of weather forecasts and weather warnings and is given in full in section 3.4.
- 6.5.5 The Broads Authority has a policy for pilotage which is given in full in section 7.1
- 6.5.6 The Broads Authority has a policy for the training of marine operational and management personnel; the policy is referenced in 2.5 and given in detail in Annex L.
- 6.5.7 A policy for hydrographic surveys is published by the Authority and is given in full in section 5.3. A discussion of survey arrangements, and the resulting recommendation, can be found at section 5.3.
- 6.5.8 A Moorings Safety Policy has been defined, and is included in the Mooring Strategy (Reference 25). The policy is discussed at section 8.3 of this SMS.

6.6 Notice to Mariners

6.6.1 The Broads Act requires that Notices to Mariners are published whenever navigation is restricted or suspended for any reason - principally due to maintenance works. Notices are published in the local press, and on the Broads Authority's website, 35 days in advance of the date of the works.

6.6.1 The Navigation Area Works Guidance (Reference 19) requires contractors to apply for publication of a Notice to Mariners for works that significantly affect navigation - e.g. severe height or width restrictions, or river closure. Because of the busy nature of the Broads, closures are not permitted unless unavoidable.

6.7 Publications Promoting Boat Safety

The Broadcaster

6.7.1 The Broadcaster is a visitor guide published annually around Easter by the Broads Authority. It is a free newspaper containing articles of interest relating to the Broads (e.g. recent conservation work), essential boat safety advice including emergency arrangements, as well as guides on things to do, places to eat, etc.

6.7.2 The Broadcaster is made widely available to visitors to the Broads, including placing copies at all boatyards and in local shops, restaurants etc. A copy can also be requested online.

Safety video and DVD

6.7.3 A video exists which boaters may purchase when booking a holiday, or which boatyards may show to hirers during the show-out. The Authority is currently in the process of developing a new video covering basic boat handling techniques and promoting boat safety, this video will be published in a DVD format. This DVD will be made available to both private boat owners and to hire companies to make available to hirers.

Other publications

6.7.4 The Broads Authority publishes a number of leaflets promoting safety on boats, with subjects including boat wash, water ski zones and speed limits. These are widely available.

6.8 Guidelines and Code of Practice

6.8.1 The Boat Safety Scheme (BSS) is currently a voluntary scheme, however the Authority intends to make this mandatory, through new Byelaws and subsequently via the Broads Bill. See section 10.6 for details.

- 6.8.2 The Code of Practice for Day Boat Hire (Reference 20) provides guidance for those who provide boats for hire, including risk assessment, the safety of the boat, handover procedures ("Show-out" to a hirer) and the BSS.
- 6.8.3 A Broads Water Skiing Guide has been produced with the intention of ensuring that water skiing does not have an adverse impact on navigation, without unnecessary over-regulation. The guide has been produced in conjunction with the water ski organisations Freedom2ski and British Water Ski, and is a voluntary agreement between the Broads Authority and water skiers. It describes the registration and toll requirements for ski boats, explains the rules currently contained in Byelaws and also requires membership of a ski club and achievement of a Ski Boat Driver's Award. If enacted, the Broads Bill will formalise this guidance.

6.9 Procedures

- 6.9.1 Standing Orders have been produced for the Mud Pilot (Reference 21), for the passage of commercial traffic to Cantley.
- 6.9.2 Complementary Standing Orders have also been produced for the Broads Authority launches which accompany large coasters navigating to Cantley (Reference 22).

Navigation Area Works Guidance

- 6.9.3 The Navigation Area Works Guidance (Reference **Error! Bookmark not defined.**) has been published to advise anyone wishing to carry out work within the Broads area of legislative requirements, provide practical health and safety advice, and highlight other possible considerations.
- 6.9.4 Although titled as "guidance", this document in fact contains mandatory procedures for the issuing of Works Licences. The Broads Act gives the Authority the power to require a Works Licence to be applied for prior to any work being undertaken, and to determine whether or not such a Licence should be granted.
- 6.9.5 It defines the general requirements that contractors must comply with, along with specific requirements for certain types of work, e.g. diving, towing etc.
- 6.9.6 It should be noted that the Navigation Works Guidance does not apply to Statutory Undertakers such as contractors working for the Environment Agency on the Broadland Flood Alleviation Project (see Hazard 021 in section 9.4).

Other procedures

- 6.9.7 A Management plan has been developed jointly with the Lowestoft and Oulton Broads Motor Boat Club (Reference 20) with regard to the regulation of navigation on Oulton Broad during power boat races. The management plan will be reviewed on an annual basis.
- 6.9.8 Procedures for Broads Authority workboats and launches are currently prepared and used on an informal basis. It is proposed that these procedures are formalised, and added as an Annex to the SMS.

6.10 Licensing

- 6.10.1 The current arrangements for registration of boats with the Broads Authority do not contain any element of licensing. The issue of a registration number merely indicates that the vessel has been registered, and does not imply that the vessel has been inspected or approved.
- 6.10.2 North Norfolk District Council have introduced compulsory licensing of hire day boats registered within their area on 1 January 2007, but this will not extend to other hire boats or boats registered in other council's areas.
- 6.10.3 The Broads Bill will, when enacted, give the Authority the power to introduce licensing arrangements across the Broads.

7 PILOTAGE

PORT
MARINE
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CODE

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.

Para 2.5.1A

7.1 Introduction

- 7.1.1 This section of the SMS describes the Broads Authority's approach to pilotage, and identifies any areas within the navigation area where pilotage may be necessary.
- 7.1.2 The navigation area of the Broads is unusual compared to a commercial port, in that the area is large, there is little commercial traffic, and the majority of traffic remains within the navigation area. This contrasts with a port where vessels are continually arriving, loading and leaving on strict timetables.
- 7.1.3 Nevertheless, the Authority recognises its responsibility with regards to pilotage, provides appropriate measures and has developed a Pilotage policy figure 7-1 below.

Figure 7-1: Broads Authority Pilotage Policy

Broads Authority Pilotage Policy

The Broads Authority (BA) is a Competent Harbour Authority (CHA) within the meaning of the Broads Authority (Pilotage Powers) Order 1991 and publishes Pilotage Directions. There are currently no circumstances in which pilotage has been declared compulsory under the terms of the Pilotage Act.

It is the Authority's policy that it will:

- a. Review the need for pilotage at least annually. This will include reviewing any extant Pilotage Directions, and will take into account any changes in the status quo with regard to large commercial vessels' usage of the Broads;
- b. Ensure that the operation of the pilotage service is compliant with national regulations, guidelines and competency standards;
- c. Ensure that the Standing Orders for pilots and the accompanying Authority launches are kept up-to-date and accurate;
- d. Ensure that pilots employed or authorised by the Authority meet the requirements of National Occupational Standard 5;
- e. Employ succession planning to ensure that an authorised and qualified pilot is always available should the requirement arise;
- f. Ensure that the means of boarding and landing pilots are regularly reviewed to ensure that these operations are always undertaken as safely as possible;
- g. Share pilotage information with other users or authorities via relevant fora;
- h. Keep this policy under review as part of the planned monitoring and auditing of the Safety Management System;
- i. Act in a proportionate and timely manner to address any perceived shortfalls in this policy.

7.2 Responsibilities

- 7.2.1 The Broads Authority (Pilotage Powers) Order 1991 (Reference 23) confirms the Authority's status as a "competent harbour authority" as defined under the Pilotage Act 1987. As such, it has a duty to determine 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 whether such pilotage should be compulsory.
- 7.2.2 This duty is reinforced in the Port Marine Safety Code, which goes on to state that authorities should exercise control over the provision of pilots by means of controlling recruitment, examination and authorisation of pilots.

7.3 Requirements for Pilot and Pilotage Directions

- 7.3.1 There is one circumstance in which pilotage is provided by the Broads Authority. In this circumstance, pilotage is strongly recommended, but has not been made compulsory by means of a Pilotage Direction.
- 7.3.2 Occasionally, oil tankers navigate from Great Yarmouth along the River Yare to the sugar beet factory at Cantley. Seagoing vessels are strongly encouraged to use the services of the Mud Pilot. The Mud Pilot manages the entire journey, including the passage of Breydon Water, coordinating the journey departure time with the opening of the Reedham Swing Bridge, and assisting with navigation of several sharp bends in the river. One or two Broads Authority launches accompany the coaster, to ensure that vessels ahead of the coaster are aware of its approach, and that vessels are moved from moorings on the sharp bends. These launches operate to their own published procedures (see section 6.9). It is several years since such a passage last occurred, and the future of this activity is currently in doubt.
- 7.3.3 There are also two bridges where pilotage is available. The Broads Authority believes that pilotage is not necessary for experienced helmsmen to safely navigate these bridges. However it is accepted that the majority of craft are hire vessels helmed by novices. As such, the boatyards have provided pilotage services to protect their own assets. The Broads Authority provides moorings and pilot boarding areas, but does not authorise or regulate these pilots.

Potter Heigham Bridge

- 7.3.4 Potter Heigham Bridge is an ancient road bridge that spans the River Thurne. The tide flows quickly through the bridge. At high water the clearance is too small for most craft to pass under the bridge. Pilotage is mandated by some hire companies for most of their hire craft. Where pilotage is compulsory, it is provided at no charge to the hirer. Pilotage is not required for helmsmen of privately-owned vessels.

Wroxham Bridge

- 7.3.5 This ancient road bridge spans the River Bure at Wroxham. Tidal streams are gentle and there is a very small range of tide, influenced more by rainfall/fluvial flow than by tidal action. However, the area is very congested in summer and the bridge is on a bend in the river. Pilotage is available but not mandatory. A fee is charged for this service.

Works Pontoons/Vessels

- 7.3.6 The Navigation Area Works Guidance advises contractors of the potential need for the Mud Pilot if movements of very large vessels are to be undertaken. In practice, such vessels are not usually piloted, but escorted by Broads Authority launches.

7.4 Authorisation of Pilots

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CODE

Harbour authorities should 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.

Para 2.5 B

- 7.4.1 Pilots at Potter Heigham and Wroxham Bridges are provided by nearby boat yards. They are neither required by, nor authorised by, the Broads Authority.
- 7.4.2 The Mud Pilot for coasters is employed by the Broads Authority, and has extensive experience of many such journeys, as well as holding a Coastal Skipper Ticket. The Mud Pilot works to published Procedures, described in section 7.5 below.
- 7.4.3 The current pilot will retire in a few years time. A potential replacement has been identified, and is receiving some training. The Authority is also holding informal discussions with Great Yarmouth Port Authority on subcontracting the Mud Pilot role to one of the Port's existing pilots.
- 7.4.4 The Authority propose to work jointly with Great Yarmouth Port Authority (GYPA) to develop a regime where formally qualified pilots are provided either by GYPA or the Broads Authority, once agreed a documented training program will be drawn up. Compliance with the PMSC will be via the following approach; -
- a. The training of the Broads Authority Mud Pilot and his replacement to National Occupational Standard for Marine Pilotage with joint cooperation between the Authority and GYPA.
 - b. The authorisation of the GYPA pilots to continue with their pilotage past their current jurisdiction boundary so that pilotage can be offered from the GYPA area up to the destination of the coaster.

7.5 Pilotage Procedures

- 7.5.1 Detailed procedures have been prepared by the Broads Authority covering all aspects of the journey. The Standing Orders for Broads Authority Mud Pilots (Reference 24) details the responsibility of the Pilot prior to and during the journey, and provides contact details for relevant stakeholders, such as swing bridge operators, and the Broads Authority River Control.

7.6 Pilotage Exemption

- 7.6.1 No pilotage exemption certificates have been awarded by the Authority. Because there are no formal pilotage directions, there has been no requirement to consider exemption. A procedure for the issue of pilotage exemption certificates will be developed by the Authority in the event that such an activity appears likely to occur.

8 MARINE SERVICES

PORT
MARINE
SAFETY
CODE

An authority's Safety Management System should cover the use of harbour craft and the provision of moorings. The authority should ensure that harbour craft are fit for purpose, and the crew appropriately trained and qualified.

Para 2.7.1A-C

8.1 Introduction

8.1.1 This section of the SMS covers the provision of Marine Services by the Authority. Marine Services are defined as support services available in a harbour, such as tugs, workboats, pilot launches and moorings.

8.2 Responsibilities

8.2.1 The Authority has a responsibility under the Broads Act to maintain the interests of navigation. In support of this, it has the power to provide and maintain moorings throughout the navigation area.

8.2.2 The Authority also has a duty under the Pilotage Act to ensure that workboats are maintained in good order.

8.2.3 The Authority has a duty of care under the Health and Safety at Work Act 1974 to maintain its workboats in good order, and to ensure that personnel operating them have received appropriate training.

8.3 Moorings

8.3.1 The Broads Authority is responsible for the provision and maintenance of a network of approximately 50 "twenty-four-hour" moorings. This means moorings at which it is permissible to moor for the night, as opposed to temporary moorings, which are for short term use only (e.g. for boarding of a bridge pilot).

8.3.2 The Broads Authority has published a Mooring Strategy document (Reference 25) which outlines the Authority's approach to the management of all moorings, to include temporary moorings and staithes as well as the 24-hour moorings.

8.3.3 The 24-hour moorings have been classified according to the facilities available, from "Flagship" where amenities such as toilets and showers are available, to "Wild", which are alongside rural uninhabited land. A risk assessment has also been conducted of each of the Broads Authority managed moorings, quantifying the risk of falling into the water, and noting the controls in place at each mooring (e.g. ladders, chains/ropes, etc.)

8.3.4 Each mooring has been assigned a priority based on location, tidal flow and incident history. The moorings are inspected by the Navigation Rangers on a weekly, fortnightly or monthly basis, in accordance with the mooring's Management Plan. Inspections are conducted in accordance with the Mooring Inspection Guide contained within the plan.

8.3.5 The Mooring Strategy contains the Moorings Safety Policy, as follows:

The Broads Authority has a commitment to ensuring the safety of users of the 24hr moorings network and will develop a 24hr mooring site management plan for each of its sites. This will be done in conjunction with the Navigation Rangers, and include an agreed inspection regime, agreed routine maintenance specification, development plans, risk assessment, property holding details and a site plan. A process for the generic risk assessment of all Broads Authority moorings has been developed and this has led to the identification of improved safety measures, which will be incorporated into all new sites when developed. Additionally a five-year programme has also been drafted for the retrospective application of preventative or management measures and is included within the Moorings Strategy Action Plan. Further, the Broads Authority is committed to ensuring that moorings are adequately spaced to allow reasonable facilities in the event of emergency, and considers 30 minute spacing appropriate.

8.3.6 There is a temporary mooring at Mutford Lock, provided to enable boats to moor whilst waiting for the lock, which is provided by the Broads Authority, but is outside of the Authority's navigational area. This mooring has no access to land, and as a result is poorly maintained.

8.3.7 There are also many private moorings and staithes, which are not maintained by the Authority. The Broads Act gives the Authority the power to demand that owners make improvements where there is a danger to navigation.

8.4 Workboats and Launches

8.4.1 The Broads Authority owns and operates a number of small workboats, as below. Passenger craft are dealt with separately at section 8.6.

- a. Eight Broads Authority launches and one RIB, for the purpose of patrolling, escorting, offering assistance and enforcement;
- b. Three self-propelled workboats;
- c. Three dumb barges;
- d. One weed harvester;
- e. A small number of dinghys;

8.4.2 Workboats and launches have a daily check in accordance with the form at Annex I. See Sections 6.9 and 10.5 respectively for proposals regarding the formalisation of launch/workboat operating procedures and risk assessments.

8.5 Towing

8.5.1 The Broads Authority does not operate any tugs. Broads Authority launches are occasionally used for towing duties (e.g. assisting boats who have engine failure etc.). If necessary, a tug from a local boatyard is contracted to provide support.

8.5.2 The Broads Authority have published a policy for towing see figure 8-1 over.

Figure 8-1: Broads Authority Towing Policy

BROADS AUTHORITY TOWING POLICY

In accordance with the Port Marine Safety Code, the Broads Authority needs to lay down guidance for towing within the navigation area

It is the Authority's policy that it will:

- a) Respond to emergencies for recreational vessels if BA vessels are available providing that prevailing conditions are favourable.
- b) In cases of emergency, tow vessels to a safe mooring or safe situation or recover passengers and crew
- c) Maintain towing capability for recreational vessels in an emergency or access to such capability through a register of competent operators, for situations reasonably expected to be encountered on the Broads, and keep this capability under review;
- d) Develop and maintain risk assessments of towing activities for various types of boats (e.g. day boats, yachts, etc) in various circumstances (e.g. grounding, propulsion failure etc);
- e) Ensure that Authority personnel involved in towing have appropriate equipment for the task, are suitably trained, and are competent;
- f) Ensure that any third parties employed by the Authority for towing activities have suitable equipment and are trained and competent to the same extent, in accordance with the BA towing specification
- g) Share towing information with other users or authorities via relevant fora;
- h) Keep this policy under review as part of the planned monitoring and auditing of the Safety Management System;
- i) Act in a proportionate and timely manner to address any perceived shortfalls in this policy.
- j) Require that towing of commercial vessel is in line with the requirements laid down in the Navigation Works Guidance

8.6 Third Party Involvement

8.6.1 Where towage or other services may be required by the Authority, the work may be subcontracted to a local boatyard, since the Authority does not operate any tugs or other specialist vessels apart from those detailed in 8.4. For any such subcontract, the Authority will require compliance with the Navigation Works Guidance and appropriate demonstration of crew competency.

8.7 Passenger Craft

8.7.1 The Broads Authority operates four passenger craft for the purpose of providing guided tours and trips to members of the public.

8.7.2 Each of these craft carries less than twelve passengers.

8.7.3 The boats have specified checks, which must be carried out on a daily and weekly basis. These exist for all the Authority's boats; by way of example the check sheets for the Electric Eel are included at Annex H.I

8.7.4 The MCA's Inland Waters Small Passenger Boat Code (Reference 26) applies to vessels that do not go to sea, and carry less than twelve passengers. The Code is a best practice guide rather than a statutory requirement.

8.7.5 Stability tests have been conducted on all the Authority's passenger boats, and maximum passenger numbers defined accordingly, however records of these tests have not been kept. It is proposed to re examine these craft and formally record the results of stability tests.

8.7.6 It is proposed that the Broads Authority-owned passenger craft are verified for compliance with the Inland Waters Small Passenger Boat Code.

8.7.7 Boats, which have been refitted within the last year, have been examined and certified by a Boat Safety Scheme examiner. The majority of the Authority's passenger boats have been certified.

8.7.8 It is proposed that all Broads Authority-owned passenger craft will be compliant with the requirements of the Boat Safety Scheme for the season commencing 1st April 2007.

8.8 Lifebuoys

8.8.1 Lifebuoys are stationed at several locations on the Broads for use in an emergency. They are checked daily in accordance with the form at Annex J.

9 HAZARDS

PORT
MARINE
SAFETY
CODE

A Safety Management System should be informed by and based upon a formal risk assessment of the port's marine activities.

Paragraph 1.5.8

9.1 Introduction

9.1.1 This section of the SMS describes the Broads Authority's approach to the systematic identification, assessment and control of hazards, and the minimisation of the risks they pose to the public and to employees of the Authority to a level, which is as low as reasonably practicable.

9.2 Responsibilities

9.2.1 The Broads Act gives the Authority a duty, *inter alia*, of "protecting the interests of navigation". It is therefore important that hazards to navigation are identified, and appropriately managed.

9.2.2 In addition, the Management of Health and Safety at Work Regulations (1999) (Reference 11) require the Authority to make a suitable and sufficient assessment of all the risks to the health and safety of workers and others arising at or from a work activity.

9.3 Formal Risk Assessment

9.3.1 A structured approach to the identification and analysis of hazards, and the assessment of the risks they pose, is at the centre of any Safety Management System. The process is described in section 10.4. In accordance with the Port Marine Safety Code, this includes:

- a. The identification and analysis of risks;
- b. An assessment of these risks against an appropriate standard of acceptability;
- c. A cost effectiveness analysis of risk reducing measures where appropriate.

9.3.2 In May 2003, a Formal Safety Assessment (Reference 27) was undertaken on behalf of the Broads Authority. This assessment identified 28 hazards, and proposed risk reduction measures.

9.3.3 The methods used to identify hazards, and assess and mitigate risk, are described in section 1. The following paragraphs provide an update of the existing FSA, and highlight areas where further investigation and risk reduction activity might be most beneficial.

9.4 Discussion of the Existing Hazard Log

- 9.4.1 Table 9-1 overleaf presents a list of all the hazards that were identified during the assessment. The Risk Class is derived by considering the worst credible consequence to People.
- 9.4.2 The Authority have conducted an internal review of the hazards, and identified the 17 of greatest significance. These have been prioritised, and the actions taken to date recorded. Table 9-1 reflects this prioritisation, and records the action taken. Hazards after hazard 017 in the table were not reviewed as part of this process, and are presented in original numerical order.
- 9.4.3 All of the hazards identified during the FSA have been informally reviewed as part of the development of the SMS. This review has been undertaken by discussing each hazard with the Head Ranger (Navigation), examining the hazard in light of the experience gained in the intervening three years, and determining whether proposed actions have been undertaken, and whether the status of the hazard has changed.
- 9.4.4 Section 9.5 of this SMS records the outcome of this informal review, and makes recommendations for prioritisation and further action.
- 9.4.5 A further formal hazard review is scheduled with an appropriate group of stakeholders, to prioritised in accordance with the recommendations of this informal review, to review the risk assessments and progress against actions, and to generate ALARP statements where possible.

**BROADS AUTHORITY
SAFETY MANAGEMENT SYSTEM**

31006/E0018
APRIL 2007

Ref. No.	Category	Short Title	Risk Class	New Risk Class	ALARP	Prob-ability	Consequence			Action Taken
							People	Env't	Assets	
014	Collision	Water-skiing	A	B Changed	N	Probable Remote	Severe	Minor	Moderate	Introduction of compulsory Water Ski Club membership Compulsory Ski Boat Drivers Award/ Proof of Insurance Review of Ski area sites - rating in relation to set safety criteria has been conducted.
015	Swamping	Water-skiing – wash	B	B Changed	N	Probable Frequent	Moderate	Minor	None Minor	
002	Swamping	Powered craft speeding	B	B Changed	N	Probable Frequent	Major Moderate	Minor	Minor	Navigation Works Guidance in development.
003	Contact	Inexperienced Helmsmen	B	B Changed	N	Probable Frequent	Moderate Minor	None	Minor	A Code of Practice for Hire Day Boats has been developed and issued to all Day Boat Operators, which covers Handover Procedures. Code of Conduct publication under development.
025	Swamping	Boat Testing	B	Not reviewed		Probable	Moderate	Minor	Moderate	
004	Collision	Yacht Racing	B	B	N	Probable	Minor	None	Minor	Compiling a database of all Water Activity Clubs to request copies of their safety/operating procedures to ensure adequate measures are in place and risks are ALARP. Seeking powers and general directions to ensure good order at events/regattas
006	Contact	Angling	B	B Changed	N	Probable Frequent	Minor	None	Minor	Representation on the Environment Agency's Broads Angling Strategy Group, Angling code of conduct in development
018	Collision	Sailing yachts	B	B		Probable	Minor	None	Minor	Compiling a database of all Clubs to request copies of their safety/operating procedures to ensure adequate measures are in place.
007	Collision	Potter Heigham Bridge	B	B	Y	Frequent	Moderate	None	Minor	New warning signage has been installed.
027	Environment	Passage Through Great Yarmouth	B	B	N	Frequent	Moderate	Minor	Moderate	As Ref.011 plus advice in Broadcaster

**BROADS AUTHORITY
SAFETY MANAGEMENT SYSTEM**

31006/E0018
APRIL 2007

Ref. No.	Category	Short Title	Risk Class	New Risk Class	ALARP	Prob-ability	Consequence			Action Taken
							People	Env't	Assets	
008	Contact	Wroxham Bridge	B	B	Y	Frequent	Minor	None	Minor	Chains and signage installed to prevent collision.
010	Contact	Bridges	B	B	N	Frequent	Minor	None	Minor	New signage installed at St Olaves New licence from Network Rail for headroom height gauges for Thorpe Bridge, Consider gauge boards on River Wensumin Norwich
020	Sinking	Individual dinghies & canoes	B	A	N	Remote Probable	Severe	None	Minor	Specific Safety information to be developed
013	Collision	Powerboat Racing	B	B	Y	Remote	Severe	Minor	Moderate	Monitoring of LOBMBC safety and operating procedures in place – restriction of movement whilst races in progress. Riparian moorings have now been organised by WDC.
009	Injury	Swimming	B	B	N	Remote	Severe	None	None	Provide advice via Broadcaster and Navigation Rangers
016	Injury	Embarkation and disembarkation	B	Not reviewed		Remote	Severe	None	None	Management Plans and Site Inspections of all BA moorings completed and publication is being prepared. Currently compiling database of all other navigation hazards to prioritise and seek remedial actions
017	Sinking	Motor cruisers and rowers	B	Not reviewed		Remote	Severe	None	Minor	Not reviewed
001	Collision	Passage of Commercial Craft	B	B	N	Extremely Remote	Major	Moderate	Moderate	Standing orders in place for movement of vessels on the River Yare
005	Sinking	Rowing skiffs	B	B	N	Remote	Severe	None	Minor	Signage to be erected for areas used by rowing clubs.
011	Grounding	Breydon Water	U	U		Very Frequent	None	None	Minor	Not included as outside of BA jurisdiction as Harbour Authority
012	Injury	Mutford Lock	B	B	N	Remote	Moderate	None	None	Responsibility for pontoon to be documented

Ref. No.	Category	Short Title	Risk Class	New Risk Class	ALARP	Prob-ability	Consequence			Action Taken
							People	Env't	Assets	
019	Collision	Dinghy Sailing	B	Not reviewed		Remote	Major	None	Minor	Not reviewed
021	Sinking	Flood alleviation scheme	B	Not reviewed		Remote	Moderate	None	Moderate	Not reviewed
022	Swamping	Flooding	U	Not reviewed		Probable	None	Minor	Moderate	Not reviewed
023	Injury	Medical Emergencies	B	Not reviewed		Remote	Major	None	None	Not reviewed
024	Environment	Water Quality	B	Not reviewed		Remote	Moderate	Moderate	None	Not reviewed
026	Sinking	Obstructions to Navigation	C	Not reviewed		Remote	Minor	Minor	Moderate	Not reviewed
028	Collision	Dredging and River Maintenance Works	B	Not reviewed		Remote	Moderate	None	Minor	Not reviewed

Table 9-1: Hazard Log

9.5 Hazard Update

001: Passage of commercial craft

- 9.5.1 There have been no commercial tankers making the passage to Cantley. The future of this activity, is in question. See section 7.3 for pilotage information.
- 9.5.2 The movement of workboats and pontoons associated with the Broadland Flood Alleviation Project (BFAP) is of increasing concern. This is discussed further under hazard 021.

002: Powered craft speeding

- 9.5.3 Warning stickers are in preparation for hire boats, to warn of the dangers of wash and swamping. Overt and covert speed monitoring is being increased. Educational material is being developed including the dangers from wash being shown in the Broads Authority safety DVD and further development of a educational leaflet.

003: Inexperienced helmsmen

- 9.5.4 The powers being introduced with The Broads Bill will enable the Authority to improve the quality of boatyard's show-out to hirers. In addition, a DVD is in preparation providing navigation and safety information to hirers. See paragraph 6.7.3.

004: Yacht racing

- 9.5.5 There is currently no requirement for yacht races to be approved by the Authority. Byelaw 86 requires that "fun events" are given prior approval by the Authority, however this applies to events involving un-registered boats, for example dragon boats or rafts.

9.5.6 It is recommended that consideration is given to whether and how the Authority should enforce safety at yacht races.

005: Rowing skiffs

- 9.5.7 There is no significant change in the status of this risk. See also hazard number 017. See also the recommendation at paragraph **Error! Reference source not found.**

006: Angling

- 9.5.8 An angling strategy group has been formed consisting of the Broads Authority, the Environment Agency and representatives of anglers, to resolve the perceived contention between angling and boating.

9.5.9 There is still concern over angling from Broads Authority moorings, whereby anglers are obliged to give way to vessels mooring, however there have been instances where this has not occurred. The Mooring Strategy has identified this issue, and recommends that conflict be resolved through the provision of alternative location.

9.5.10 There remains no common visibility of angling events.

007: Potter Heigham Bridge

9.5.11 The action to move the warning signs to a more prominent location has been completed.

008: Wroxham Bridge

9.5.12 The chain curtain has been made more conspicuous by the application of a rubber sheath on the cable, however there have been problems with vandals removing or damaging the rubber. The rate of incident reporting at the bridge is being monitored, and will be used to demonstrate the effectiveness of this measure.

9.5.13 The Authority does not currently believe that pilotage should be compulsory for all craft through bridges.

009: Swimming

9.5.14 This hazard continues to be a problem, especially at Beccles Bridge which is close to a school. The original hazard was related to diving and swimming in the vicinity of bridges, however there is a more general swimming hazard, including swimming from boats, and swimming from Caen Meadow in Wroxham. The latter is a particular problem, with youths causing a nuisance to boaters as well as endangering themselves.

9.5.15 It is recommended that the scope of this hazard is widened to include all swimming activity, and that the hazard and its mitigating actions are reviewed regularly.

010: Bridge navigation

9.5.16 No significant change to the status of this risk.

012: Mutford Lock

9.5.17 Mutford Lock is operated by Waveney District Council (WDC) on behalf of the Broads Authority. This hazard relates specifically to the waiting pontoon which, although outside the Broads Authority area, is provided by the Authority. Maintenance of this pontoon is not covered by the Operating Agreement with WDC.

9.5.18 It is recommended that a decision is made whether the Mutford Lock pontoon should be maintained by the BA, or by WDC under the Operating Agreement, and a maintenance schedule developed accordingly.

013: Powerboat racing

9.5.19 This was identified as one of the more significant hazards during the original FSA. As a result, action has been taken to restrict navigation in Oulton Broad during races, except for a "navigation lane" down one side.

014: Waterskiing

9.5.20 This was identified as the most significant hazard during the original FSA. A voluntary waterskiing code has been developed in consultation with various waterskiing organisations.

9.5.21 The voluntary code has been found to work well, and is due for review in early 2007. The Broads Bill (see section 1.5) seeks powers to make the code mandatory.

015: Waterskiing - wash

9.5.22 Boats towing water skiers are exempt from the speed limit, but are still bound by the requirement in the Speed Limit Byelaw to not create a wash of more than 300mm in height on any bank.

9.5.23 Such wash is sometimes caused by cornering, but is also caused by modification of vessels to allow wakeboarding, which inherently involves a certain amount of wash being produced.

9.5.24 The Broads Bill, if enacted, will enable the Authority to make the voluntary code compulsory, and enable the management of wakeboarding.

016: Embarkation and disembarkation

9.5.25 The Authority does not currently have control over the contents of "show-outs" given by boatyards to hirers, however the Broads Bill will give the Authority power to license hire boats and thereby stipulate that suitable show-outs are a condition of the license. There is an ongoing problem with people using flood defences as an informal mooring. In addition, some private moorings are in poor repair. The Authority only has powers to require improvements where there is a hazard to navigation.

9.5.26 A leaflet has been produced on the subject of safe embarkation, in the light of a recent incident. In addition, a DVD is in preparation providing navigation and safety information to hirers. See paragraph 6.7.3.

017: Motor cruisers and rowers

- 9.5.27 There is a potential safety issue where the use of the river is shared by rowers and motorised craft. The wash from a motor cruiser has the potential to swamp a rowing skiff, and potentially of more concern, rowers travelling at speed down the centreline of the river, facing astern, are potentially unaware of approaching craft.
- 9.5.28 Rowing principally takes place in Norwich, where the number of hire boats has declined in recent years.
- 9.5.29 Discussions have commenced with rowing clubs and signage is being considered where rowing takes place on a regular basis. A code of conduct and safety leaflet is being developed for this activity.
- 9.5.30 There is scope for merging this hazard with hazard 005, since both cover a very similar hazard.

018: Sailing yachts

- 9.5.31 This hazard concerns inconsiderate navigation by the helmsmen of sailing vessels, especially when tacking in a narrow channel, or when involved in racing. There have also been occasions where the boom on a moored yacht has moved in the wind and struck a pedestrian on the riverside.
- 9.5.32 This hazard could be split into two, to focus on racing and general navigation separately.
- 9.5.33 A Code of conduct for the activity of yachting is being developed to include basic safety advice and is to include reference to organised racing and regattas.

019: Dinghy sailing

- 9.5.34 Dinghy races are not currently classified as "events" under the Byelaws. A possible mitigation for this risk would be to require that those involved in dinghy racing comply with RYA criteria, and that the helms of safety boats are suitably qualified for their task.
- 9.5.35 If such races were classified as events, then recommendation 9.5.6 may also be applied to this hazard.
- 9.5.36 A Code of conduct for the activity of yachting and dinghy sailing is being developed to include basic safety advice and is to include reference to organised racing and regattas.

020: Individual dinghies and canoes

- 9.5.37 The recommendation at **Error! Reference source not found.** is also applicable to this hazard.

- 9.5.38 A Code of conduct for the activity of canoeing and dinghy handling is being developed to include basic safety advice.

021: Flood alleviation scheme

- 9.5.39 The current hazard only identifies the flood alleviation work on the River Yare. In fact, the rivers Yare, Bure and Waveney and their major tributaries are all part of the scheme, which has been divided into 37 distinct "compartments" each with their own timetable for works (Reference 28).

- 9.5.40 The Project is funded by the Environment Agency (EA), which is a "statutory undertaker", and therefore exempt from regulation by the Broads Authority through their Navigation Works Guidance. The Broads Authority has not had sight of method statements or risk assessments that may have been completed by the contractor for the EA, however the Navigation Rangers have observed several unsafe practices.

- 9.5.41 The Broads Act includes the provision that a statutory undertaker shall comply with any reasonable direction given by the Authority for the purpose of protecting navigation within the navigation area or the Haven [Broads Act Section 11(8)]. It is possible that this power could be used to demand sight of the contractor's risk assessments and method statements.

- 9.5.42 In addition, The Broads National Park Authority Bill will, when enacted, give the Authority power to give General Directions.

- 9.5.43 It is recommended that the Broads Authority investigate the hazard posed by the movement and mooring of BFAP-related boats and pontoons, and consider the need for discussions with the Environment Agency, and for more stringent monitoring.**

023: Medical emergencies

- 9.5.44 The main issue is that helmsmen of hire boats are frequently unable to report their exact location when calling in an emergency. The Authority is currently considering signage identifying villages and towns, however this must be weighed against the policy of keeping riverside signage to a minimum. The Authority is also considering attaching a plaque to each 24-hour mooring giving its grid reference.

- 9.5.45 Helmsmen are reminded, through the Broadcaster and skipper's manual, to dial 999 in the event of an emergency. If required, the Coastguard may deploy a helicopter to locate the caller.

024: Water quality

- 9.5.46 Water quality testing is undertaken by the Environment Agency. Boaters are discouraged from discharging waste into the river by the provision of pump-out stations.

9.5.47 A byelaw also exists prohibiting the discharge of polluting matter into the rivers. See section 1.6.8 for further details of this byelaw.

9.5.48 A procedure exists for the reporting and management of blue-green algae in the Broads, however this procedure is not documented.

9.5.49 It is recommended that the procedure for the reporting and management of blue-green algae is documented, and attached to this SMS as an Annex.

025: Boat testing

9.5.50 Although not recorded in the original hazard, it should be noted that boat testing is only permitted in designated areas and at designated times given in the Speed Limit Byelaws Schedule 3. The Authority has the right to review the log books that are required to be kept on such boats.

026: Obstructions to navigation

9.5.51 There is no change to the status of this hazard. The Broads Bill, if enacted, will give the Authority the power to compel landowners to maintain trees etc. on their property, whereas at the moment any remedial work required often has to be undertaken by the Authority.

027: Passage through Great Yarmouth

9.5.52 It is noted that signage could be improved for those crossing Breydon Water. This is currently under the jurisdiction of Great Yarmouth Port Authority, although the Broads Authority maintains a patrol every day. Should the Broads Bill be enacted, provision will be made for navigation in this area to become the responsibility of the Broads Authority.

028: Dredging and River Maintenance Work

9.5.53 No change in this hazard. The action, not previously listed, is to ensure that all works comply with the Navigation Works Guidance, and make sure that contractors are complying with their own health and safety plans.

9.5.54 Note that the Broadland Flood Alleviation Project is covered separately under Hazard 021.

9.6 Hazard Identification

9.6.1 The Sheet at Annex F was used to record hazards at the 2003 FSA. This was conducted using the "Structured What If Technique" (SWIFT) however the sheet could easily be modified for other techniques such as HAZOPS (Hazard and Operability Study).

- 9.6.2 Such techniques are an ideal method of identifying hazards, since they gather together a group of suitably-qualified people to discuss the hazards. This provides assurance that the hazard is valid, and that the assessment of the hazard, and the safeguards proposed, are suitable.
- 9.6.3 Hazards may also be identified by any employee of the Authority, or indeed any person. Any hazard raised in such a way should be discussed and considered for inclusion in the hazard log. Decisions should be recorded to provide an audit trail.
- 9.6.4 A person should be nominated to take responsibility for updating the hazard log. See the recommendation at section 10.4
- 9.6.5 The ongoing management of hazards identified by such processes is described in the next section.

10 RISK ASSESSMENT

PORT
MARINE
SAFETY
CODE

A safety management system should be informed by and based upon a formal risk assessment of the port's marine activities.

Para 2.7.1A-C

10.1 Introduction

10.1.1 The conduct of a formal risk assessment is central to the effective operation of the Safety Management System. Risk assessments must also be conducted for specific activities undertaken by the Authority.

10.2 The ALARP principle

PORT
MARINE
SAFETY
CODE

The aim of assessing and managing marine operations is to reduce risk as low as reasonably practicable. The degree of risk in a particular activity or environment can be balanced against the time, trouble, cost and physical difficulty of taking measures that avoid the risk.

Paragraph 2.1.12

10.2.1 The principle of ALARP (As Low As Reasonably Practicable) is considered to be best practice by the Health and Safety Executives, and is derived from case law in accident investigation cases. The HSE's document "Reducing Risks, Protecting People" (Reference 29) gives the background to ALARP.

10.2.2 The aim of the ALARP principle is to strike a balance between the severity of the consequence of a particular hazard, and the cost and difficulty of implementing control measures.

10.2.3 A risk can be declared ALARP, provided it is not in the "intolerable" region described below, if it is believed that all possible mitigating actions and safeguards have been identified and, if considered reasonably practicable, implemented.

10.2.4 The ALARP principle therefore recognises that it is seldom possible to entirely remove risk, and this is particularly true in a marine environment.

10.2.5 ALARP statements are to be generated following the formal hazard review. This may entail further analysis of the hazard or identification of additional mitigating actions.

10.3 Risk Classification System

10.3.1 The Formal Safety Assessment conducted in May 2003 derived risk levels by using the risk matrix approach shown at Figure 10-1. The risk matrix approach is used to combine the estimated likelihood of a hazard with its estimated consequences to people, the environment and assets (the higher the risk numbers the greater the risk).

10.3.2 Figure 10-1 also shows the risk acceptance criteria for this project: those that fall in the green region (C) are considered to be “Broadly Acceptable” and those within the red region (A) are “Intolerable”. Risks that fall between these categories are in the As Low As Reasonably Practicable (ALARP) region. It should be noted that it is incorrect to say that a risk in region B “is ALARP”. Its placement in this region means that the risk has to be demonstrated to be ALARP by means of mitigations and risk reduction.

- a. Intolerable risks (class A) would require urgent attention and be the focus of regular reviews by the Broads Authority and any suitable risk control measures that are identified should be seriously considered for implementation. Such risks cannot be declared ALARP, a means of reducing or avoiding the risk must be found and implemented;
- b. Risks in the ALARP region (class B) require review to ensure that they can be satisfactorily weighed against the time, trouble, cost and physical difficulty in taking further measures to reduce them;
- c. Broadly acceptable risks (class C) would require some attention and occasional review (e.g. annually) to ensure that they remain under control.

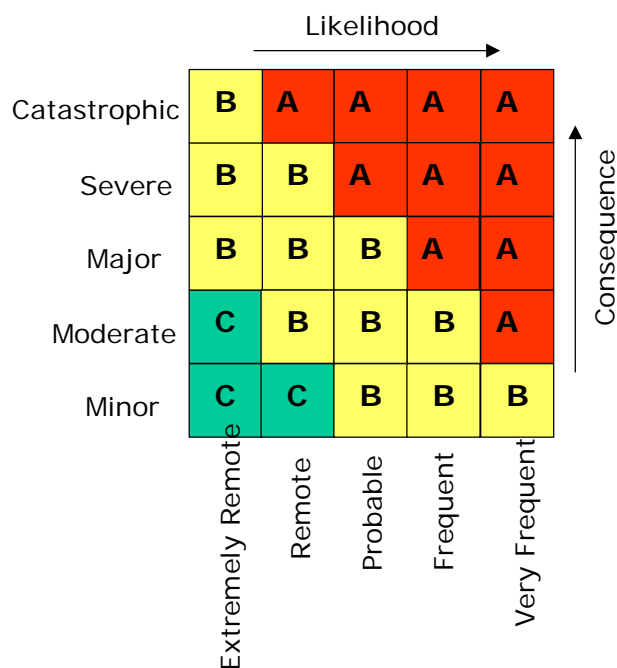


Figure 10-1: Risk Assessment Matrix

- 10.3.3 Risks are judged in terms of their likelihood (the probability of an incident occurring) and their impact (the worst-case consequence, if an incident occurs, on people, assets and the environment).
- 10.3.4 The estimates that were provided in the original FSA were considered to be worst credible scenarios, however, it is important to emphasise that these values should be viewed in relative terms and are not absolute measures of risk. Empirical evidence has shown that experts tend to be pessimistic when estimating risk levels (particularly when relating to safety) and this should be considered when reviewing the results of risk assessments.

Assessment of Incident Likelihood

- 10.3.5 The likelihood categories range from less than 1 incident per 100 years to a likelihood of more than 1 incident per month, as shown in Table 10-1 below.

Likelihood Category	Definition
Extremely Remote	Less than 1 incident per 100 years.
Remote	Between 1 incident per 10 years and 1 incident per 100 years.
Probable	Between 1 incident per year and 1 incident per 10 years.
Frequent	Between 1 incident per month and 1 incident per year.
Very Frequent	More than 1 incident per month.

Table 10-1: Risk Likelihood Categories

Consequence to People

- 10.3.6 The consequences to people to people range from no injuries or damage to health to >5 fatalities or >50 major injuries, as shown in Table 10-2 below.

Consequence Category	Definition
None	No injuries or fatalities.
Minor	1 minor (recoverable) injury.
Moderate	1 major injury (e.g. broken bones); or <10 minor (recoverable) injuries; or 1 minor occupational illness.
Major	1-10 major injuries; or multiple occupational illnesses.
Severe	1-5 fatalities; or up to 50 major injuries.
Catastrophic	>5 fatalities or >50 major injuries.

Table 10-2: Consequence to People

Consequence to the Environment

10.3.7 The consequences to the environment range from no environmental damage to persistent and severe environmental damage over a large area with, as shown in Table 10-3 below.

Consequence Category	Definition
None	No environmental damage.
Minor	Minor local pollution with short-term environmental damage; limited pollution response required by Broads Authority and/or other local organisations.
Moderate	Moderate local pollution with medium-term environmental damage; significant pollution response required by Broads Authority and/or other local organisations.
Major	Major but recoverable (in the medium term) environmental damage over a local area; significant pollution response required by Broads Authority and/or other regional organisations.
Severe	Severe but recoverable (in the medium to long term) environmental damage over a large area; significant pollution response required by the Broads Authority and/or other regional organisations.
Catastrophic	Persistent and severe environmental damage over a large area; major pollution response required by the Broads Authority and/or other national organisations.

Table 10-3: Consequence Categories – Environment

Consequence to Assets

10.3.8 The estimates of consequences to assets ranged from no damage to assets to complete disruption to commercial activities; cost of repair >£10M; all river users affected, as shown in Table 10-4 below.

Consequence Category	Definition
None	No damage to assets.
Minor	No disruption to commercial activities; cost of repair £0-£10K.
Moderate	Brief and partial disruption to commercial activities; cost of repair between £10K-£100K; few river users affected.
Major	Significant short-term or minor long-term disruption to commercial activities; cost of repair between £100K-£1M; many river users affected.
Severe	Significant and long-term disruption to commercial activities; cost of repair £1M<£10M; many river users affected.
Catastrophic	Complete and long-term disruption to commercial activities (e.g. river closure for up to 1 week); cost of repair >£10M; all river users affected.

Table 10-4: Consequence Categories – Assets

10.3.9 The estimates of likelihood and consequence were made in terms of orders of magnitude, using expert judgements which were provided by the Project Team preparing the Formal Safety Assessment, with advice from the Head of Navigation Strategy, the Navigation Safety & Projects Officer and the Head Ranger (Navigation), plus reference to historical incident data. More background may be found in the Formal Safety Assessment report (Reference 27).

10.4 Management of hazards and risk

10.4.1 Having identified hazards and controls, it is important to verify that those controls are put into place, and that they are effective in mitigating the hazard.

10.4.2 This requires that the hazards are reviewed on a regular basis, and that completion of the actions is recorded. It is also important to identify the actions for any given control measure, and to ensure they are aware of, and accept, the action.

10.4.3 It is recommended that a procedure be developed for the ongoing review, update and re-assessment of hazards in the hazard log, in accordance with the suggestions below.

10.4.4 The Guide to Good Practice identifies the steps of hazard management as shown to the right of Figure 10-2.

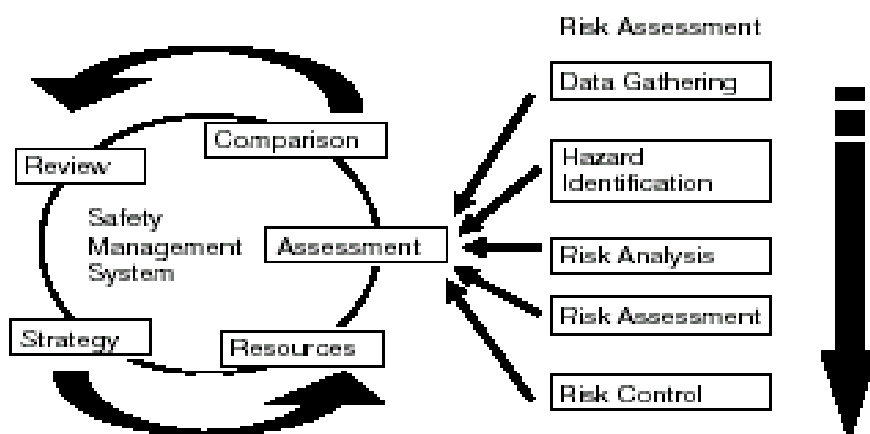


Figure 10-2: Safety Management System and Risk Assessment

10.4.5 A policy should:

- a. Remind to all personnel that they may raise a hazard, with a form for capturing pertinent information;
- b. Establish responsibility for management of the hazard log;
- c. Identify the hazard log in which the hazards are to be kept and tracked. This may be a specialist tool such as "C-risk", or a simple spreadsheet.
- d. Establish a timetable for a full review of the hazards (suggest every couple of years) to include identification of any new hazards as well as updating the existing ones. This action is to involve appropriate stakeholders.
- e. Establish a means of tracking the hazard controls actions, and verifying that those charged with carrying out the actions have done so.

10.5 Risk Assessment

10.5.1 It is a part of the Authority's Navigational Safety Policy that risk assessment techniques be used to ensure that hazards are reduced to a level which is as low as reasonably practicable.

10.5.2 It is important that risk assessments are conducted to a common standard, and against common criteria. This will then enable the level of risk to be understood and prioritised.

10.5.3 The Authority has developed instructions for the conduct of a risk assessment, including definitions of the probability and consequence of identified hazards. These instructions, along with a blank risk assessment form, are contained in Annex G.

10.5.4 These instructions have been used for the risk assessments of the 24-hour moorings (see section 8.3).

10.5.5 It is recommended that these instructions are followed for all risk assessments undertaken by the Authority, and the results logged in such a way that they can be easily retrieved and reviewed.

10.5.6 It is recommended that the Risk Assessments for Authority launches and workboats, which are currently informal, are formalised.

10.6 Boat Safety Scheme

10.6.1 The Boat Safety Scheme (Reference 30) is a nationally-implemented scheme. Its aim is to work on behalf of the UK's navigation and harbour authorities to help sustain safety and promote pollution avoidance on the inland waterways in respect of boats, their installations and components.

10.6.2 The Scheme concentrates on safety of the fixtures and fittings of the boat principally with respect to fire, fumes and explosion. As such, it concentrates on engines, fuel tanks, gas appliances/piping and electrical equipment/cablings. The BSS does not cover navigational safety, stability or watertight integrity of hulls.

10.6.3 The BSS will be introduced in three phases between April 2007 and April 2009, with the larger craft and hire craft requiring earlier compliance.

10.6.4 The version of the BSS issued in 2002 applies to hire craft, whereas a revision published in 2005 (with less prescriptive requirements) applies to private craft.

10.6.5 Compliance with the Boat Safety Scheme is currently voluntary. The Authority is seeking powers in the Broads Bill to make compliance with the Boat Safety Scheme mandatory. However, because of the long timescales associated with passing Acts of Parliament, the Authority is also preparing a byelaw to formalise the requirement for BSS compliance in the interim .

11 EMERGENCY RESPONSE

PORT
MARINE
SAFETY
CODE

A Safety Management System should include preparations for emergencies - and these should be identified as far as practicable from the formal risk assessment. Emergency plans need to be published and exercised.

Paragraph 2.2.12

11.1 Introduction

11.1.1 This section of the SMS describes the Authority's preparedness for emergency situations, and their procedures for dealing with an emergency should it arise.

11.2 Responsibilities

11.2.1 The Broads Act does not give the Authority a responsibility to act as an emergency service. Nonetheless, the Navigation Rangers and River Control frequently receive emergency calls, and have a responsibility to liaise appropriately with the emergency services.

11.3 Reporting of an Emergency

11.3.1 In the event of an emergency on the water, boaters are instructed to call the Emergency Services on 999. The Coastguard acts as co-ordinator for any action which may be required, liaising with River Control and the Navigation Rangers as necessary.

11.3.2 The Broads Authority is not a designated Emergency Service and is not a declared Search And Rescue (SAR) resource by H.M. Coastguard. However, the Authority's staff and patrol launches are frequently called on to assist the official emergency services in searching for missing persons or overdue vessels, communicating emergency messages to vessels, providing guidance on locations and access to the rivers network and sometimes transporting police, fire, ambulance or coastguard personnel or equipment.

11.3.3 The Broads Authority's personnel and resources are controlled via the "River Control" VHF Radio Base station at Ludham. River Control is operated during office hours seven days a week in summer, shorter hours in winter. Callers with emergencies or serious problems are directed to dial 999 and ask for the appropriate emergency service. H.M. Coastguard at Great Yarmouth will co-ordinate any major incident that requires any of the maritime SAR assets to be used, or when the Ludham office is closed. H.M. Coastguard at Great Yarmouth has recently tested a leading edge technique in assessing and managing the adequacy of SAR.

- 11.3.4 Some areas of the Broads have good access to the road network, so the usual land based emergency services can reach any casualty in these areas. For the open waters of the Broads, and those rivers with no direct road access, the Broads Authority provides patrol craft manned by Navigation Rangers and Auxiliaries. The Norfolk Constabulary "Broads Beat" has a RIB available to assist with SAR activities. The Hemsby Inshore Rescue RIB can be transported to the Broads and regularly exercises on the waterways. The RNLI has established one of its first inland Lifeboat Stations at Oulton Broad. This is equipped with a directly launched D Class inflatable and also a small portable inflatable deployed to distant locations on a specially adapted four wheel drive pickup. Most of the sailing and boating clubs on the Broads have dedicated rescue craft afloat during racing and regattas. An RAF Sea King SAR helicopter is based at Wattisham, which can reach the Broads in about 30 minutes. This aircraft has night vision equipment and has para-medics in the crew. The helicopter has the capacity for 17 passengers, plus the crew.
- 11.3.5 River Control operates a messaging/incident recording system for recording all calls received - whether an emergency or not. Incident records are kept and maintained in the Waterways Office for analysis and the derivation of trends and statistics.

11.4 Incident Reporting System

- 11.4.1 The Association of Inland Navigation Authorities (AINA), of which the Broads Authority is a member, is introducing a national incident database known as IRIS (Incident Reporting and Investigation System).
- 11.4.2 All incident data from the Broads Authority, British Waterways and the Environment Agency since 1 January 2005 is being added to the database retrospectively, and in the future all incidents will be reported and investigated using this system.
- 11.4.3 The IRIS system allows incidents to be logged and managed, and facilitates the analysis of historical incident trends.
- 11.4.4 The Authority has recently switched to the IRIS system for the recording of messages and incidents.

11.5 Assessment of the Situation

- 11.5.1 If the Authority receives a call from a person in distress, the Navigation Rangers need to determine the nature of the situation, and decide whether it is necessary to call the Emergency Services, or whether to attend themselves.

11.6 Response to a Minor Emergency

11.6.1 In the event of a minor emergency (for example a vessel which has run aground), a Navigation Ranger will attend and provide support as required. All Broads Authority personnel operating in the field are first-aid trained, as described in the Training and Development Policy (Annex B).

11.7 Oil spills

- 11.7.1 The Authority has produced two plans for management of oil/fuel spills.
- 11.7.2 The "Oil Spill Contingency Plan - Broads Navigation Area" (Reference 31) is for spillages relating to private and hire craft. Such spills are generally relatively minor in nature, and consist of spillage of diesel during fuelling, and the leaking of engine oil or fuel into bilges and thence into the water.
- 11.7.3 The plan has been compiled in consultation with the Environment Agency, English Nature, Defra, Norfolk County Council and the Great Yarmouth Port Authority.
- 11.7.4 It describes three tiers of response, in terms of the quantity of spillage, the organisation and mechanism for response, and the resources at the Authority's disposal for containment and disposal of oil. The plan interfaces with Local Authority and National plans for the higher tiers of severity. In all cases, containment and recovery of the pollutant is the preferred option - the use of dispersants is avoided unless necessary.
- 11.7.5 The other type of oil spill which may occur is the escape of Heavy Fuel Oil (HFO) from the tanker supplying fuel to the British Sugar factory at Cantley. Because this is a very rare operation, and the potential severity of a spill is significantly higher than the situations in the main plan, a separate plan has been developed in conjunction with British Sugar. The "Broads Authority/British Sugar Oil Spill Contingency Plan - Cantley Trade" (Reference 32) outlines the arrangements for responding to a major spillage of HFO in this situation.
- 11.7.6 The plans include consideration of arrangements for the safety of those involved in the oil spill response, a definition of the level of training required, and a regime for the conduct of exercises.

11.8 Communications

- 11.8.1 In the event of calls being received by the Authority as a result of a major incident, the call will generally be passed to the officer with the appropriate technical background to respond.
- 11.8.2 A Communications Strategy has recently been developed by the authority, which details aims and procedural information for all communications both internally and to external bodies inclusive of the media . (Annex K)

11.8.3 It is recommended that the Communication Strategy be further developed to include communications with the media, friends and relations in the event of an emergency. The aim is to reduce the risk of the Authority unintentionally exposing itself to liability.

11.9 Emergency Response Exercise

11.9.1 The Authority isn't an Emergency Response Organisation.

11.9.2 The Authority takes part in emergency planning exercises with the emergency services and the County Emergency Planning team.

12 MONITORING AND AUDITING

12.1 Introduction

- 12.1.1 The SMS will evolve and develop as the Broads area changes. Effective management and maintenance of the SMS will be required, to monitor any changes and the impact that those changes have on safety.
- 12.1.2 The PMSC requires that the SMS is monitored and audited to ensure that it continues to meet the requirements of the code. Such monitoring and auditing comprises three basic types:
- a. Proactive monitoring: This involves regularly reviewing aspects of the SMS to ensure that it is continuing to deliver an appropriate level of safety. This is generally achieved by reference to a defined set of performance indicators;
 - b. Reactive monitoring: This involves reviewing the causes and outcomes of any incidents or accidents, and ensuring that any implications on the SMS are captured and implemented;
 - c. Auditing: This involves taking a detailed and independent look at some or all of the SMS to verify its compliance with the PMSC and its effectiveness.

12.2 Proactive Monitoring

- 12.2.1 The PMSC requires that monitoring is carried out to demonstrate to the Duty Holder that the SMS is achieving its goals.
- 12.2.2 To monitor performance, it is necessary to identify a set of performance indicators which will cover all aspects of the SMS.
- 12.2.3 The following performance indicators will be monitored monthly to provide evidence of the continued functioning of the SMS, and enable progress towards (or away from) targets to be assessed. The status of each indicator, in relation to its defined target, will be recorded on the Authority's website.

Conservancy and Management of Navigation

- a. Delivery of Annual dredging programme (Target: 100%, however a phased increase in target may be preferred based on the Sediment Management Strategy Action Plan);
- b. The number of navigational aids (markers/buoys/lights) which are overdue for scheduled inspection (Target: Zero);
- c. No of Channel markers and bouys renewed against routine maintenance programme.

Pilotage

- d. The number of piloted movements undertaken within the reporting period (Target: No target set, however the indicator provides a measure of the level of activity);
- e. Pilots to be trained to meet the National Occupational Standards for Marine Pilots (Target: All personnel employed as pilot to be trained to the relevant standard);

Marine Services

- f. Number of moorings which are overdue inspection under the Mooring Management Plan (Target: Zero);

Hazards and Risk Assessment

- g. Number of non-ALARP hazards. (Target: Zero)
- h. Number of hazards overdue for review (Target: Zero)

Emergency Response

- i. Number of recorded incidents. (Target: No target set, however the indicator provides a measure of the level of activity. It may also be argued that a low number of incidents is partly due to the successful implementation of a Safety Management System);
- j. Number of oil spill incidents (Target: No target set, however the indicator provides a measure of the level of activity. It may also be argued that a low number of incidents is partly due to the successful implementation of a Safety Management System).

12.3 Reactive Monitoring

- 12.3.1 The purpose of reactive monitoring is to ensure that any incidents or accidents are reported and investigated, and that where an amendment to the SMS might reduce the risk of reoccurrence, that amendment is made.
- 12.3.2 The Authority has an incident reporting procedure that utilises the Incident Reporting and Investigation System (IRIS) application to log and record incidents. It is the Authority's policy that all reports from this system will be reviewed on a monthly basis to determine whether an amendment to the SMS might be required.
- 12.3.3 Each incident report is to be risk-assessed in accordance with the criteria at Section 10 of the SMS. This assessment should take into account that a low-category incident recurring regularly may, on aggregate, merit a higher category.

- 12.3.4 Category C issues are to be logged for implementation at the next scheduled SMS update. Category B issues are to be raised to senior management, and a decision taken as to whether an immediate update of the SMS is required. Category A issues should be notified to senior management, and an update to the SMS issued promptly.
- 12.3.5 Examples of the kind of amendment which may be required include updating a policy, or changing the status of a hazard.
- 12.3.6 Where an amendment to the SMS is identified, it shall be logged for implementation at the next update, unless the severity of the situation is such that an immediate update is required.

12.4 System Auditing

- 12.4.1 Monitoring of performance indicators provides a useful guideline as to how well the system is functioning, however an occasional in-depth analysis of the SMS is required.
- 12.4.2 The Designated Person will conduct annual internal audits of specific areas of the SMS, record the findings, and implement any action which arise as a result.
- 12.4.3 Every four years, the Authority will arrange for a full audit to be undertaken by an independent third party to gain an objective opinion of the effectiveness and suitability of the SMS to meet its objectives, and to verify continued compliance with the PMSC.
- 12.4.4 The following sequence is proposed for the conduct of full and internal audits.

Year	Subject
1	Conservancy and Management of Navigation and Marine Services
2	Hazard/Risk Assessments, Emergency Response and Pilotage
3	Full System Audit

Table 12-1: Proposed audit sequence

- 12.4.5 The Designated Person will have responsibility for conducting internal audits, reporting the outcomes of all audits to the Members of the Authority, and arranging for the results to be published.
- 12.4.6 Where audits identify areas for improvement or non-compliances, an Action Plan will be developed to rectify these issues.

- 12.4.7 The audits will be timed to feed into a statement that will be made in the Broads Authority Annual Report on the navigation safety performance of the Authority. It is a requirement of the PMSC (paragraph 2.2.11) that performance reports should be published by the Authority. The Guide to Good Practice cites three years as an appropriate interval for such reports. The Full Audit programme is timed to align with this.

13 RECOMMENDATIONS

13.1 Recommendations

13.1.1 The following list summarises the recommendations that have been made in the current issue of the SMS. It also shows the paragraph and page number on which they occur.

Para	Recommendation	Page
9.5.6	It is recommended that consideration is given to whether and how the Authority should enforce safety at yacht races.	58
9.5.18	It is recommended that a decision is made whether the Mutford Lock pontoon should be maintained by the BA, or by WDC under the Operating Agreement, and a maintenance schedule developed accordingly.	60
9.5.43	It is recommended that the Broads Authority investigate the hazard posed by the movement and mooring of BFAP-related boats and pontoons, and consider the need for discussions with the Environment Agency, and for more stringent monitoring.	62
9.5.49	It is recommended that the procedure for the reporting and management of blue-green algae is documented, and attached to this SMS as an Annex.	63
10.4.3	It is recommended that a procedure be developed for the ongoing review, update and re-assessment of hazards in the hazard log, in accordance with the suggestions below.	69
10.5.5	It is recommended that these instructions are followed for all risk assessments undertaken by the Authority, and the results logged in such a way that they can be easily retrieved and reviewed.	71
10.5.6	It is recommended that the Risk Assessments for Authority launches and workboats, which are currently informal, are formalised.	71
11.8.3	It is recommended that the Communication Strategy be further developed to include communications with the media, friends and relations in the event of an emergency. The aim is to reduce the risk of the Authority unintentionally exposing itself to liability.	76

14 ABBREVIATIONS AND GLOSSARY

14.1 Abbreviations

AINA	Association of Inland Waterways Authorities
ALARP	As Low As Reasonably Practicable
BA	Broads Authority
BESL	Broadland Environmental Services Ltd
BFAP	Broadland Flood Alleviation Project
BSS	Boat Safety Scheme
BWSF	British Water Ski Federation
CE	Chief Executive
Defra	Department for the Environment, Food and Rural Affairs
DfT	Department for Transport
ES	Environmental Stewardship
ESA	Environmentally Sensitive Area
FSA	Formal Safety Assessment
GIS	Geographic Information System
HAZOPS	Hazard and Operability Study
HFO	Heavy Fuel Oil
HSE	Health and Safety Executive
IRIS	Incident Reporting and Investigation System
MCA	Maritime and Coastguard Agency
NERC	Natural Environment and Rural Communities
PMSC	Port Marine Safety Code
SAC	Special Area for Conservation
SAR	Search and Rescue
SMS	Safety Management System
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SWIFT	Structured What-If Technique
VTS	Vessel Traffic System
WDC	Waveney District Council

Table 14-1: List of abbreviations

14.2 Glossary

Competent Harbour Authority	Any harbour authority which has statutory powers in relation to the regulation of shipping movements and the safety of navigation within its harbour, and whose harbour falls wholly or partly within an active former pilotage district. (Source: Pilotage Act)
C-Risk	A simple to use Risk Management tool based on the systematic identification, assessment, control and management of risk. [Source: BMT Reliability Consultants Ltd]
Designated Person	Provides independent assurance to the Duty Holder that the SMS is working effectively, and to audit the Authority's compliance with the Code. (Source: PMSC)
Duty Holder	Each board member of a harbour authority must accept responsibility for ensuring that the Authority discharges its duties and powers to the standards laid down. The members are, severally and collectively, the Duty Holder. (Source: PMSC)
Harbour	The area or areas inside the limits of which the harbour authority's statutory powers are exercisable. (Source: Pilotage Act)
Impact	The severity (in terms of people, assets or the environment) of an incident or accident occurring as a result of a hazard.
Likelihood	The chances of an incident or accident occurring as a result of a hazard.
Marine Operations	Those operations which facilitate the safe use of a harbour by vessels. (Source: PMSC)
RAMSAR	The Convention on Wetlands, signed in Ramsar, Iran, in 1971, an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Risk Class	The classification of a risk, in terms of tolerability, based upon its likelihood and impact
Statutory undertaker	Persons authorised by enactment to carry out any railway, light railway, tramway, road transport, water transport etc. undertaking. Any public gas supplier, water or sewerage undertaker, the Environment Agency, the Post Office and the Civil Aviation Authority are deemed to be Statutory Undertakers (Source: Town and Country Planning Act 1990, 262).

Table 14-2: Glossary of Terms

15 REFERENCES

- 1 Norfolk and Suffolk Broads Act, 1988 (c. 4)
- 2 Port Marine Safety Code, DETR, ISBN 1 85112 365 2, dated March 2000
- 3 A Guide to Good Practice on Port Marine Operations, DETR, ISBN 185112 5221, dated March 2002
- 4 Safety Management System Manual, Great Yarmouth Port Authority, Draft 2, undated
- 5 Associated British Ports Lowestoft - The Port Marine Safety Code Policy and Plans, dated January 2002
- 6 The Norfolk and Suffolk Broads Act 1988 (Alteration of Constitution of the Broads Authority) Order 2005, Statutory Instrument 2005 No. 1067
- 7 Pilotage Act, 1987 (c. 21)
- 8 Broads Authority (Pilotage Powers) Order 1991, Statutory Instrument 1991 No. 1633
- 9 Natural Environment and Rural Communities Act 2006 (c. 16)
- 10 Health and Safety at Work Act, 1974
- 11 Management of Health and Safety at Work Regulations, 1999
- 12 The Rivers (Prevention of Pollution) Act 1951 (Continuation of Byelaws) Order 1989, Statutory Instrument 1989 No. 1378
- 13 National Occupational Standard, Marine Port Operations,
<http://www.dfes.gov.uk/readwriteplus/nosmapping/tree/fa06/nvq00291/I02/>
- 14 The Broads Plan 2004: A strategic plan to manage the Norfolk and Suffolk Broads, dated February 2004
- 15 The Broads Plan 2004 Five Year Action Plan, Version 1.0, dated April 2004
- 16 Statement of Community Involvement, Broads Local Development Framework, January 2006
- 17 Norfolk COMPACT, Norwich & Norfolk Voluntary Services,
<http://www.nvs.org.uk/compact.php>
- 18 Waterways Specification, Sediment Management Strategy
- 20 Navigation Area Works Guidance, Version 1.1, dated August 2005

References Continued

- 20 Code of Practice - Day Boat Hire, Broads Authority, dated February 2005
- 21 Standing Orders for Broads Authority Mud Pilots, Draft 3, dated December 2000
- 22 Standing Orders for Broads Authority Launches on Coaster Escort Duty, dated 3 March 2001
- 23 Broads Authority (Pilotage Powers) Order 1991, Statutory Instrument 1991 No. 1633
- 24 Standing Orders for Broads Authority Mud Pilots, Draft 3, December 2000
- 25 A Mooring Strategy for the Broads Authority, dated March 2006
- 26 Inland Waters Small Passenger Boat Code, Maritime & Coastguard Agency/Association of Inland Navigation Authorities, Ref MCA/IW/01, dated February 2004
- 27 Broads Authority Navigational Formal Safety Assessment, 328S116, Issue 1.2, dated May 2003
- 28 Broadland Flood Alleviation Project, <http://www.bfap.org/>
- 29 Reducing Risks, Protecting People - Health and Safety Executive, 2001. ISBN 0 7176 2151 0, <http://www.hse.gov.uk/risk/theory/r2p2.pdf>
- 30 Boat Safety Scheme, 2002 and 2005, British Waterways and Environment Agency, <http://www.boatsafety.com>
- 31 Oil Spill Contingency Plan, Broads Navigation Area, dated January 2006
- 32 Broads Authority/British Sugar Oil Spill Contingency Plan - Cantley Trade
- 34 Harbour Masters, National Occupational Standards, Port Skills and Safety <http://www.portskillsandsafety.co.uk/publications/nos4>