
Navigation Authority Hirer Safety Review

Initial Recommendations
November 2013

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Executive summary

This review considers the nature and level of risk to hirers of powered boats on inland waters in Great Britain and Ireland. It has been carried out in cooperation with the main navigation authorities and the hire boat trade who have helped generate its conclusions.

The review takes account of the principles for managing water related risks developed by the National Water Safety Forum.¹ It is based firmly on the premise that hirer safety is a shared responsibility between the hirer, hire operator and the navigation authority.

The review found that all the main risks are well understood and existing controls, in general, appear to be proportionate and effective in managing them down to acceptable levels.

The key risk controls are:

- boats and equipment maintained to appropriate safety standards
- safety information and advice that is effective in informing hirers of the risks and the risk controls in place and influencing their behaviour

The recommendations arising from the review are largely refinements to these controls suggested by a working group of hire operators and others with an interest in hirer safety². They also address the need to ensure that key safety controls are consistently applied.

At present there is some confusion as to the status and role of the Hire Boat Code³, BSS⁴ (Boat Safety Scheme) certification, RCD (Recreational Craft Directive) declaration and navigation authority licence or registration conditions.

In consequence, important safety advice is scattered, and there is lack of clarity about what is mandatory. The recommendations are designed to address this.

Perhaps the most fundamental issue identified is the need for a mechanism to progress the recommendations. Given their role in regulating hire boating on their waterways it is appropriate for the main navigation authorities to take lead responsibility for this.

¹ <http://www.nationalwatersafety.org.uk/about/principles.asp>

² Hirer Safety Review Group. Members of this group can be seen on page 8 of this report.

³ Code for the Design, Construction and Operation of Hire Boats. British Marine Federation, Association of Inland Navigation Authorities, Maritime and Coastguard Agency, June 2009

⁴ The Boat Safety Scheme is a safety initiative owned by the Canal & River Trust and Environment Agency. It is supported and promoted by the Association of Inland Navigation Authorities. <http://www.boatsafetyscheme.org/>

Recommendations

- Navigation authorities should take the lead in establishing a single authoritative resource where operators can obtain information on standards and advice on best practice for managing the risk from hire boating.

(The present situation is confused. Reports and guidance have been produced variously by - an AINA Safety Issues Group; Inland Waterways Advisory Group, as part of the National Water Safety Forum; BSS Management Committee; and the AINA/MCA/BMF⁵ review group for the Hire Boat Code.)

- All risk controls relating to the boat and its equipment, whenever practicable, should be incorporated within BSS certification.

(The status and authority of the BSS is well-established and the hire trade generally regards it with favour.)

- BSS certification for all hire boats should be required before licensing or registration.

(The Recreational Craft Directive declaration that navigation authorities currently accept for the first four years in place of BSS certification, does not specify all the necessary safety controls.)

- Key risk controls that are not part of the BSS scheme should be brought together in a single document that clearly indicates those that are mandatory. Adherence to them should be a condition of licensing or registration.

(This would avoid the need to list a plethora of safety risk controls as individual conditions within the licensing/registration process. Consideration should be given to revising the Hire Boat Code to become this document.)

- A simplified set of key safety messages should be developed for hirers.

(Informing and educating hirers about the risks that they will encounter is one of the main risk controls. There is a need to evaluate which methods are most effective and an opportunity to reinforce the advice across a range of media; for example in guides, manuals, handover, posters, DVDs, web and apps.)

- A process to capture more reliable and detailed information about accidents and near misses should be introduced.

(Better data is needed to improve the validity and quality of risk assessment and to facilitate prompt response to any new risks that emerge. Better data should underpin changes to BSS hire boat requirements and Hire Boat Code)⁶

- There should be processes in place to audit and enforce compliance with licence and registration conditions.

(Hire operators want reassurance that safety controls are consistently and universally applied.)

Recommendations are highlighted like this in the body of the report.

⁵ AINA Association of Inland Navigation Authorities; MCA Maritime and Coastguard Agency; BMF British Marine Federation

⁶ The WAID database, explained in more detail on page 8, could be developed to fulfil this need.

Introduction

Every year over 800,000 people enjoy using powered boats on our inland waterways. Considering that over 214 million hours of time are spent on these boats, there are remarkably few serious accidents. (Within these figures it is estimated that over half a million people spend 33 million hours on hire boats.) In contrast there are many benefits. Time spent on recreation and exploration of our waterways makes a major contribution to people's health and well-being.

Although few accidents do occur, it is essential that the navigation authorities and hire operators have taken all reasonable steps to avoid them. They must also be able to demonstrate this is the case if faced with a claim or investigation.

Managing hire boat safety is about balancing benefits and risks in order to provide overall benefit to society and individuals. It is not about creating a totally risk free society or stopping important recreational and learning activity where the risks are considered and accepted.

Nevertheless navigation authorities and hire operators have a statutory duty to ensure, so far as is reasonably practicable, that hirers are not put at risk of harm. They should also be aware of any dangers they might face. The essence of sensible risk management is to focus resources on reducing the most serious risks. These are both those that occur most often and those that have the greatest potential for harm.

When measures to reduce the risk of personal injury are also likely to significantly reduce the benefits the duty holders must ensure that they are sensible, proportionate and appropriate.

The level of risk can be weighed against the level of sacrifice, in terms of time, trouble and money, needed to introduce measures to reduce the risk. The duty holders do not need to go beyond a point where the sacrifice is grossly disproportionate to the risk.

Boating cannot be risk free. Hirers, however, are mainly attracted to the inland waterways for peace, quiet and relaxation.⁷ They may wish to minimise risk and excitement.

Irrespective of whether the boater is seeking adventure or relaxation there should be no nasty surprises. The hirer should be giving informed consent to the risks involved.

Although the number of fatalities and serious injuries appears to be low, navigation authorities and hire operators still have a legal obligation to undertake risk assessment. They should work together to examine how deaths or injuries might occur and consider what methods of risk control are appropriate and achievable.

⁷Holiday Boaters Survey, British Waterways, 2008

Significance of hire boating

There are several reasons why it is important to look at risk from boat hire:

- Hire boats are intensively used. In consequence, although numbering only 4% of all boats, they represent 16% of all boating exposure to risk. Their significance is even greater on the Broads, with hire boats responsible for 35% of the time boaters are exposed to risk (but only 14% of the total number of boats).
- For many people hiring is their introduction to boating. Every year almost a quarter of the holidays booked is by total novices⁸.
- Hirers often go on to be private boat owners. 31% of people buying their first boat have previously been on hire boats⁹.

Safety is a shared responsibility

Safety is a shared responsibility between the hirer, hire operator and the navigation authority.

Hirers should be made aware of the risks they will face. They also need to understand that although they have a right to appropriate protection they also have a responsibility to behave sensibly and take reasonable care for their own well-being.

⁸ Holiday Boaters Survey, British Waterways, 2008

⁹ Private Boating Price-Demand Relationship. Steer Davies Gleave, for British Waterways and the Environment Agency. EA R&D Technical Report W76, 1997

Context

The review was initiated by the navigation authorities, and administered through the Boat Safety Scheme (BSS) and its committees. It has been informed and shaped by the advice and experience of hire boat operators.

The risk assessment and review stage was facilitated by Mike Barrett, BRM Consultancy Services Ltd.; Graham Watts, Manager, Boat Safety Scheme; and Ken Dodd, Chairman, Ken Dodd Associates.

It follows the visitor risk management principles established by the Visitor Safety in the Countryside Group¹⁰ and adapted by the National Water Safety Forum¹¹.

The review focussed on the risk to hirers of self-drive boats, with and without overnight berths.

Earlier research in 2000¹² identified a comprehensive list of potential boating accidents, using a variety of sources. These included:

- Records of actual fatal boating accidents. (Mainly derived from navigation authority records.)
- Records of other boating accidents. (Non-fatal accidents, however, frequently go unreported).
- Claims for compensation for injury.
- “Boatowners’ Views”. An annual survey of boaters then on British Waterways, which asked for details of any accidents.
- Risk assessments carried out by the navigation authorities.
- Workshops involving hire operators, private boaters, boat builders, safety advisors, lock keepers and navigation staff.

The major risk types identified were:

- collision
- crushing
- falls
- operating injuries
- fire, explosion and carbon monoxide poisoning
- antisocial behaviour

This work also identified a need for specific guidance with respect to locks, strong stream conditions and any unusual local risks.

The findings were used to inform the writing of “The Boater’s Handbook, Basic Boat-Handling and Safety” (2002).

¹⁰ <http://vscg.co.uk/guiding-principles/>

¹¹ <http://www.nationalwatersafety.org.uk/about/principles.asp>

¹² Private and Hire Powered Boats. A report prepared for the Steering Group of the “Guidance for Boaters and Other Users of the Inland Waterways” Project, Ken Dodd Associates & Nigel Stevens (Shire Cruisers) October 2000

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The handbook remains in use. On Canal & River Trust waterways over 80% of hirers see the handbook, either on the boat, or, in the case of 37%, posted to them in advance of the holiday.¹³

It is recommended that the Boater's Handbook is reviewed to ensure that its design and messages are consistent with the conclusions of this review.

Further risk assessment was subsequently carried out in support of the 2003 BSS review¹⁴ and following the capsizing of a day hire boat, "Breakaway 5" in 2003. (The risk of capsizing does not feature in the safety section of "The Boater's Handbook".)

This resulted in the production of a (non-statutory) national code of safe practice for boats let for hire on inland waterways, (Hire Boat Code), published in 2009.¹⁵

The code was developed in the context of the Water Safety Principles published by the National Water Safety Forum.¹⁶

It recognises that navigation authorities, hire operators and hirers each have a responsibility for ensuring adequate levels of safety.

The main additional risk identified was from capsizing and the code provides detailed recommendations for stability and freeboard testing.

It also emphasises the importance of having good boat handover procedures; and highlights the need for operators to reassess risk when making changes to boats, especially when they concern stability, fire or ventilation.

It is recommended that the Hire Boat Code is reviewed to ensure that its messages are consistent with the conclusions of this review. Adherence to the revised code should be a condition of hire boat licencing or registration.

Scope of this review

The review sets out to answer three basic questions:

How safe is hire boating?

What are the biggest risks?

What, if anything, should be done to reduce them?

The review assumes the validity of previous work. Its purpose is to identify any significant changes that could affect the conclusions previously reached.

The focus is on analysing available data on boats, incidents and accidents since 2007.

13 Holiday Boater Survey 2008, British Waterways

14 Risk model produced by Advantage Ltd.

15 Code for the Design, Construction and Operation of Hire Boats. British Marine Federation, Association of Inland Navigation Authorities, Maritime and Coastguard Agency, June 2009

16 <http://www.nationalwatersafety.org.uk/about/info/water-safety-principlesv4.pdf>

Process

The BSS Office carried out, and presented to the BSS committees, a comparative risk review of the 2002 BSS hire boat requirements with the 2013 private boat requirements. This assessed the relevance of the latter to hire boats and whether any of the 2002 hire requirements in excess of the 2013 private, should be retained.

BSS Office also carried out, and presented to BSS committees, a risk review of the requirements of the Hire Boat Code in relation to BSS hire requirements and navigation authority licensing and registration conditions.

Boat numbers and accident data for 2007 to 2012 were gathered from all the navigation authorities. The navigation authorities were invited to suggest trends and safety issues.

Accident and fatality data from WAID¹⁷ and BSS records were analysed.

Reports from the Marine Accident Investigation Branch (MAIB) and press cuttings were obtained to establish, where possible, the circumstances of fatalities.

This detailed information was considered over a two-day meeting by a Hirer Safety Review Group (HSRG), a sub group of the BSS committees with the following representation:

- Inland navigation authority
- Association of Pleasure Craft Operators (2 representatives)
- Broads Hire Boat Federation
- British Marine Federation Thames Valley Group (2 representatives)
- British Marine Federation executive
- Canal Boatbuilders Association
- Inland Waterways Association
- National Association of Boat Owners
- Experienced boat hirers (3 representatives)
- BSS examiner/surveyor
- BSS Quality Assessor
- BSS Manager

The work of the HSRG was facilitated by Mike Barrett, BRM Consultancy Services Ltd.

The group suggested trends that might affect safety, agreed the key risks to hirers and considered the adequacy of existing risk controls. The group made some recommendations for change which were subsequently put to groups of hire operators at a series of regional open forums.

All operators and navigation authorities were invited to participate in any of five such forums. Attendees were encouraged to consider trends and risks to hirers. They were asked to comment on the suggestions made by the HSRG.

¹⁷ WAID (WAter Incident Database) was started in 2008 by members of the National Water Safety Forum (NWSF), supported by the Department for Transport. WAID collects incident data from a wide range of sources including the navigation authorities, emergency services, sports governing bodies, coastguard, rescue services, coroners' courts and press reports.

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Hand-outs were used to capture individual views and the forums were structured to encourage discussion. The forums were also used to verify assumptions made about exposure to risk (for example, number of weeks bookings achieved).

The regional open forums were facilitated by Ken Dodd, Chairman, Visitor Safety in the Countryside Group, Ken Dodd Associates.

This report, and any other outcomes from the risk review, will be considered by the BSS committees and ultimately by the BSS Management Committee representing navigation authorities.

The navigation authorities will consider this report and develop any proposals in early 2014. Any consequent revisions suggested to BSS requirements or hire boat licence conditions will be subject to formal consultation in Spring/Summer 2014.

It is envisaged that implementation of any agreed changes will be achieved by April 2015.

Hire boating risk

An established way to compare risk is to look at the death rate per 100 million hours of an activity, known as the FAR (Fatal Accident Rate).

We know the number of hire boats, how often they are booked and the number of people on board. We have assumed that, on average, hirers are away from the boat (for example shopping, sight-seeing and eating out) four hours each day.

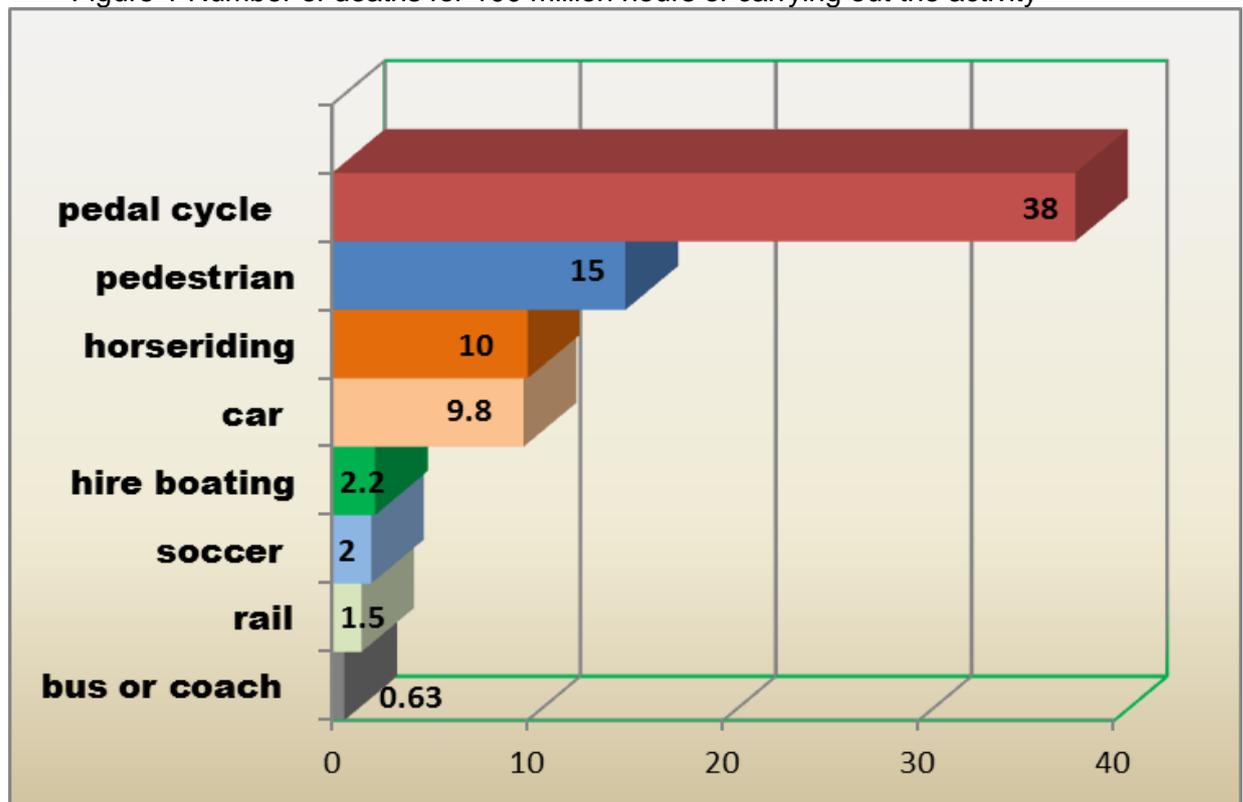
We have used this data to generate the number of hours hirers have spent on boats on Canal & River Trust (CRT), Environment Agency (EA) and Broads Authority (BA) waterways during the six years 2007 to 2012.

Four hirers died on these waterways during this period. This gives a fatal accident rate of 2.2. This compares favourably with other activities. For example, the FAR for travelling in a car is 9.8.

It is, however, important to bear in mind the limitations in reliability of the FAR for hire boating. It is derived from data for a very small number of deaths over a comparatively short period. It will almost certainly change as better data becomes available.

Fatal Accident Rates

Figure 1 Number of deaths for 100 million hours of carrying out the activity¹⁸



¹⁸ Travel fatal accident rates from Department of Transport 2008. Horseriding and soccer FAR from David Ball, Professor of Risk Management, Middlesex University

Hire Fleet Characteristics

There are currently around 2382 boats registered for weekly hire and 836 day boats¹⁹.

Figure 2 shows the number of hire boat operators by navigation authority²⁰

Figure 2 hire boat operators				
	day	weekly	both	total
Canal & River Trust	44	86	19	149
Broads Authority	40	39	21	100
EA Thames	27	34	3	64
EA Anglia	10	6	0	16
EA Medway	0	0	1	1
Scottish Canals	0	3	1	4
Lakes	9	2	0	11
Others	4	2	1	7
totals	134	172	46	352

Some operators have large fleets and more than one base. One third of weekly boats (781) are managed by five companies.

In contrast, 11% of boats (270) are licensed to 208 operators of only one or two boats each.

Figure 3 size of fleet	
number of bases	fleet size (number of boats)
146	1
62	2
92	3 to 9
63	10 to 19
27	20 to 29
9	30 to 50
3	100 to 130
1	221
total number of bases 403	total number of hire boats 3218

48 operators of 1202 hire boats have recently been audited for the British Marine Federation's Hire Boat Handover Procedure.

¹⁹ Navigation authorities hold data in different ways. (Some by financial year, some by calendar, with different reporting dates. The numbers are mainly from 2011 and 2012.)

²⁰ It is not possible to give precise data for any one time. (Companies go out of business, register boats at different times. Navigation Authorities hold records for differing periods.) Nevertheless the table is a good representation of most of our inland waterways. Hire boat data from Waterways Ireland is awaited.

Possible safety implications

It is relatively easy to learn how risk is controlled on a third of the weekly hire boats by talking to just five operators. In contrast it is much more difficult to monitor, or learn from the experience of the large number of smaller operators.

For example, the operator of a single day boat let out with a waterside cottage may lack the boating knowledge and experience necessary to provide effective instruction. This could be controlled, in part, by the availability of standard briefing material.

A decline in the number of smaller operators, as is believed to be the trend on the Broads for example, may result in much greater distances between sites where hirers could receive support.

Handover is an important risk control that should be applied consistently. The BMF procedure and audit process is well regarded. It is encouraging that over 37% of boats have been covered by audit in recent years.

Handover process in accordance with specified criteria should be mandatory. (BMF procedure and audit provides a sound basis for implementation.)

Trends affecting hirer safety

The review considered what has changed since 2007 that could affect hirer safety.

Trends suggested by the Hirer Safety Review Group were considered in the regional open forums. Levels of agreement expressed at the open forums and the safety implications thought likely are detailed in the table below.

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Figure 4 Changes since 2007 suggested by the Hirer Safety Review Group		
Hire Operator trends	% forum agreement	Safety implications
more one or two boat operators	54	No significant common concerns emerged.
lower profits leading to fewer staff	47	
Hire Boat trends		
longer boats	49	Whilst some thought that boats were getting bigger (longer, wider or higher) there were no overwhelming safety concerns, although some issues were raised. These included; greater likelihood of longer boats having problems in locks; higher risk of collision; fall risks when mooring from higher freeboard.
less LPG, now mainly for cooking	80	Seen as positive for safety.
more use of oil-fuelled equipment	65	Seen as positive for safety.
more 240V equipment, more inverters	91	Risk of electrocution and fire; could be controlled by residual current breakers and proper specification of shore lines and equipment.
Waterway & Nav Authority trends		
more volunteer staff	79	Views mixed as to whether this brought good or bad safety consequences. Possible need for standard training to ensure that volunteers deliver consistent safety messages to boaters.
reduction in maintenance standards	57	Some operators were concerned that funding pressures might lead to lower standards of maintenance and slower response to problems. A particular worry seemed to be overhanging vegetation on the non-towpath side. Navigation authorities generally refuted suggestions and expressed views that safety standards have not and would not be compromised.
Hirer trends		
smart phones and tablets	94	Facilitates efficient communication with hire operators, allowing photographs to be used. Potential for text messaging to advise of changed conditions.
More likely to make claims	64	Likely to be positive, encouraging operators to document safety advice given.
Bring own 240V appliances	60	Risk of electrocution and fire; could be controlled by residual current breakers and proper specification of shore lines and equipment.
Availability of cheap alcohol	50	No great safety concerns were reported and operators appear happy to manage any possible risk by giving advice during the handover process. Problems from alcohol and stag/hen parties do not appear to be on the increase.
Older age groups	35	
more single sex (hen & stag) parties	45	
greater use of candles/tea lights	23	
greater use of charcoal or gas BBQs	39	

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Attendees at the forums were invited to suggest any further recent changes that might affect hirer safety. The table below records those that were considered relevant; although it is important to stress that they have not been subjected to any discussion or further scrutiny.

Figure 5 Changes since 2007 suggested by the regional open forums	
Hire Operator trends	Safety implications
larger fleets with fewer bases	Greater distances between sites where hirers could receive support.
Fewer operators	
fewer operators using booking agencies	Reduction in percentage of hirers receiving safety information from agency as part of booking process.
More use of Collision Damage Waiver insurance instead of cash deposits	Reduced incentive for hirers to avoid collisions.
Hire Boat trends	
more hire boats with solid fuel stoves	Increased risk of CO poisoning and fire.
Waterway & Nav Authority trends	
fewer navigation staff	Reduced advice and policing presence on waterway
navigation staff having poorer understanding of boaters	Poorer quality of safety advice.
Hirer trends	
hirers with poor English	Difficulty of ensuring effective handover. Key messages lost in translation to crew. Need for airline-style safety cards with diagrams used to illustrate emergency procedures
more hiring on impulse	Reduced time to deliver safety advice before hire commences. Viewed as a particular issue for day hire handover.
Less smoking inside boat	Reduces fire risk. However, one hirer fatality was when going out to smoke at night.
Less frying on boat	Reduced fire risk.

Risks to hirers

Five hirers died as a result of boating-related accidents between 2007 and 2012. Such a low total reduces the levels of confidence in any conclusions drawn from the data. It is therefore statistically more reliable to consider fatalities to all boaters. This does, however, demand judgement as to whether the causes would be of similar priority for hirers as for private boaters.

Figure 6 BSS recorded motor boating fatalities 2007 to 2012 inclusive		
type of incident	number of deaths	percentage
slips, trips, falls, man overboard	22	48%
fire	9	20%
CO	4	9%
capsize	6	13%
collision	1	2%
operating accident	1	2%
unknown cause	3	6%
total fatalities	46	100

The table above includes deaths of five hirers.

Two were on the Broads, both involved falls, one when mooring, the other returning to board.

Two were on CRT narrow canals, both involving falls; one overboard into a lock, one from the towpath into the canal when the boat was moored.

The fifth was to a hirer on Lough Erne in Ireland. This is the “operating accident.” The hirer was hit by a metal cleat that broke off a private boat as the hirer tried to pull it off reeds.

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Data for non-fatal accidents to boaters is not available in a consistent form to allow a similar table to be compiled for all inland navigations. But, as an indication, the two tables below show incidents to powered boats recorded on the Broads (extracted from the Broads Authority Annual Marine Safety Audits) and the Scottish Canals.

Figure 7 Broads boating incidents 1 April 2008 to 31 March 2013		
type of incident	number of occurrences	percentage
falls getting on and off boats	49	47%
fire	15	14%
poor boat handling	14	13%
heart	7	7%
boat canopies etc.	5	5%
fall overboard	4	4%
fall other	3	3%
capsize	2	2%
illness	2	2%
fending off	2	2%
condition of boat	1	1%
fingers in rope	1	1%
total incidents	105	100
Number recorded on hire boats	35	33%
Number recorded on private boats	16	15%
Type unrecorded, likely private	54	51%

Figure 8 Scottish Canals boating incidents 2007 to 20012 inclusive		
type of incident	number of occurrences	percentage
slips, trips, falls, man overboard	19	54%
Collision/crushing	9	26%
capsize/sinking (all lock hang-ups)	5	14%
fire/CO	1	3%
operating accident (ran aground)	1	3%
total incidents	35	100
Number recorded on hire boats	10	28%

Immediately noticeable, is how the risk from slips, trips, falls and man overboard predominates: the cause of 48% of fatalities overall; 56% of non-fatal incidents on the Broads and 54% on the Scottish Canals.

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This data together, with previous research, was analysed by the Hirer Safety Review Group and a list of key risks agreed.

1. Slips, trips, falls and man-overboard
2. Fire and CO poisoning
3. Capsize and sinking
4. Collisions and crushing

The forums were subsequently asked to consider whether the risks were true for hirers in the order stated. They were also asked to suggest any other risks of significance that were not listed.

There was consensus that slips, trips falls and man-overboard was the highest risk. Views varied with respect to the priorities for the other risks. Some thought that collisions should be of higher significance. Some thought that fire and CO risk was controlled more effectively on hire than on private boats.

As over half the recorded accidents and fatalities are from slips, trips, falls and man overboard, this is the obvious key priority for risk reduction. The priority order of the remaining risks has less relevance. Therefore the other risk categories merit equal attention.

The following additional key risks were suggested at the forums:

machinery	leptospirosis
off-shore wind/weather	electrocution
explosion	health issue when boat is in a remote area

Risk from operating the boat and machinery (such as paddle gearing and swing or lift bridges) was identified as a key element in the 2000 review. The risk is still apparent from the incident data 2007 to 2012. It should be retained on the list of key risks.

It is suggested that the other risks suggested should be taken into consideration as part of the risk management process. For example, although electrocution has not yet been recorded as a cause of death or serious injury, it is an emerging risk as a consequence of the trend for more hire boats to have 240 volt systems.

It is recommended that electrocution is added as a key risk and that risk controls are introduced as part of the BSS process.

The 2000 review identified the risk from antisocial behaviour to be high (for example objects dropped from bridges). This risk is not evident in recent incident data. Therefore it has been removed from the list of key risks.

Resources should be focussed on reducing the following categories of serious risk.

Figure 9 Key risks to hirers
Slips, trips, falls and man overboard
Fire and CO poisoning
Capsize and sinking
Collisions and crushing
Operating (boat and machinery)
Electrocution

Hire Boating appears to be as safe as private boating

Analysis of the data suggests that the risk to hirers is comparable to private boaters and perhaps slightly less. Making comparisons is, however, difficult. Assumptions have to be made about how much time private boat owners are exposed to risk. Information about this is less reliable than data about hire boat use.

However, using reasonable assumptions about the time exposed to risk, and applying them to the incident data in Figure 7 you would expect the risk to hirers to be 35% of the total exposure for boats on the Broads, whereas the actual number of accidents to hirers was slightly less at 33%.

On the Scottish Canals (Figure 8), 28% of the incidents were recorded on hire boats, whereas the exposure to risk is estimated to be 39%.

Similarly the fatal accident rate for private boating is a little higher than that for hire.

Types of boat at particular risk

The review considered whether any particular types of boat presented unusual risk. The HSRG identified three that were put to the forums: - boats with solid fuel stoves; boats with inboard petrol inboard engines; narrow boats where you could be knocked overboard by the tiller.

Views from hire operators at the open forums were mixed as to whether hirers of boats with solid fuel stoves were at greater risk, although several suggested that CO alarms may be an appropriate control. Otherwise proper construction and maintenance of the stoves together with instruction at handover were generally regarded as adequate controls.

A majority of open forum attendees believed hirers of boats with petrol inboard engines were at greater risk. However, there are only a few operators of such boats and the introduction of new inboard petrol-engine boats is highly unlikely.

A proposal to mark the tiller arc on narrow boat decks met with little support at the open forums. Operators felt the risk could be adequately controlled by advice at handover.

Other categories of hire boat or equipment that might put hirers at increased risk suggested at the forums were:

- boats with only one door
- boats with electric outboards
- longer boats (when in lock)
- shared boats and private boats hired out
- boats with poor visibility from/to helm
- items brought on board
- impulse day hire
- cookers without flame failure devices
- boat hooks
- canopies restricting movement on deck
- gas water heaters
- inverters
- BBQs

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The majority of these suggestions come from individual comments written on the hand-outs. They have not been validated by any discussion. They, should, however all be considered.

This need reinforces the recommendation that an appropriate mechanism is put in place to take the risk review process forward.

Hirers at particular risk

The review considered whether any particular hirers were at increased risk. There was general agreement that some hirers were at greater risk. People with disabilities, young children, and the elderly were frequently given as examples. Also mentioned were:

Single sex parties
Novices/inexperienced
Youth groups
Non-English speakers
People who cannot take in advice
The vulnerable
Anglers

Some operators manage risks by requiring adults and able-bodied members to be in the parties. Several do not permit single-sex bookings. Several mentioned the importance of handover when assessing ability to handle the boat.

Competence assessment is recommended in the Hire Boat Code:

“During or at the completion of the handover briefing, the hire operator must decide whether the hirer and his party are sufficiently competent to be allowed to take the boat out. Reasons for not doing so would include:

- Inability of the skipper(s) to demonstrate adequate control (even after repeated instruction)
- Perceived impairment through drink or drugs
- Inadequate resources available to the party to control children safely or supervise persons with special needs.

This (competence assessment) is a good example of the type of risk control that could be made mandatory within a revised Hire Boat Code, adherence to which should be made a condition of licensing or registration.

Further consideration should be given to ways of managing hirers at particular risk.

Again this is evidence of the need for a mechanism to take this review forward. This includes provision to review safety material and design punchy, key safety messages in forms that are easily understood.

This would help meet the needs of several of the higher-risk hirer groups identified (novices/inexperienced; people who do not understand English or find it difficult to take in advice).

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Risk controls

The Hirer Safety Review Group considered the relative responsibilities of hirers, hire operators and navigation authorities in managing all the key risk categories.

The group concluded that, by and large, established risk controls were adequate. Recommendations were concerned with their refinement and making important controls mandatory to ensure consistent application. This would be achieved by making them a BSS or licence/registration condition.

The HSRG conclusions that were considered at the open forums are shown below.

Conclusion from HSRG	Explanation	Forum view
To better control all key risk categories		
Handover process is a key control for all the high risks	Opportunity to influence hirer behavior, assess hirer competence and give generic and local safety advice.	91% agreement (no-one disagreeing)
Handover process in accordance with specified criteria should be mandatory	Handover is such a key risk control that it must be applied consistently. BMF procedure and audit provides a sound basis for implementation.	91% agreement (7% against)
Need to develop punchy key safety messages	Airline-style diagrams could be developed for emergency situations. Key messages could be better integrated in pre-hire information, boat manuals, handover, guidance like the Boaters Handbook and on posters and web-sites.	78% agreement (12% against)
Need to collect better hirer incident data	We need better incident data to improve our understanding of risk to hirers. It is suggested that operators collect hirer incident data in order to inform their own risk control procedures and to share with the navigation authorities. Post hire surveys could be used to collect information with a possible option for comments to be provided to an independent body. Ideally a standard format should be agreed.	62% agreement (28% against)

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Conclusion from HSRG	Explanation	Forum view
To better control slips, trips, falls and man-overboard risk		
It should be mandatory to have lifejackets available on board in defined circumstances	Put on board for each child and non-swimmer, and 'offered' to all others for Cat A and B waters; put on board for all on Cat C and D waters. The type of lifejacket to be determined by applying the principle of equivalence, as used in RNLI life-saving equipment work.	74% agreement (14% against)
A means of re-boarding after MOB into deep water should be mandatory	To aid recovery of people falling overboard. Could be achieved by boat design as per RCD requirement or by portable equipment such as rope ladders or lengths of rope with footholds intended to be tied to a cleat.	66% agreement (11% against)
Slip-resistant surfaces should be mandatory for crew areas	There should slip-resistant surfaces wherever a walkway surface is determined to be a 'crew area'. Boarding-plank upper surface should be included.	76% agreement (14% against)
Tiller marking on narrow boats should be mandatory	The arc of the tiller should be clearly marked on the deck boards to alert hirers to the risk of being knocked overboard.	35% agreement (31% against)
To better control the risk of fire and CO poisoning		
Annual servicing of fire extinguishers should be mandatory	Fulfills hire operators' duty of care, meet manufacturers' service instructions within BS 5306 and (often) insurance company requirement.	91% agreement (6% against)
Annual appliance and flue safety check under the Gas Safety (Installation & Use) Regulations carried out by a Gas Safe registered installer should be mandatory	Recommendation is in line with current landlord & tenant requirements.	80% agreement (9% against)
CO alarms should be installed, (subject to the results of industry trials)	Although there was debate in the HSRG as to whether there was evidence to support the need for alarms (other than possibly on hire boats with solid fuel appliances), and some concern as to their reliability on boats, there was a view that hirers would be reassured by alarm protection.	69% agreement (16% against)
Smoke alarms should be installed, (subject to the results of industry trials)	Again there was debate in the HSRG as to whether alarms should be mandatory and their reliability on boats.	64% agreement (24% against)
To better control the risk of capsize and sinking		
A simplified method for testing stability and freeboard should be developed and applied	HSRG recommended that operators help to further simplify the stability and freeboard testing requirement of the Hire Boat Code and then apply the test to all hire boats using the developed software.	72% agreement (6% against)
Stability and freeboard testing should be mandatory	Licence or registration condition could require evidence of passing the Hire Boat Code stability and freeboard test. This could be a simple software-based spread sheet. Enforcement could be by spot-checks/sampling using the same software-based approach.	73% agreement (5% against)

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Given the generally significant levels of support, it is recommended that, with the exceptions listed below, all the recommendations from the HSRG are taken forward.

The lack of support for (and significant opposition to) the proposal to mark the tiller arc needs further investigation. Several narrow boat operators felt that the risk was adequately controlled by advice given at handover. This proposal should not be made mandatory, unless more convincing evidence can be provided that sways the operators to give greater support.

Although there were good percentages in favour of the use of smoke and CO alarms there was significant opposition suggesting that more persuasive evidence would help before use of alarms was made mandatory. In particular, it is desirable to demonstrate that alarms can be reliably operated in the confined space of narrow boats.

Collecting better quality information about accidents to hirers is vitally necessary to underpin risk assessment. This review, like all that preceded it, has been hampered by the lack of good information about the nature and circumstances of non-fatal accidents. More work is needed to address this.

It was noted that the lowest support for the suggestions about collecting better data was at the Broads forum, with 55% actually against the proposal and only 40% in agreement. This merits further investigation; particularly as the Broads Authority has made the reporting of accidents to them a condition of licence issue.

BSS hire boat requirements

Navigation authorities currently accept Recreational Craft Directive documentation for newly-built hire boats for the first four years, and in consequence they are not necessarily assessed against BSS hire boat requirements.

RCD compliance does not give full assurance to the navigation authorities because there are already around 40 BSS checks on hire boats, largely covering safety equipment, that are additional to the RCD requirements. Adopting the recommendation in this report would increase this figure to around 55 BSS checks.

Therefore it is recommended that navigation authorities require all hire boats to have a BSS certificate as a condition of licensing/registration from the outset.

(Yachts that are hired out are similarly required to comply with MCA codes from new.)

This recommendation was well-received by the forums, with 74% in favour and 12% against.

The conclusions from the comparative risk review of the (current) 2002 BSS hire boat requirements with the 2013 private boat requirements were included in a hand-out provided at the forums. These included twenty one points of detail, some of which had been the subject of recommendations earlier in the hand-out. Probably in consequence 44% did not indicate either agreement or opposition (sometimes making comment about individual points). 51% did agree with the new BSS requirements with only 5% saying no.

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It is therefore recommended that the BSS Office is asked to take forward the proposals contained in their document below.

Review of BSS hire boat requirements

Stage 1 risk-review and assessment includes the following review of BSS hire boat requirements:

- a) the existing published BSS private boat requirements are assessed by the BSS Committees for their appropriateness and relevance for hire boats, including the new and changed BSS requirements for private boats published in January 2013.
- b) the current BSS hire boat checks published in the 2002 BSS Standards that are in excess of the 2013 BSS private boat requirements are assessed for their continued relevance. For example, the use of safety glass, the height above waterline of the weed hatch opening, lifebuoys, etc.
- c) the coverage of hirer safety published in the Hire Boat Code that is over and above the current BSS requirements is risk-reviewed. For example, stability & freeboard assessments, the concept of fire/CO detection, cleats and strong points, anchors and chains/warps and adequate hire boat handover.

Concerning a) above, it is proposed to replace the 350+ hire boat BSS checks published in the 2002 BSS Examination Checking Procedures with 178 private boat BSS checks published in the 2013 BSS Examination Checking Procedures.

The risk argument in favour of this change is that the BSS private boats requirements have been subject to two risk reviews since 2004 and are seen in general terms as representing reasonable and proportionate risk controls. The impact of the proposal is as follows:

- A generally neutral impact on BSS hire boat requirements concerning 143 checks (81%).
- A less onerous requirement for hire boats as assessed against the current 2002 BSS hire boats requirements is proposed concerning 22 checks (12%)
- A more onerous requirement for hire boats as assessed against the current 2002 BSS hire boats requirements is proposed concerning 14 checks (8%). Those checks being:
 - disused fuel filling points to be disabled
 - fuel tank vent hose connections to be accessible for inspection
 - structures and surfaces surrounding exhaust system components free of signs of heat damage
 - a.c. shore-power and battery charging lead inlet connections of the correct type in good condition, and suitably protected from the weather
 - shore-power, battery charging, and other a.c. power source lead connections of a suitable type
 - shore-power, battery charging, and other a.c. power source leads and connectors in good condition

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- a requirement for it to be impossible to connect simultaneously more than one power source to the alternating current distribution system
- a.c. electrical circuits pass through a consumer unit
- a maximum capacity of individual portable petrol tanks to permit safe and convenient carrying and removal for refilling outside the vessel
- spare fuel containers to be in good condition
- portable fire extinguishers to be in open view, or their location clearly marked
- any fire blanket housings to be fixed in position
- low pressure LPG hoses only to be used to connect regulators or appliances to LPG supply pipework and to be a maximum of 1m in length
- solid fuel appliances to be free of unintended gaps/cracks and loose, damaged or missing cover plates

Concerning b) above, it is proposed that 22 requirements (6% of the total number of checks) will be retained from the 2002 BSS Examination Checking Procedures for hire boats, albeit they will be further risk-assessed and may have modified wording. Those checks being:

2.22.1 means of reversing to be operable from steering position

2.21.3 stop control to be located as near to steering position as practicable

3.7.1 - a requirement for ignition protected electrical equipment in petrol spaces (subject to further risk review)

4.4.1 electric propulsion motor – to have an effective means of reversing

4.4.2 electric propulsion motor – to have an effective means of reversing from steering position

7.6.2 LPG cylinder locker opening – to be situated outside of accommodation space

7.9.1 LPG main shut-off valve – to be outside of the accommodation space

10.1.1 a lifebuoy to be provided

10.1.2 a lifebuoy to be carried in readily accessible position

10.2.1 hand/guardrails to be fitted

10.2.2 hand/guardrails to be of adequate strength

10.2.3 hand/guardrails to be of adequate length

10.3.1 hull opening – lowest point to be positioned greater than 250mm above n.l.w.l. and watertight up to 250mm (subject to further risk review and adopting of Hire Boat Code stability and freeboard testing)

10.3.2 hull opening – self-draining cockpit to meet the specification

10.3.3 weed hatch cover – cover to be at least 150mm above normal laden waterline.

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10.3.4 weed hatch cover – to be watertight when secured

10.4.1 water intakes – opening below waterline must be fitted with directly adjacent valve/cock

10.4.2 hull opening valve – to be readily accessible

10.5.1 ventilation labels – to be fitted

10.5.2 ventilation labels – to be prominently displayed

10.6.1 glass – to be safety glass

10.6.2 acrylic /polycarbonate window material (*if not glass*), to be of suitable material

It follows that for over 94% of the 2002 checks, it can be concluded that the 2013 private boat requirements are considered appropriate to control the risk.

Concerning c) above, it is also proposed to introduce 7 new BSS requirements drawn from a review of the recommendations published in the Hire Boat Code. Those recommendations being:

- 230V AC supplies - fit earth leakage protection (RCD)
- battery isolators - label each isolator, e.g. starter and services
- emergency escape - label secondary means of escape where not obvious
- 'crew area' decks to be provided with slip-resistant surfaces
- provision of a bilge pump and bucket or bailer
- a new mandatory BSS requirement for smoke alarms may follow, but subject to competent body advice and the results of a field trial
- the provision of any clear notices denoting the crew area designation and displaying the maximum number persons allowed on the roof. This requirement would be directly linked to the stability and freeboard test results

Other aspects of hire operator responsibility as published in the Hire Boat Code have been risk-reviewed as part of this process however no recommendations are made at this stage. It should be noted that Change Control may be relevant to the need for further freeboard and stability testing.

- Recreational Craft Directive (HBC Section 4.1, page 12)
- Change Control (HBC Section 6, page 31)
- Record Keeping (HBC Section 7, page 32)
- Recommendations and Best Practice for Inspection and Maintenance of Craft by Hire Operators (Appendix 1, page 35)

It can be appreciated that these subjects largely relate to the responsibility of hire operators and will not generally cross-over to BSS requirements, but these subjects may be underpinned by Navigation Authority licensing conditions