Report on the investigation of

the capsize of the passenger launch

Swan

on the River Avon, Bath

14 October 2004

Marine Accident Investigation Branch
Carlton House
Carlton Place
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 2005 – Regulation 5:

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

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purpose is to attribute or apportion liability or blame.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AINA	-	Association of Inland Navigation Authorities
BSS	-	Boat Safety Scheme
BSSC	-	Boat Safety Scheme Certificate
BW	-	British Waterways
cm	-	Centimetres
Cumecs	-	Cubic metres per second
DEFRA	-	Department of the Environment, Food and Rural Affairs
GRP	-	Glass Reinforced Plastic
HMS	-	Her Majesty's Ship
IWSPBC	-	Inland Waters Small Passenger Boat Code
kg	-	Kilograms
MCA	-	Maritime and Coastguard Agency
mm	-	Millimetres
MOD	-	Ministry of Defence

SYNOPSIS

On 14 October 2004, a converted ex-admiralty whaler, with nine passengers and a skipper onboard, flooded and capsized under Pulteney Weir on the River Avon at Bath.

The owners operated the vessel from a base just below the weir on pleasure trips which took up to 12 passengers down the river to Weston Lock and then back to the centre of Bath. The highlight of each trip came just before the end when the vessel was manoeuvred close in to the "V" shaped weir, to enable the passengers to experience the "unique thrill" of the water cascading over the weir close on each side of the boat.

On the day of the accident, *Swan* was driven too close to the weir. Eddy currents caught the open boat and she was taken under the cascading flow of water. The water flooded in, reducing the boat's stability and causing her to capsize and tip the passengers and skipper into the water. Fortunately, the upturned vessel stayed afloat, enabling those in the water to cling to the hull until the vessel fetched up on the side of the river. Close to the weir, tall stone walls flank the river, so the passengers and skipper were unable to climb out of the water. The fire brigade launched a boat and was able to rescue them about 20 minutes after the accident. The passengers were traumatised, one had suffered a fractured wrist and others were affected by mild hypothermia.

There are no statutory requirements governing the stability or equipment required by small vessels like *Swan* that carry less than 12 passengers, and there are no mandatory controls or inspections for these craft. Guidance on minimum levels of stability and equipment is contained in the non-mandatory Inland Waters Small Passenger Boat Code (IWSPBC) which is produced jointly by the Maritime and Coastguard Agency (MCA) and the Association of Inland Navigation Authorities (AINA).

The MAIB investigation found that the stretch of the River Avon below Pulteney Weir had no navigation or licensing authority, unlike many other navigable waterways in the UK.

The investigation also found that:

- no effective risk assessment had been carried out on the boat's operation;
- *Swan* did not fulfil the minimum stability guidance suggested in the IWSPBC when she was carrying more than four passengers; and
- she did not meet the guidance on levels of safety equipment to be carried.

The boat's original stability characteristics had been changed considerably by various former owners. The changes included the fitting of a steel canopy to protect passengers from the elements, and the addition of 250kg of permanent ballast. Even

though the boat was intended to carry passengers, there was nothing to prevent the owners from making changes to its design without checks being made to establish the effect of any change on the boat's stability.

A recommendation, which builds on the work already being carried out as a result of MAIB recommendations arising from the capsize of *Breakaway 5* in 2004, to ensure that all fully navigable waterways are under the control of a navigation or licensing authority, has been made to the Government Interdepartmental Group on Water Safety. Another recommendation, directed to all inland waterway navigation and licensing authorities, encourages those authorities to insist on compliance with the Inland Waters Small Passenger Boat Code as a condition of the granting of a boat licence.

Figure 1

Swan in boatyard after the accident

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *SWAN* AND ACCIDENT (Figure 1)

Vessel details

Registered owner	:	Bath City Boat Trips
Type	:	Passenger launch
Built	:	1975
Construction	:	GRP hull
Length overall	:	8.80 metres (28’10”)
Engine power and/or type	:	11.8hp
Service speed	:	7 knots
Other relevant info	:	The vessel was a converted ex-admiralty whaler

Accident details

Time and date	:	1600 on 14 October 2004
Location of incident	:	Below Pulteney Weir on River Avon at Bath
Persons on board	:	Skipper + 9 passengers
Injuries/fatalities	:	1 passenger fractured her wrist, others suffered mild hypothermia
Damage	:	Vessel flooded and holed below waterline and canopy lost

1.2 BACKGROUND

1.2.1 The boat's history

Swan was built in about 1975 as an Admiralty whaler. She was subsequently sold by the Ministry of Defence (MOD) into private ownership. Her second private owner used the vessel for carrying passengers on pleasure trips along the River Medway. During this period of his ownership, the original Lister engine was replaced with a Volvo Penta one, and a steel canopy was fitted over the boat to protect passengers from the elements. The owner also placed approximately 250kg of concrete kerbstones under the bottom boards in an attempt to "stiffen" the vessel up, as it appeared to be "tender"[1] when passengers stepped aboard.

In July 1998, the boat was sold, and used by the new owner to carry passengers on the River Thames. In December 2001 the boat was sold once again and used for pleasure trips, carrying passengers on the Leeds/Liverpool Canal in the Skipton area. During this period, the owners were concerned that the vessel was very tender, so the steel canopy was lowered by about 0.45m to improve her stability. This also enabled the vessel to pass under the low bridges on the canal.

The vessel was sold to her present owners, Bath City Boat Trips, in 2003 for operation on the River Avon below Pulteney Weir. The only change made to the boat during her current ownership was the replacement of the engine with one of similar size and power.

In addition to *Swan*, Bath City Boat Trips own and operate two larger passenger launches that can carry 33 and 56 seated passengers respectively. The three boats were operated on the same route. The two larger boats were classified passenger vessels by the MCA, and were therefore required to comply with the statutory rules and regulations that apply to that type of craft.

1.2.2 Skipper's experience

Swan's skipper on the day of the accident was also a part owner of Bath City Boat Trips. He held a valid Boat Master's Licence issued by the MCA in 2000. The skipper had gained no commercial marine experience prior to obtaining his licence, but had a keen interest in boating. He had acted as skipper on *Swan* during the 18 months the vessel had been under her present ownership. During that time, the boat had always operated on the same route below Pulteney Weir.

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[1] "Tender" – easily moved from side to side. Usually an indication of marginal stability.

1.2.3 Boat licensing and certification

The owners were in possession of a valid Boat Safety Scheme Certificate for *Swan* dated 7 March 2003, which was valid until 6 March 2007. The certificate was granted while *Swan* was under a previous ownership and was operating in the Skipton area on a canal where the navigation authority was British Waterways (BW). She had also been sold to Bath City Boat Trips with a valid BW river licence. However, in early 2004, the licence had expired and had not been renewed because Bath City Boat Trips did not know the identity of the navigation or licensing authority responsible for the part of the River Avon where she was based.

1.2.4 Area and scope of *Swan*'s operation

The River Avon at Bath is a wide river, where the depth is generally more than 1.5 metres and the significant wave height can not be expected to exceed 0.6 metres. It is, therefore, defined as a Category B water as defined by the Merchant Shipping (Categorisation of Waters) Regulations 1996 and its associated Merchant Shipping Notice 1776(M).

Swan was operated daily between March and November on trips that each lasted about 1 hour. The trips started just below Pulteney Weir at the boat's base where the passengers boarded. The boat was first taken downriver to Weston Lock, then she was turned and she proceeded upriver to the weir. The highlight of the excursion was to take the boat into the "v" of the weir, as close as the prevailing river conditions allowed, and to hold her there for a short time.

The boat trip was advertised locally, on flyers posted in tourist information shops and on websites attracting visitors to Bath. There were no restrictions, concerning age or mobility for instance, placed on who could board the vessel.

1.2.5 Safety equipment

The vessel carried the following safety equipment: 3 life rings, fire extinguishers, boathook and first-aid kit. There is no mandated requirement for safety equipment.

1.3 NARRATIVE

On 14 October 2004, *Swan* had completed two trips: one starting at 1100 and the other at 1345. She had arrived back at her base from the last trip at about 1500.

Nine passengers boarded the vessel for the third trip of the day, and she left the berth about 1510.

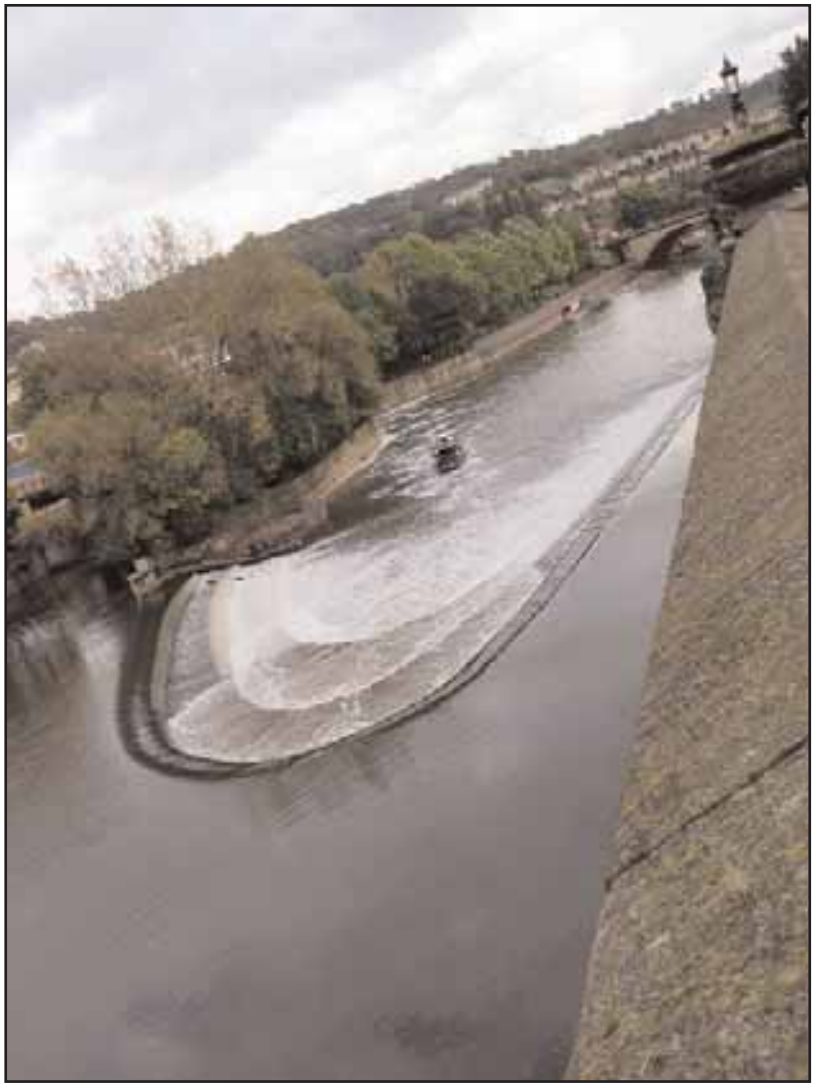
The skipper, on this occasion, forgot to give his usual safety announcement on departure.

He took the boat 2 miles downriver, giving the passengers a running commentary on the local landmarks and points of interest. He then turned the boat just before Weston Lock and returned back up the river towards the centre of Bath.

The boat passed the boarding point and made her way towards Pulteney Weir.

Swan slowly approached the weir **(Figure 2)** and the skipper manoeuvred her into the disturbed water until her bow was between 2 and 3 metres from the centre of the weir. Control of the boat was lost and it moved to port causing the port bow to enter into the water that was cascading over the weir. *Swan* began filling rapidly with water, as the skipper tried, in vain, to move her astern and clear of the weir.

Figure 2



Photograph taken by a member of public as vessel approached the weir

The boat started to list towards the port side as more water poured in. The passengers began to stand up from their seats and move to avoid the inrushing water. The boat continued to list over to port, throwing the passengers and the skipper into the river before fully capsizing.

Some of the passengers found themselves under the upturned boat but, fortunately, were able to get out from underneath the hull.

As the vessel rolled over, some of the passengers tried to hold onto the stanchions of the boat's steel canopy. However, the canopy broke away, injuring one of the passengers as it did so.

The upturned boat drifted slowly downriver, with the passengers and skipper clinging onto the hull as best they could **(Figures 3 and 4)**.

Figure 3

Upturned boat drifting down river

Figure 4

Upturned boat and survivors near river island wall

The skipper was unable to raise the alarm because his sole means of communication, his mobile telephone, was in his pocket and had become damaged by the water. A member of the public signalled to him from the road above the weir, that he had called the emergency services.

Another member of the public ran to a narrow boat moored downriver and informed its owner about the accident. The member of public boarded the narrow boat and the owner quickly got his boat underway and proceeded towards the scene of the accident.

Swan drifted downriver in the current, and towards the right-hand side of the riverbank. Some of the passengers managed to grasp a rope that was strung along the riverbank wall close to a sluice gate. By this method they were able to stop the boat from drifting further downstream. By that time, *Swan* had righted herself. The skipper, helped by some of the male passengers, assisted some of the female passengers into the swamped boat **(Figure 5)**.

The narrow boat arrived on scene. However, concerned for the safety of some of his passengers, who were in the water between *Swan* and the riverbank wall, *Swan*'s skipper asked that she not be brought alongside. Instead, the narrow boat approached end-on.

Figure 5

Boat comes to rest alongside river island wall

About 20 minutes after the accident, the fire brigade's emergency boat, which had been launched from a trailer close to the scene, arrived alongside *Swan*.

The fire brigade took the female passengers off *Swan,* and out of the water, and then ferried them to safety, where paramedics were waiting **(Figures 6, 7 and 8)**.

The male passengers and the skipper transferred to the narrow boat to be taken ashore.

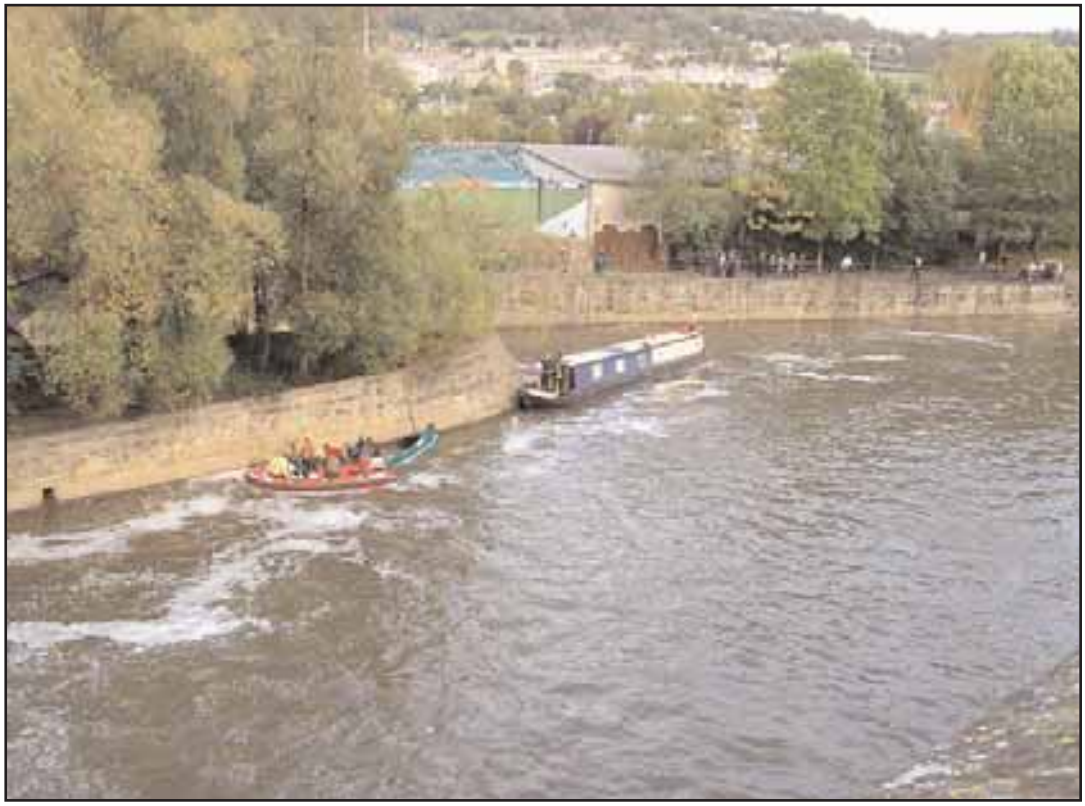
All of the passengers were taken to a local hospital as a precautionary measure, where it was found that one female had sustained a fractured wrist.

Swan's skipper was questioned by the police and was given an alcohol breath test, which produced a negative result.

Figure 6

Fire service personnel arrive on scene in their rescue boat

Figure 7



Narrow boat close to stricken vessel and emergency services in attendance

Figure 8

Female passengers landed to shore

1.4 ENVIRONMENT

Heavy rain had fallen in the Avon catchment area during Wednesday 13 and Thursday 14 October. The daily mean flow on the River Avon at Bath on the day of the accident was 19.282 cumecs. This was high compared with the rate on the previous day which had been 12.194 cumecs and the monthly average rate which was 13.33 cumecs.

(Figures 9, 10 and 11)

On the day of the accident the sky was clear, with light winds.

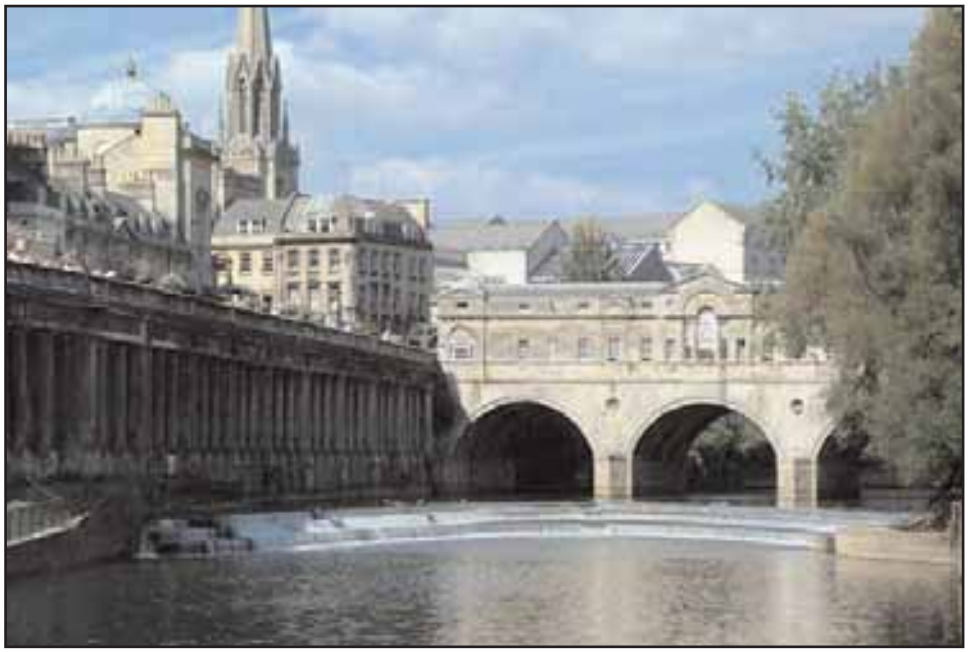


Figure 9
Photograph showing weir calm water

Figure 10
Conditions at weir on the day after the accident

Figure 11
Close-up of water flow over weir

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

2.2 THE CIRCUMSTANCES OF THE ACCIDENT

It is apparent that the skipper took *Swan* too close to the apex of the "v" or horseshoe shaped weir and became caught up in powerful eddy currents which moved her bodily to port and under the cascading water. The skipper had previously taken the boat close to the weir on numerous occasions without incident. However, the river was flowing much faster than would normally have been expected for the time of year, and it is likely that the skipper underestimated the effect the eddy currents would have on his boat.

As a consequence, the skipper was unable to back away from the weir and get clear as a substantial amount of water was taken on board. Passengers stood up to move away from the water and this raised the boat's centre of gravity. This, combined with the free surface effect of the water and the reduction in freeboard, was sufficient to cause *Swan* to capsize.

There was no regulatory requirement for the owner or the skipper of *Swan* to conduct a risk assessment. However, a properly conducted risk assessment of *Swan*'s operation would have identified the dangers associated with working close to the weir, especially when the flow in the river had increased, and the distance the boat held off the weir could have been increased to mitigate the risks.

2.3 THE DESIGN AND STABILITY OF THE BOAT

The Admiralty Whaler was originally intended to be a ship's boat for service in the Royal Navy. It was the most common boat in naval use for about 100 years, until the advent of the rigid inflatable boat. Over the years, modifications to the basic design have been made. In particular, after the Second World War, a motor was added, and later the construction material was changed from wood to glass reinforced plastic (GRP). This type of craft has been referred to as an Admiralty Whaler since the 1950s **(Figure 12)**.

The boat was originally designed with a low freeboard to facilitate being rowed. The low freeboard also enabled easier access to and from the boats when beached. The hull is relatively narrow when compared to contemporary motor boat designs of a similar length. A narrow hull was easier to propel with the relatively limited power produced by rowers.

Figure 12

Admiralty whaler (similar vessel)

Swan differed from the standard Admiralty Whaler design in that a steel canopy had been fitted to provide shelter for passengers **(Figure 13)**. The addition of the canopy with a high centre of gravity affected the boat's stability. This had been recognised, and the effect on stability had been reduced by lowering the canopy about 450mm (18 inches) **(Figure 14)**. Additionally, about 250kg of concrete kerbstones had been added as ballast under the bottom boards, to try and improve the boat's stability **(Figures 15 and 16)**. The boat's original designed levels of freeboard and stability had been changed by these and other modifications during her life. Despite the fact that she was used to carry passengers, there was no control over what modifications were made to the boat, as there were no statutory minimum rules on stability against which the effect of any changes could be measured.

On 6 January 2005, the MAIB carried out an inclining test on *Swan*. The purpose of the test was to establish the position of the centre of gravity of the vessel (G) in a known condition. The displacement and position of G for the accident condition was then arrived at by calculation.

Because the canopy had been lost during the accident, and had not been recovered by the time of the test, the results of the inclining experiment were adjusted to reflect the effect the canopy would have had on the boat's stability. The construction of the canopy was established from anecdotal evidence supplied by former owners and boatyards and from photographs. The MAIB estimated that it would have weighed about 300kg.

Figure 13

Early photograph of *Swan* with raised canopy

Figure 14

Boat when operated at Skipton

Figure 15

One of many kerbstones positioned under bottom boards

Figure 16

Kerbstones positioned in engine compartment

A computer model of the hull was compiled using a stability software package. This definition, along with the displacement and position of G, enabled *Swan's* stability to be analysed for the accident condition. It was found that the deck edge would immerse at an angle of heel of just over 20 degrees, the freeboard was 393mm (15½ inches), and a passenger of average weight would cause the deck edge to sink about 75mm (3 inches) on stepping aboard.

The MCA/Association of Inland Navigation Authority's (AINA's) Inland Waters Small Passenger Boat Code (see section 2.5) is not mandatory, but it contains best practice guidance on, among other things, minimum stability and freeboard criteria. *Swan*, in her condition at the time of the accident, just met the Code's minimum criteria for freeboard. The Code also outlines a simple heel test that can be applied to a small vessel to assess its stability. The test involves loading a boat with people, or approximate weights, to establish angles of heel with everybody on one side. Another user of admiralty whalers had applied this test to the original design of boat and, as a result, had concluded that the design could only pass the minimum stability requirements of the Code with a maximum of four people on board. As stated, that test was applied to the original design of boat (without a canopy or extra ballast). MAIB used the computer definition of the hull in a simulation of the test for the condition she was in on the day of the accident. The modifications carried out on *Swan*, particularly the addition of the heavy canopy, meant that she was only able to pass the minimum stability requirements of the Small Passenger Boat Code with two people on board. In the event, better stability might have enabled the boat to stay upright once flooding had occurred.

The narrow hull made the admiralty whaler tender; this means for example, that when somebody boarded from a quayside, the deck edge would dip noticeably as his or her weight was transferred to the boat. It also meant that the design was sensitive to people moving around; for example, if several passengers moved from one side to the other this would cause a substantial angle of list. The MAIB considers that *Swan* was unsuitable for carrying members of the public, bearing in mind that most of them would not have been accustomed to the handling of this type of small boat, which was designed to be used by professional seafarers. *Swan* was particularly unsuitable for anyone who was unsteady on their feet.

2.4 RIVER/CANAL NAVIGATION AUTHORITY

There are about 4,000 miles (6,440km) of navigable rivers and canals in the United Kingdom. Of these, around half are managed by British Waterways (BW), a public corporation, which derives its powers from Acts of Parliament. BW is funded by income generated from: operating its waterways; government grants through the Department of Food and Rural Affairs (DEFRA), the Scottish Executive and the Welsh National Assembly; and third party sources such as European bodies and the Heritage Lottery Fund.

The majority of the remaining navigable waterways are managed by other navigation authorities, such as the Environment Agency, or licensing authorities such as local councils. Navigation authorities and local councils are empowered, either by specific Acts of Parliament, bylaws or, in the case of local councils, section 94 of the Public Health Amendments Act 1907 **(see Annex 1)**, to issue licences to boats using their waters. A number of local councils choose not to exercise their powers in this respect, leaving some navigable waterways with no navigation or licensing authority.

The owners of *Swan* operated the vessel on the River Avon, carrying fare-paying passengers between Pulteney Weir and Weston Lock. The stretch of the River Avon between Pulteney Weir and Widcombe Lock **(Figure 17)**, has no navigation or licensing authority. However, the waterway between Widcombe Lock and Weston Lock is managed by BW **(Figure 18)**.

When *Swan*'s BW river licence lapsed in February 2004, her owners did not seek to renew it because they did not know who the licensing authority was for the stretch of river where the vessel was berthed. Although the majority of the vessel's trip was through a BW waterway, they did not approach BW for advice.

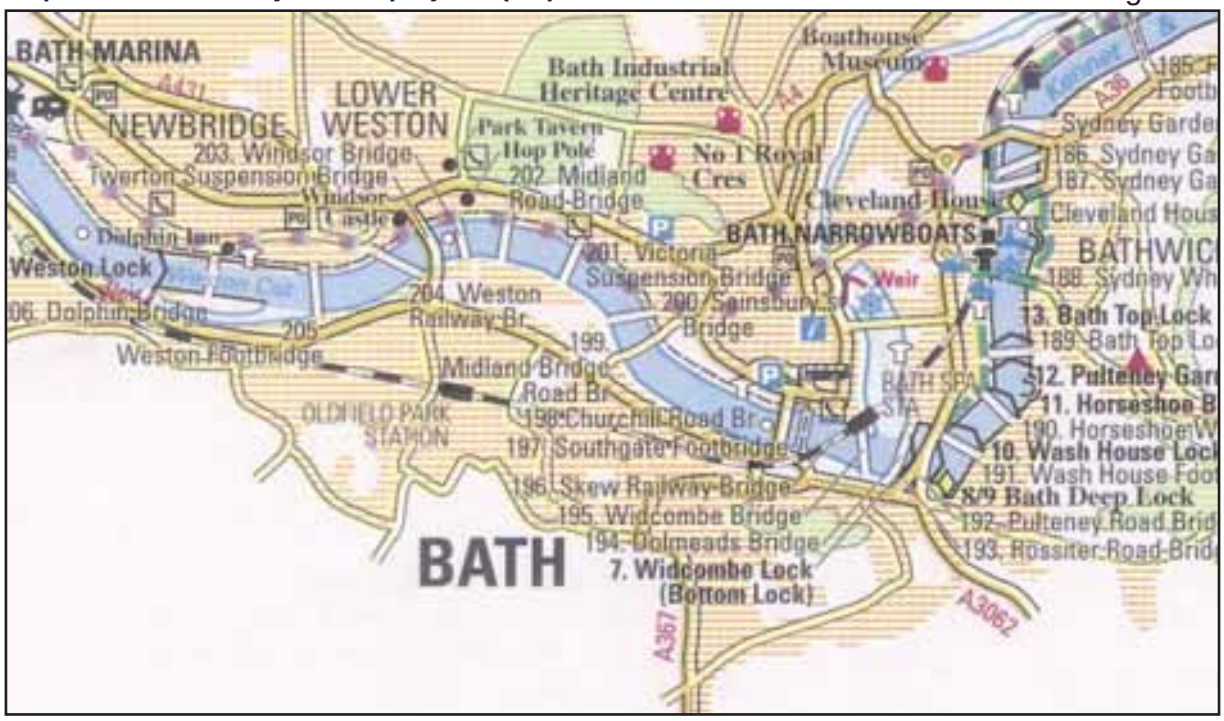
BW was unaware that *Swan* was operating on its waterway. *Swan* still had a BW boat registration number on her side from her previous area of operation **(Figure 19)** and, as she tied up on the stretch of water outside its jurisdiction, a river patrol officer would not have had the opportunity to closely inspect the vessel or to board her.

Despite the fact that the section of the River Avon between Pulteney weir and Widcombe lock has no navigation authority, under common law, owners of property immediately adjoining the river have riparian ownership of the river. This type of ownership does not confer authoritative powers over the river, however, the riparian owner has certain rights and responsibilities regarding the watercourse and the riverbank.

The riparian owner of some, if not all of the stretch of river in question, is the local council, Bath and Northeast Somerset Council. The council was aware of its responsibilities concerning the riverbanks on this stretch of river. It had financed major repairs to the weir and had installed lifesaving equipment at various points along the riverbanks, but it did not license or in any way manage the craft operating on the river.

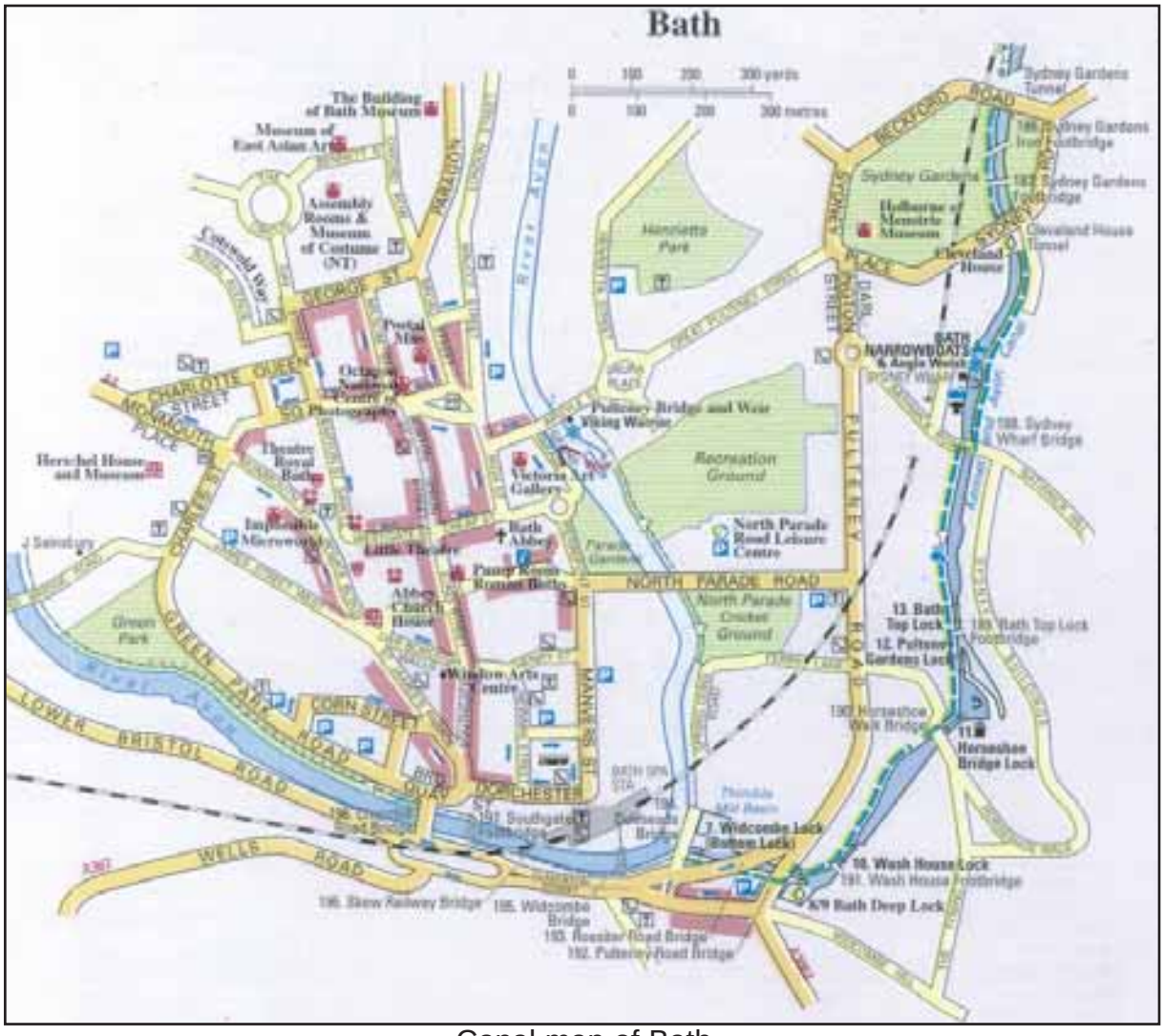
Map extracts courtesy of GEOprojects (UK) Ltd

Figure 17



Map of Bath

Figure 18



Canal map of Bath

Figure 19

BW identification number

A number of local councils and navigation authorities have set up licensing regimes for fully navigable waterways within their respective areas, and have put important conditions against the issuing of licences to small passenger craft. These include:

- a requirement to comply with the Inland Waters Small Passenger Boat Code
- a requirement for third party liability insurance (evidenced by a certificate)
- a requirement for the owner to possess a valid Boat Safety Scheme Certificate for the vessel
- a requirement for the skipper to hold a valid certificate such as a Boat Masters Licence issued by the MCA
- additional safety requirements applicable to their local area, i.e. rules regarding navigational hazards such as tunnels, waterfalls and weirs.
- change of ownership details
- details of alterations to a registered boat
- maximum allowed safe speed on their waterway
- evidence of varying degrees of boat structure and equipment surveys.

If *Swan* had been required to comply with the IWSPB Code, or if specific restrictions had been placed on operations close to the weir, the accident might have been avoided.

2.5 INLAND WATERS SMALL PASSENGER BOAT CODE [IWSPBC]

The IWSPBC is a code of practice for the construction, equipment, stability, operation, manning and maintenance of vessels carrying no more than 12 passengers and operating in Category A, B, C, D and other inland waters.

The Association of Inland Navigation Authorities (AINA) and the Maritime and Coastguard Agency (MCA) published the code which was developed by a team of industry experts, and modified following extensive public consultation. It encourages risk assessment which allows for each operator's experience and own interpretation of risk, and it gives safety advice to operators, licensing authorities and regulators.

The Code is a best practice guide, but is not mandatory. However, as mentioned above, in some areas it is given the force of law as a licensing condition applied by navigation or local authorities, and many owners comply with it voluntarily. The standards it contains should be applied in accordance with the level of risk identified by operators and competent authorities.

In 1999, it was believed that approximately 600 commercial craft were operating on inland waterways in the UK while carrying fewer than 12 passengers. The Code is intended to apply to vessels operating commercially with a skipper or crew, and which carry passengers, and includes vessels like angling or dive boats operating in estuarial waters, a skippered sailing boat taking passengers out on a lake, a water taxi, a hotel boat, or a narrow boat on a canal doing trips in aid of a restoration project.

Applicable sections of the Code as it stood at the time of the accident are as follows:

> *It is the responsibility of the operator to ensure that a vessel is properly maintained, equipped and manned so that it can be operated safely.*
>
> *It is recommended that operators use a simple safety management system of the type that is mandatory for Class V passenger vessels. The purpose of this system is to:*
>
> - *ensure safety on board for passengers and crew,*
> - *prevent human injury and loss of life, damage to property or the environment,*
> - *comply with applicable regulations and rules; and*
> - *keep documentary evidence of risk assessments and the safety procedures in place.*

Note: A rudimentary safety management system might have raised the issue of passenger and vessel safety in the confines of a weir, and evidence would have existed as to what risk assessment had been taken and what safety procedures were in place.

All vessels should comply with the stability requirements given in Annex 8 [of the Code]. Guidance on practical stability tests for motor vessels is given in Annex 10 [of the Code].

Note: *Swan*'s stability would have failed the test contained within the Code, see (see section 2.2).

All vessels should comply with the freeboard requirements given in Annex 9 [of the code].

Note: The vessel would have passed the freeboard test contained in the Code (see section 2 .2), however, the obvious danger was the height of the weir in relation to the freeboard which might have come to light had a full risk assessment been completed.

In Category A and B waters, lifejackets for use in an emergency are not required. Exceptionally, where vulnerable passengers are carried, a risk assessment should be carried out to establish whether, and in what circumstances, lifejackets or buoyant apparatus should be available to assist in the event of an evacuation.

Note: During this accident, the boat capsized but stayed afloat, and the passengers and skipper were able to cling to the upturned hull. It should be noted that had that not been the case, and the vessel had sunk, or passengers, some of whom were non-swimmers had been separated from the boat, there would have been an urgent need for other buoyant apparatus. A full risk assessment, taking account of the maximum depth of water at the weir being 2.74m (9 feet), the shear walls either side of the weir, the water flow and the fact that the trip was open to any member of the public, might have highlighted a need for lifejackets.

Communications equipment should be carried for the following purposes, as applicable to the area of operation …

- *Emergency communications with local emergency services.*

Mobile phones or portable VHF should be contained in a waterproof pouch, or be waterproof in their own right.

Note: The skipper's mobile telephone was carried on his person, so was rendered inoperable when he was tipped in the water. Had the Code been applied, the skipper would have still been able to raise the alarm using his mobile telephone despite the fact the boat had capsized.

At the start of every voyage or trip, the skipper should give a safety briefing to all passengers and crew. If this is not appropriate (e.g. short, regular trips), a safety notice could be prominently displayed at the boarding place, giving brief emergency instructions for passengers.

Note: The skipper forgot to issue his normal safety message before departure. However, his normal safety message was rudimentary and did not contain sufficient information to have been useful in these circumstances. The Code details what a safety briefing should contain, and specifies that the giving of such a message is obligatory.

2.6 BOAT SAFETY SCHEME CERTIFICATE [BSSC]

At the time of the accident, *Swan* had a valid Boat Safety Scheme Certificate (BSSC). A BSCC is required by both BW and the Environment Agency as a condition before a licence is granted. *Swan*'s certificate had been issued during a previous ownership, when she was operating on BW waters.

A Boat Safety Scheme Certificate is issued when a vessel meets the minimum construction and maintenance standards set out by the participating Navigation Authorities relating to the prevention and spread of fire, prevention of explosion and prevention of pollution. The certificate is valid for 4 years. The Boat Safety Scheme is primarily intended to protect against third party risks, and does not cover other important areas such as stability, hull integrity or operational safety.

2.7 BOAT MASTER'S LICENCE

The skipper of *Swan* held a valid Boat Master's Licence issued by the MCA, which was required in order for him to skipper the two larger boats in the fleet. At present, there is no requirement for skippers of small passenger boats carrying up to 12 passengers to have gained a particular level of qualification or experience.

2.8 FATIGUE

Fatigue in the skipper is not thought to have been a contributory factor, due to the small number of trips he made each day.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

1. No effective risk assessment of *Swan*'s operation had been undertaken. A properly conducted risk assessment would have highlighted the dangers of operating close to the weir. [2.2, 2.5]

2. Despite the fact that *Swan* was used to carry passengers, there was no control over the modifications that had been made to the boat through her life, as there were no statutory minimum stability and freeboard requirements that had to be met. The modifications, particularly the addition of the heavy canopy, meant that *Swan* would only have been able to pass the non-mandatory Inland Waters Small Passenger Boat Code's heel test with two or fewer people on board. [2.3, 2.5]

3. *Swan*'s narrow-hulled design was unsuitable for carrying members of the public, especially any who were unsteady on their feet. [2.3]

4. There was no navigation and/or licensing authority on the stretch of river where the vessel berthed and the accident occurred. [2.4]

5. *Swan* did not have to comply with the MCA/AINA's code of practice, the Inland Waters Small Passenger Boat Code, as it is non-mandatory. [2.5]

6. *Swan* did not carry any lifejackets for use by the passengers in the event of an emergency. This accident indicates that there is a need for lifejackets on inland waterways under certain circumstances. [2.5]

7. There was no requirement for the skipper of a passenger boat that carries up to 12 passengers to have any minimum level of qualifications or experience. [2.7]

SECTION 4 - ACTION TAKEN

4.1 OWNERS OF *SWAN*

The owners of *Swan* have disposed of the vessel as a result of an internal investigation, and have voluntarily decided to use only vessels licensed by the MCA.

4.2 PREVIOUS MAIB RECOMMENDATIONS

The MAIB published a report on the investigation of the fatal capsize of *Breakaway 5* in February 2004 (see MAIB website, www.maib.gov.uk). The investigation highlighted the fact that a number of navigable waterways had no responsible navigation or local licensing authority. Two of the recommendations to arise from that investigation were:

2004/122 Unless already undertaken by other authorised authorities, local authorities are recommended to assume responsibility for ensuring that hire boats operate safely within their area of interest by arranging the introduction of licensing regimes supported by the inspection of hire craft by competent bodies.

2004/123 To support the above recommendation the MCA is recommended to form and chair a working group of key interested parties including inland navigation authorities, local authorities, and the hire boat industry, to draw on current best practice to agree on how licensing regimes operated by inland navigation and local authorities can be co-ordinated to ensure full coverage of the UK inland waterways, and to seek the empowerment of appropriate inland navigation authorities to license if required.

A copy of the *Breakaway 5* report, containing the above recommendations, was sent to all councils in the UK including Bath and Northeast Somerset Council.

SECTION 5 - RECOMMENDATIONS

The Department for Transport (Shipping Policy 2) is recommended to:

2005/155 Through the Government Interdepartmental Group on Water Safety, build on the work being carried out by the Maritime and Coastguard Agency as a result of recommendations made after the capsize of *Breakaway 5* (Recommendation 2004/123) to determine the navigation and/or licensing authority for all fully navigable inland waterways in the UK. Where it is determined that no navigation/licensing authority has responsibility for any stretch of fully navigable waterway, it should encourage the relevant government department to take appropriate steps to ensure that a navigation/licensing authority is established.

All inland navigation and/or licensing authorities are recommended to:

2005/156 Issue licences for all vessels for hire which carry passengers. The appropriate licensing authorities should include conditions including, as a minimum, one that requires compliance with the Inland Waters Small Passenger Boat Code when appropriate.

Marine Accident Investigation Branch
July 2005

ANNEX 1

Section 94 of the Public Health Acts Amendment Act 1907

SECTION 94 OF THE PUBLIC HEALTH ACTS AMENDMENT ACT 1907

1. The local authority may grant upon such terms and conditions as they may think fit licences for pleasure boats and pleasure vessels to be let for hire or to be used for carrying passengers for hire, and (persons in charge of or navigating) such boats and vessels, and may charge (for each type of licence) such annual fee as appears to them to be appropriate.

2. Any such licences may be granted for such period as the local authority may think fit, and may be suspended or revoked by the local authority whenever they shall deem such suspension or revocation to be necessary or desirable in the interests of the public; provided that the existence of the power to suspend or revoke the licence shall be plainly set forth in the licence itself.

3. No person shall let for hire any pleasure boat or pleasure vessel not so licensed or at any time during the suspension of the licence for the boat or vessel, nor shall any person carry or permit to be carried passengers for hire in any pleasure boat or vessel unless,

    a. the boat or vessel is so licensed and the licence is not suspended; and

    b. the person in charge of the boat or vessel and any other person navigating it is so licensed and his licence is not suspended and the conditions of his licence are complied with.

4. A licence under this section shall not be required for any boat or vessel duly licensed by or under any regulations of the Marine & Coastguard Agency (or for a person in charge of or navigating such a boat or vessel).

5. No person shall carry or permit to be carried in any pleasure boat or pleasure vessel a greater number of passengers for hire than shall be specified in the licence applying to such boat or vessel, and every owner of any such boat or vessel shall, before permitting the same to be used for carrying passengers for hire, paint or cause to be painted, in letters and figures not less than one inch in height and three-quarters of an inch in breadth, on a conspicuous part of the said boat or vessel, his own name and also the number of persons which it is licensed to carry, in the form "Licensed to carry persons".

6. Every person who shall act in contravention of the provisions of this section shall for each offence be liable to a penalty not exceeding (level 3 on the standard scale) (but a person shall not be guilty of an offence under this sub-section by reason of a failure to comply with such conditions as are mentioned in sub-section (3) (b) of this section if it is shown that there is a reasonable excuse for the failure).

7. Any person deeming himself aggrieved by the withholding, suspension, or revocation of any licence under the provisions of this section may appeal to a petty sessional court held after the expiration of two clear days after such withholding, suspension, or revocation: provided that the person so aggrieved shall give twenty-four hours' written notice of such appeal, and the ground thereof, to the clerk, and the court shall have power to make such order as they see fit and to award costs, such costs to be recoverable summarily as a civil debt.

8. No licence under this section shall be required in respect of pleasure boats and pleasure vessels on any canal owned or managed by the British Waterways Board.

9. In sub-section (1) and (3) of this section "let for hire" means let for hire to the public.