

Extract from The United Kingdom Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 – Regulation 5:

“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an such 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 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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The capsizing of fishing vessel *Anna-Marie II* (WK 875) Brora, East Scotland resulting in one fatality 23 September 2019

SUMMARY

At about 1550 on 23 September 2019, the 6.2m fishing vessel, *Anna-Marie II*, capsized as it entered the mouth of the Brora river while returning from its creel fishing grounds. The vessel broached and was capsized in the waves, resulting in both its skipper and crewman entering the water. Neither was wearing a personal flotation device¹; the crewman managed to swim ashore but sadly the skipper drowned.

The MAIB investigation found that:

- *Anna-Marie II* capsized because it broached and was turned side on to the breaking waves as it crossed the bar at the entrance to the Brora river.
- The skipper struck his head during the capsizing, which might have affected his ability to swim. The lack of a lifejacket led to the skipper being unable to keep his head above water.



Figure 1: *Anna-Marie II*

¹ A personal flotation device is a general term used to describe lifejackets and buoyancy aids. A lifejacket is designed to turn an unconscious person face-up on entering the water while a buoyancy aid only provides assistance in keeping a person afloat.

- The waves at the time of the accident were very unusual for the Brora harbour entrance and had developed very quickly to a height of approximately 3 to 3.5m.
- The experienced skipper underestimated the risk of capsizing in the prevailing conditions and was caught out by the unusually high waves that he encountered.

No recommendations have been made as a result of this investigation. The MAIB has issued a safety flyer to the fishing industry.

FACTUAL INFORMATION

Narrative

At about 1520 on Monday 23 September 2019 *Anna-Marie II* (**Figure 1**) sailed from Brora harbour with its owner/skipper, William 'Willie' Sutherland, and his son (crewman) on board. It was their intention to lift, empty, re-bait and re-shoot one string of creels, and lift, empty and bring ashore two other strings. At about 1540, having re-shot one string of creels and recovered another string of nine creels, the crew saw that the swell was causing waves to break over the marker buoys of the third string of creels, which had been laid closer to the shore. After a short discussion, they decided not to recover the third string and instead return to Brora harbour.

The skipper steered *Anna-Marie II* westward towards the Brora river entrance (**Figure 2**) and waited for three sets of waves to pass before starting his run into the river in the following seas. At this time the crewman was looking to the rear of the vessel from just outside the wheelhouse. Once they were committed to entering the river, an unexpected large wave caught *Anna-Marie II* from astern, causing the vessel to broach; turning it to starboard and heeling it to port, beam on to the waves. A second wave then hit the vessel, rolling it further to port, causing it to capsize and invert (**Figure 3**). The crewman was initially trapped under the hull, but after 10 to 15 seconds he was able to free himself. When he surfaced he could not see his father in the water so decided to head for shore.

At about 1550 the skipper of another local fishing vessel, *Sunny*, which was in Brora harbour, was told by two passers-by on the quay that a vessel had capsized in the river entrance. *Sunny's* skipper, having already spoken to *Anna-Marie II's* skipper earlier in the day, tried to contact him on his very high frequency (VHF) radio, but received no response. At 1553, he called "Mayday" on VHF channel 16 and took *Sunny* out of the harbour into the river to assist. He also called the skipper of another fishing vessel from Brora who he knew was at sea, and told him that the river entrance was blocked. *Anna-Marie II's* crewman managed to swim to shore and was helped uninjured from the water by passers-by and taken to a nearby house to warm up.

As *Sunny* moved towards the river entrance, its skipper saw *Anna-Marie II's* skipper floating face-up and apparently conscious in the water. He immediately shouted to him, but did not get a response. He then manoeuvred *Sunny's* stern towards *Anna-Marie II's* skipper, and pulled him on board using the vessel's shooting ramp (**Figure 4**). *Sunny's* skipper realised that *Anna-Marie II's* skipper was not breathing and started cardiopulmonary resuscitation (CPR). He then began to manoeuvre *Sunny* back into the harbour, which he found difficult, as he had to avoid *Anna-Marie II's* creel lines in the water, prevent the vessel running aground and continue CPR. With the help of people on the quay, *Sunny* was tied up while the skipper continued to provide CPR.

At 1621, an ambulance arrived on scene and at 1635 a coastguard rescue helicopter, R151, arrived. Shortly after, the skipper was flown to Raigmore Hospital in Inverness, where he was declared deceased. The cause of death was determined as drowning. There was also some bruising to his scalp in keeping with a blow to the head.

Image courtesy of Google Maps



Figure 2: Satellite image of Brora river entrance (inset: looking from Brora harbour towards the river entrance)



Figure 3: *Anna-Marie II's* upturned hull



Figure 4: Fishing vessel *Sunny* berthed at Brora

Crew

William Sutherland was 51 years old and had been a fisherman for over 35 years. He had completed the mandatory fishing vessel safety courses² and had lived close to the mouth of the Brora river all his life. He was well respected by other local fishermen for his experience and knowledge of the local area. At the time of the accident the skipper was wearing a T-shirt, fleece, trousers, bib and brace oilskins, a light waterproof and wellington boots. He was not known to have been suffering from any ailments and was described as physically fit and able to swim.

The crewman was 26 years old and had been fishing since leaving school, primarily in the summer months. He had been fishing more regularly on *Anna-Marie II* for about a year and his main role during a normal fishing trip was to shoot and haul the creels while his father helmed the vessel. He had not attended any fishing vessel safety courses.

Neither crew was wearing a personal flotation device (PFD) at the time of the accident. The crewman understood there were two PFDs on board *Anna-Marie II*, although these were not found following the accident, having probably been lost during the capsize and inversion. It was understood that the skipper had worn an inflatable lifejacket in the past, when he fished alone. However, he had stopped wearing it due to concerns that it would hamper his ability to cut himself free if he fell overboard and became trapped in fishing gear, or would lead to him becoming trapped if his vessel capsized.

Vessel

Anna-Marie II was a 6.2m Seal Islander open boat design, constructed from glass reinforced plastic in Chichester in 2012. The vessel had been owned by the skipper for several years and was fitted with a 40 horsepower Honda outboard engine that was under a year old. The vessel's steering equipment was found to be operational after the accident.

Anna-Marie II had ballast in the bilges and fishing gear and fuel was kept at the stern of the vessel to assist with keeping the outboard propeller submerged. The vessel had a full tank of fuel when it left Brora harbour. The vessel had an estimated freeboard of 650mm. The Maritime and Coastguard Agency's (MCA) Marine Guidance Note (MGN) 503 (F)³ recommended a minimum freeboard of 400mm for an open boat and the Wolfson Method, as detailed in its MGN 526 (F)⁴ indicated a critical freeboard of 440mm.

Anna-Marie II was last inspected by the MCA on 13 November 2017 and was issued with a small fishing vessel certificate valid until 26 November 2022. The inspection highlighted three deficiencies: no light for the lifejacket, the VHF radio needed to be registered and there was no means of re-boarding the vessel. All three deficiencies were reported to the MCA, with supporting photographs, as having been rectified before the certificate was issued.

Environmental conditions

At the time of the accident, the tide was flooding and the tidal curves predicted a height of tide of 2.7m above chart datum. The waves at the Brora river entrance were reported as 3m to 3.5m, which was regarded locally as very high and rare. Low tide was at 1251.

The wind was easterly force 3. This was an unusual direction for Brora, but was as had been forecast.

The forecast was for the weather to worsen towards the middle of the week as a low-pressure system was due to move in from the west (**Figure 5**).

² Fishermen must attend the following safety training courses:

- Survival
- Basic fire-fighting and prevention
- Basic first-aid
- Basic health and safety

All new entrants must do the basic sea survival course before going to sea for the first time. The other three basic safety training courses must be done within 3 months of starting work as a fisherman.

³ [MGN 503\(F\)](#) - Procedure for carrying out a roll or heel test to assess stability for fishing vessel owners and skippers, 2014.

⁴ [MGN 526\(F\)](#) - Stability Guidance for Fishing Vessels - Using the Wolfson Method, 2018.

Image courtesy of the Met Office

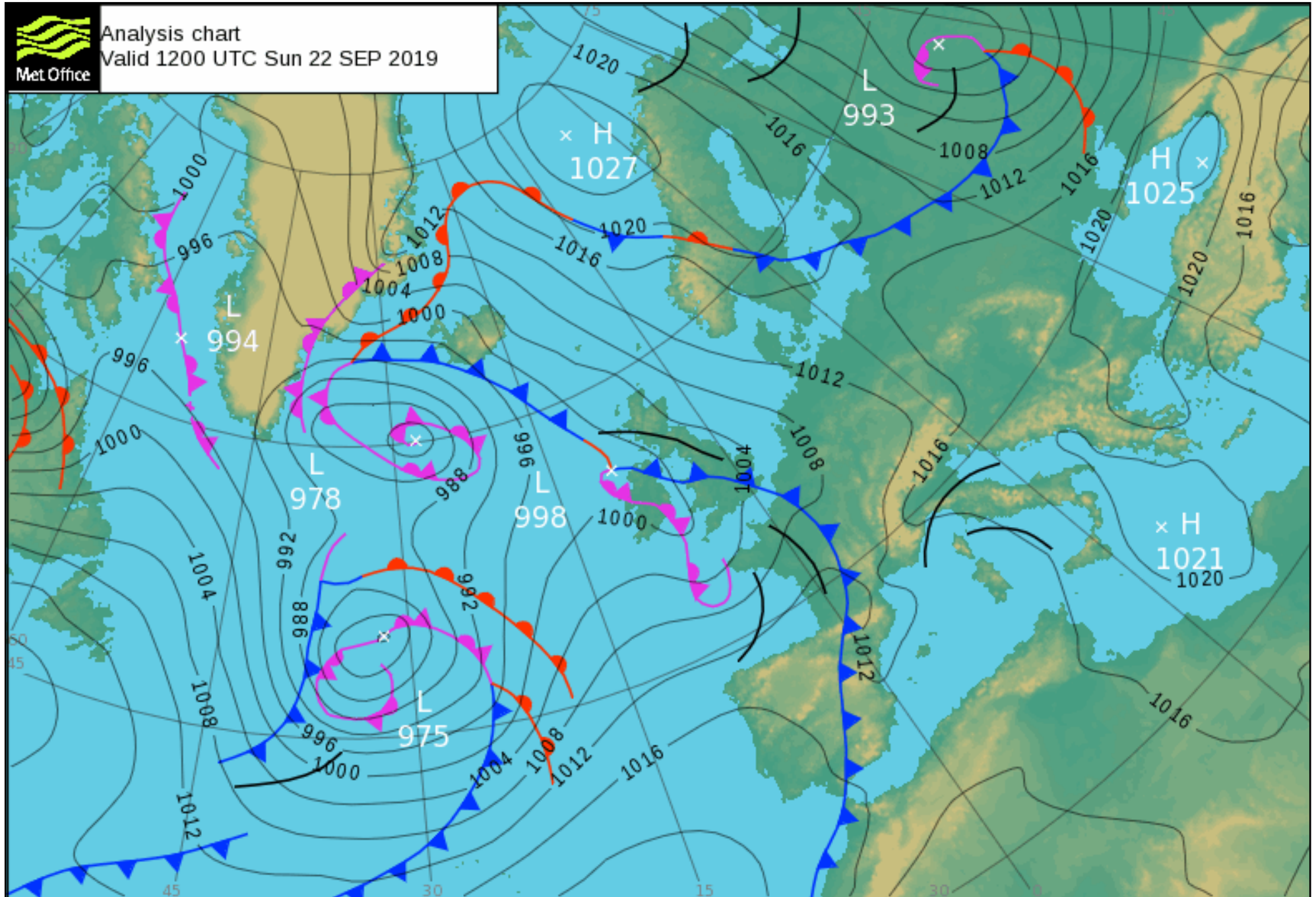


Figure 5: Synoptic weather chart indicating low pressure coming in from the west prior to accident

The bar⁵ at the entrance to the Brora river is known to generate waves (**Figure 6**). These are most significant at low water, when the bar can only be crossed by vessels with a very shallow draught. As occurred on the day of the accident, the local fishermen kept in touch by VHF radio and would often discuss the sea conditions. If already at sea and conditions at Brora were judged too bad to attempt entering the harbour, the local fishermen would typically divert to alternative harbours at Helmsdale (about 6.5nm from Brora) or Portmahomack (about 8nm from Brora).



Figure 6: Waves over the bar at Brora river entrance

Preparing for winter

It was usual for *Anna-Marie II*'s skipper to prepare for fishing over the winter season and perform annual maintenance tasks on the vessel during September. Typically, he would reduce the number of creels laid and/or move them to more sheltered fishing grounds. With adverse weather for fishing forecast for later that week, he had planned to take the vessel out of the water on 24 September, the day after the accident, and arrangements had been made for it to be towed out on a trailer at Brora.

⁵ A bar is a raised area of the seabed that can occur at the entrances to rivers, causing rough conditions as waves from sea increase in size in the shallower water at the same time as meeting the outward flow of the river.

ANALYSIS

Overview

Anna-Marie II broached and lost steerage in the waves encountered while attempting to cross the bar at the entrance to the Brora river; it slewed to starboard, heeled heavily to port and capsized when it was caught by a second large wave. Following the capsize, the skipper and crewman both entered the water after briefly being trapped under the inverted hull. The crewman managed to swim to shore, but sadly the skipper drowned.

This section of the report will analyse why *Anna-Marie II* broached and capsized, and what contributed to the skipper drowning. The skipper's decision to go to sea, the attempt to enter the Brora river, and the crew's preparedness to survive a capsize will also be discussed.

The capsize

A vessel will be susceptible to broaching in a following sea if the waves are travelling faster than the vessel itself. Steering can be temporarily lost as a wave crest approaches, and the vessel then slews beam-on to the approaching waves. The vessel is then dependent on its stability to remain upright while it is broadside onto the waves.

In common with many small open fishing vessels, *Anna-Marie II's* stability was not formally assessed. However, the vessel had ballast in the bilge, a minimum operational freeboard greater than 400mm, as recommended in MGN 503 (F), a critical freeboard greater than 440mm, as calculated using the Wolfson Method described in MGN 526 (F), and had operated without incident in and out of Brora harbour for many years. While the stability of the vessel might have been adequate, an open boat design has a dramatic loss of stability as soon as the bulwark rail enters the water as there is no further righting moment and catastrophic flooding occurs.

Due to the presence of waves with a relatively short wavelength at the Brora river entrance in most weather conditions, it was normal for fishing vessels to enter the Brora river in following seas with waves catching and overtaking them. To reduce the risk of broaching, a more powerful outboard engine can be used to provide more thrust; the engine on *Anna-Marie II* was towards the upper limit of the manufacturer's recommendation for the vessel type. Equipment and fuel were also stowed towards the stern of the vessel to create a stern trim that would help keep the propeller in the water as much as possible to provide thrust. However, on this occasion the skipper was unable to prevent *Anna-Marie II* broaching in the waves encountered.

In this accident, the size and steepness of the waves that *Anna-Marie II* encountered were too great, and once the vessel had turned broadside to the waves it had insufficient stability to resist the capsizing moment. While a decked vessel may take some time to invert, an open vessel has nothing to prevent it from inverting rapidly. This led to the brief entrapment of the skipper and crewman.

Emergency response

It was fortunate that the capsize was witnessed on shore as the skipper and crewman had no opportunity to raise the alarm themselves. On being informed, *Sunny's* skipper reacted quickly, calling a "Mayday" to alert the coastguard that enabled the emergency services to respond quickly.

Sunny's skipper, at potentially great risk to himself, then headed out to the scene of the capsize and very quickly located and recovered *Anna-Marie II's* skipper on board his vessel. *Sunny's* skipper achieved a remarkable feat recovering an unconscious person from the water and then commencing CPR while heading back to the harbour, where help was waiting.

Although unsuccessful in saving the skipper's life, this accident highlights the importance of completing first-aid training and knowing how to raise the alarm in an emergency.

Emergency preparedness

Due to the effectiveness of the normal strategy used for crossing the Brora river entrance it is probable that *Anna-Marie II*'s skipper believed he had done enough to reduce the risk of broaching and capsize. Unfortunately, because the skipper did not perceive that the waves were unusually high and the risk of capsize was great, he did not consider potential measures, such as dropping the set of creels he had collected, calling a local fisherman ashore for advice on wave height or donning appropriate PFDs.

Merchant Shipping Notice (MSN) 1871 Amendment 1 (F) - *The Code of Practice for the Safety of Small Fishing Vessels of less than 15m Length Overall* states:

The wearing of Personal Floatation Devices is mandatory unless a written risk assessment can demonstrate that the risk of going overboard has been eliminated.'

In an open fishing vessel, it is extremely unlikely that a PFD would not be required while on deck given the risk of going overboard cannot be eliminated. The skipper had apparently worn an inflatable 150N lifejacket while fishing alone in the past, but then decided in some circumstances not to do so because of concerns over entrapment.

The MCA introduced the mandatory wearing of PFDs because of the significant number of fishermen who have drowned following fishing vessel accidents. The potential benefits, specifically, of wearing an inflatable lifejacket far outweigh the risks of secondary issues, such as entrapment. This is because they enable survival during the initial stages of cold water shock and then ensure a casualty's head is kept clear of the water, even if unconscious, thus minimising the risk of drowning. In this case the skipper suffered a blow to the head during the capsize, which might have affected his ability to swim, so a lifejacket would have kept his head above water and perhaps prevented him from drowning. While the crewman managed to make his way to shore after a difficult swim and without a PFD, he was very fortunate to have survived in the cold water and large waves he encountered.

The MAIB has conducted a lifejacket review⁶, and the Royal National Lifeboat Institution and Fishing Industry Safety Group provide guidance on PFD use and selection⁷ for specific fishing hazards. Additionally, the New Zealand Coastguard, a country with many hazardous river entrances, provides specific guidance on how to best approach crossing a river bar⁸. Its instructions include the need to make sure everybody on board is wearing a lifejacket.

The 26-year-old crewman, who had been fishing on and off since he left school and on board *Anna-Marie II* for almost a year, had not attended the mandatory fishing vessel safety courses. The 1-day sea survival course must be attended before going to sea for the first time to ensure fishermen are aware of the actions to take in the event of ending up in the water. All four courses are intended to prepare fishermen for emergencies at sea and to make them aware of how to stay safe. Without such knowledge the crewman was less aware of the potential risks and what actions to take in an emergency.

Decision to go fishing

The swell in the Moray Firth had increased during the day. At the time of the accident the swell probably had become the dominant influence on the size of the waves in the Brora area. It is common for the wind to be the principal generator of waves as it moves over an area of sea (a fetch) in a constant direction. However, wind waves generated from weather systems out at sea can also produce swell waves that travel for many miles and increase wave heights as the seabed shallows.

There were no indications from available forecasts to suggest a significant swell in the Moray Firth on the day of the accident, so it is unlikely that the skipper would have been concerned about the influence of swell that day. On his departure from Brora harbour that afternoon there was little to concern the skipper about going to sea.

⁶ (2015) Marine Accident Investigation Branch: [Lifejackets: a review, November 2015](#)

⁷ (2013) Royal National Lifeboat Institution: [PFD Guidance for commercial fishing](#)

⁸ (2019) New Zealand Coastguard: <https://www.coastguard.nz/boating-safely/bar-crossing-safety/>

Decision to enter Brora river

With breaking seas making it too hazardous to recover the final set of creels, and the swell increasing, the decision to return to port was taken with no discussion of diverting to one of the local ports of refuge. It is probable that this was because *Anna-Marie II*'s skipper did not see sufficient cues to suggest that the waves at the river entrance would be dangerous. While the swell from an easterly direction was unusual for Brora, the wind was only a gentle breeze, which would not be associated with the size of waves encountered.

Anna-Marie II's skipper took a proactive approach to maintaining and improving his vessel, and had planned to conduct some annual maintenance the next day in Brora. It is not known whether this influenced his decision to return to Brora harbour.

A potential local indicator of the swell influence might have been the waves breaking further out to sea from the river entrance, which made reaching the final set of creels unsafe. As the skipper was very experienced in the local conditions, perhaps larger waves breaking further out had not presented a problem in the past when entering the Brora river.

The evaluation of the waves prior to heading into the Brora river was fairly brief, the skipper using his usual practice of observing the waves and then going in on the third wave. This approach to entering the river was usually highly reliable. However, on this occasion the skipper was caught out by the unusually high waves that he encountered.

CONCLUSIONS

- *Anna-Marie II* capsized as the skipper lost steerage when the vessel broached, slewing it to starboard and placing the vessel broadside on to the next wave.
- *Anna-Marie II* capsized and inverted because the size and steepness of the waves encountered were too great and the vessel had insufficient stability to resist the heeling moment.
- It is likely that the skipper was conscious when he cleared the upturned hull but drowned as his ability to swim was affected by the blow to the head he sustained during the capsize. The lack of a lifejacket led to the skipper being unable to keep his head above water.
- The unusually high waves created by an easterly swell were not evident in any weather forecasts.
- The skipper of *Anna-Marie II* had extensive experience of the local conditions but was caught out by the size of the waves, which were more difficult to judge from out at sea.
- The skipper's numerous previous successful entries into the Brora river potentially led to a reduced awareness of the risk of capsizing.
- Despite the inherent risk of capsize and persons falling in the water while entering the Brora river, PFDs were not worn by the skipper and crewman on board *Anna-Marie II*.

ACTION TAKEN

MAIB actions

The MAIB has published a safety flyer for dissemination within the fishing industry.

RECOMMENDATIONS

No recommendations have been made as a result of this investigation.

SHIP PARTICULARS

Vessel's name	<i>Anna-Marie II</i>
Flag	United Kingdom
Classification society	Not applicable
IMO number/fishing numbers	WK 875
Type	Fishing vessel, creel fishing
Registered owner	Privately owned
Manager(s)	Privately managed
Year of build	2012
Construction	Glass Reinforced Plastic
Length overall	6.2 m
Registered length	6.2 m
Gross tonnage	1.45
Minimum safe manning	Not applicable
Authorised cargo	Not applicable

VOYAGE PARTICULARS

Port of departure	Brora, Sutherland
Port of arrival	Brora, Sutherland
Type of voyage	Fishing
Cargo information	1 x leader (8 x creels)
Manning	2

MARINE CASUALTY INFORMATION

Date and time	23 September 2019, at 1550
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Brora, Sutherland
Place on board	Ship deck
Injuries/fatalities	One fatality
Damage/environmental impact	Nil
Ship operation	On passage
Voyage segment	Arrival
External & internal environment	Easterly wind (4-9 knots), sea state 3, sea temp 13.1°C. Slack tidal stream.
Persons on board	2