ACCIDENT REPORT

Report on the investigation of

the capsize and full inversion of the self-righting keelboat

RS Venture Connect sail number 307

resulting in the death of a disabled sailor

on Windermere, Cumbria

12 June 2019

VERY SERIOUS MARINE CASUALTY REPORT NO 20/2020 DECEMBER 2020

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

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 investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."

NOTE

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

CPR	-	Cardiopulmonary resuscitation
GRP	-	Glass reinforced plastic
N	-	Newton
PFD	-	Personal Flotation Device
RCD	-	Recreational Craft Directive
RCR	-	Recreational Craft Regulations
RIB	-	Rigid Inflatable Boat
RSVC 307	-	self-righting keelboat RS Venture Connect sail number 307
RYA	-	Royal Yachting Association
SOP	-	standard operating procedures

TIMES: all times used in this report are UTC+1 unless otherwise stated.

SYNOPSIS

On 12 June 2019, Blackwell Sailing's self-righting keelboat RS Venture Connect sail number 307 (*RSVC 307*) capsized and inverted while sailing on Windermere, England. The boat was crewed by an experienced disabled sailor, who had limited mobility, at the helm, and a local sailing instructor who was acting as crewman and tending the sails.

Having been knocked down by gusty winds, *RSVC 307* initially lay on its starboard side with its two crew still in their seats. Almost immediately the boat's liftable keel slid back into the hull, following which the boat inverted completely, trapping the disabled helmsman under the hull. The crewman was able to swim clear, but with the keel retracted he was unable to right *RSVC 307* unaided.

The boat was righted by the Windermere Lake Wardens working with the crew of the sailing centre's safety boat, and the helmsman was recovered from the water. Attempts to resuscitate him in the Lake Warden's boat and on shore were unsuccessful.

The investigation found a number of factors that contributed to the inversion of *RSVC 307* and the death of the disabled sailor, including:

- The boat's weighted keel was not secured, and it retracted into its casing when the boat was knocked down.
- The requirement for the keel 'restraining' strap to be fastened was not stated in the Owner's Manual.
- A total inversion of the boat had not been identified as a risk, so the safety boat crew were insufficiently prepared.

A number of safety issues regarding the management of safety at Blackwell Sailing were also identified. In particular, the centre's risk assessments and procedures did not include a reference to *RSVC 307*. Although the centre was subject to annual inspections by the Royal Yachting Association, the Sailability aspects of the centre's activities were not reviewed during these periodic reviews.

Following this accident, RS Sailing has taken a number of actions to address the issues identified regarding the keel strap. The MAIB issued Safety Bulletin 2/2019, relating to the securing of keels and weighted centreboards; and the Royal Yachting Association has sent out an Advice and Guidance Note to Sailability centres covering the issues raised by this accident.

A recommendation has been made to Blackwell Sailing to review its safety management system in light of the new guidance. A recommendation has also been made to the Royal Yachting Association aimed at improving the support provided to Sailability centres.

RS Venture Connect sail number 307

SECTION 1 – FACTUAL INFORMATION

1.1 PARTICULARS OF RS VENTURE CONNECT SAIL NUMBER 307 AND ACCIDENT

SHIP PARTICULARS	
Vessel's name	RS Venture Connect sail number 307
Flag	United Kingdom
Classification society	Not applicable
IMO number/fishing numbers	Not applicable
Type	RS Venture Connect
Registered owner	Blackwell Sailing
Manager(s)	Blackwell Sailing
Construction	Glass reinforced plastic
Year of build	2016
Length overall	4.9m
Registered length	Not applicable
Displacement	320kg
Minimum safe manning	1
Authorised cargo	Not applicable

VOYAGE PARTICULARS	
Port of departure	Bowness-on-Windermere, Cumbria
Port of arrival	Bowness-on-Windermere, Cumbria
Type of voyage	Pleasure
Cargo information	Not applicable
Manning	2

MARINE CASUALTY INFORMATION	
Date and time	12 June 2019, at about 1220
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Windermere, Cumbria
Place on board	Over side
Injuries/fatalities	1 fatality
Damage/environmental impact	None
Ship operation	Sailing
Voyage segment	Mid-water
External & internal environment	Overcast, wind force 4-5, moderate waves, good visibility, water temperature 12ºC.
Persons on board	2

1.2 BACKGROUND

Blackwell Sailing was a Royal Yachting Association (RYA) Sailability[1] centre located in Bowness-on-Windermere, England. As a Sailability centre, it enabled people with special needs and disabilities to participate in a variety of sailing activities.

Recreational dinghy sailor Stephen Hague was a former police officer who had been involved in an accident that left him with limited mobility in his legs and arms. During his recovery from the accident, he joined Blackwell Sailing and became a competent dinghy sailor. Despite his level of competence, Stephen required the assistance of a crewman to sail the centre's self-righting keelboat RS Venture Connect[2] sail number 307 (*RSVC 307*).

1.3 NARRATIVE

1.3.1 Preparation

At about 0915 on 12 June 2019, Stephen arrived at Blackwell Sailing **(Figure 1)** to participate in his weekly sailing session. He parked his car and walked the short distance from the car park to the clubhouse, where he was greeted by the sailing centre's RYA School Principal (Principal). The Principal told Stephen that he expected the wind to be quite breezy during the day and explained that *RSVC 307*'s sails would need to be reefed[3].

By 0930, six volunteer assistant instructors had arrived at the clubhouse ahead of an expected party of five students and three lecturers from a local special educational needs and disability college. The Principal chose one of them to crew *RSVC 307* and two to crew the safety boat. He and the remaining three assistant instructors split into two pairs to crew two of the centre's Lune Whammel[4] boats, *Freida* and *Joanna*. Once tasked, the assistant instructors left the clubhouse and went to the lake to check and rig the boats. *RSVC 307* was rigged with a reefed mainsail as agreed.

The college party arrived at the sailing centre at about 1030 and went to the clubhouse. The Principal and the college's lead lecturer discussed the plan for the day and agreed that the group would sail to the northern part of the lake and head towards Millerground **(Figure 1)**. This was to allow a drone operator from the college, who was to be based at Millerground, to take some aerial footage of the students sailing.

Prior to going to the lake, Stephen and the college party were issued waterproofs and personal flotation devices (PFD). Stephen was given a 150N automatic-inflation lifejacket, a couple of non-swimmers were issued with either a 100N buoyancy aid or a 150N automatic-inflation lifejacket while most of the college party were given 50N buoyancy aids. The Principal then gave a safety brief to the group and explained the route they would take from the centre to the sailing area. On completion, they

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[1] Sailability – RYA programme to give persons with disabilities the opportunity to get afloat and gain sailing experience.

[2] RS Venture Connect – based on the RS Venture, the Connect was a self-righting keelboat adapted for sailors with mobility issues.

[3] Reefing – an evolution that reduces the area of a sail.

[4] Lune Whammel – a clinker style boat based on a traditional design of fishing boats used on the Lune Estuary.

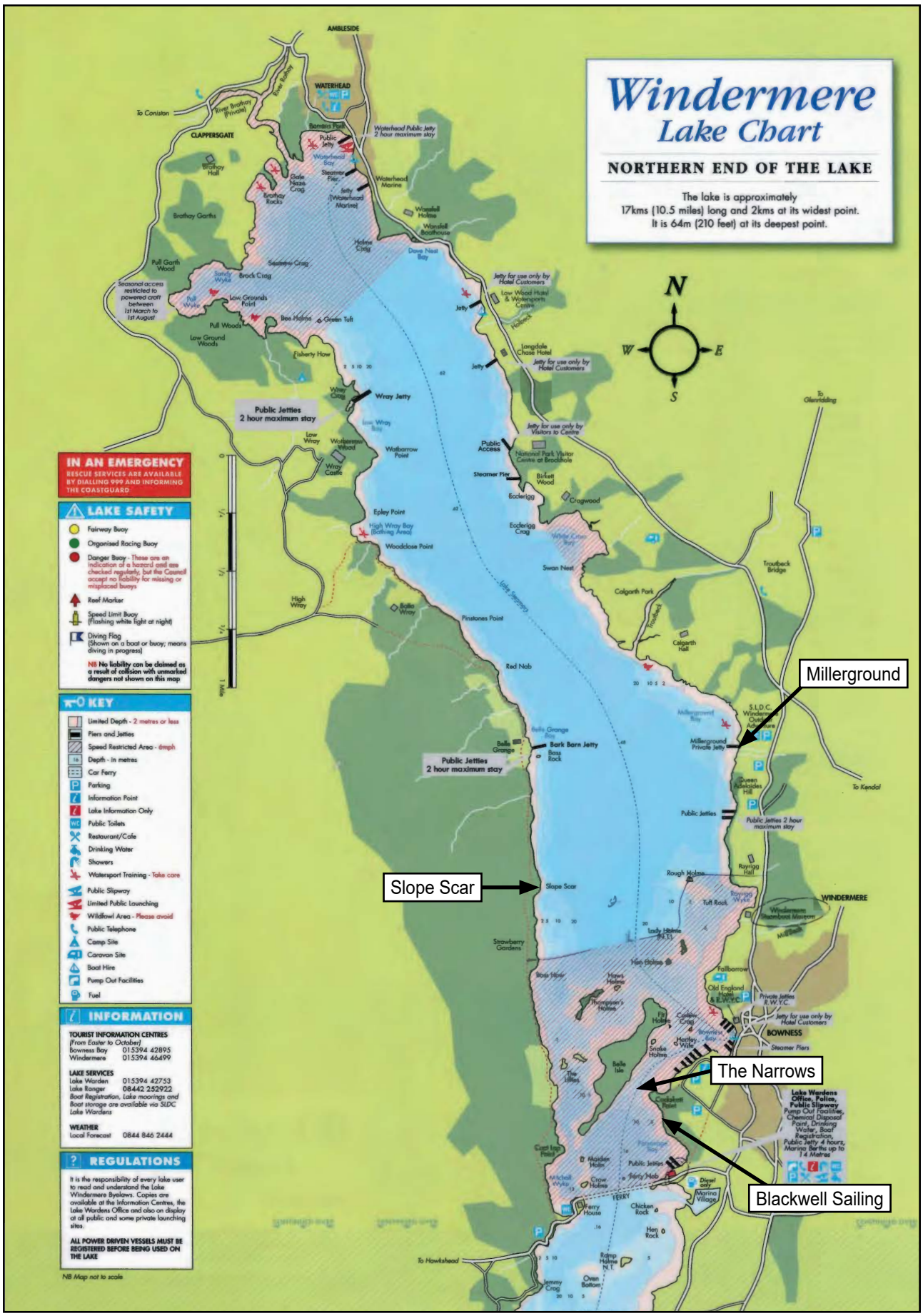

Figure 1: Chart of Windermere showing Blackwell Sailing, Millerground, The Narrows and Slope Scar

all donned their waterproofs and PFDs and made their way to the boats. By 1100, the three sailing boats and the safety boat, a rigid inflatable boat (RIB), were on the water and heading for a stretch of the lake called the Narrows **(Figure 1)**, which they had to pass through to reach the northern part of the lake. Stephen was sitting in *RSVC 307*'s starboard seat **(Figure 2)** and was using its joystick **(Figure 3)** to helm the boat; his crewman, an assistant instructor at Blackwell Sailing was sitting in the port seat controlling the main sail and jib.

Figure 2: *RSVC 307* under sail – still from video footage

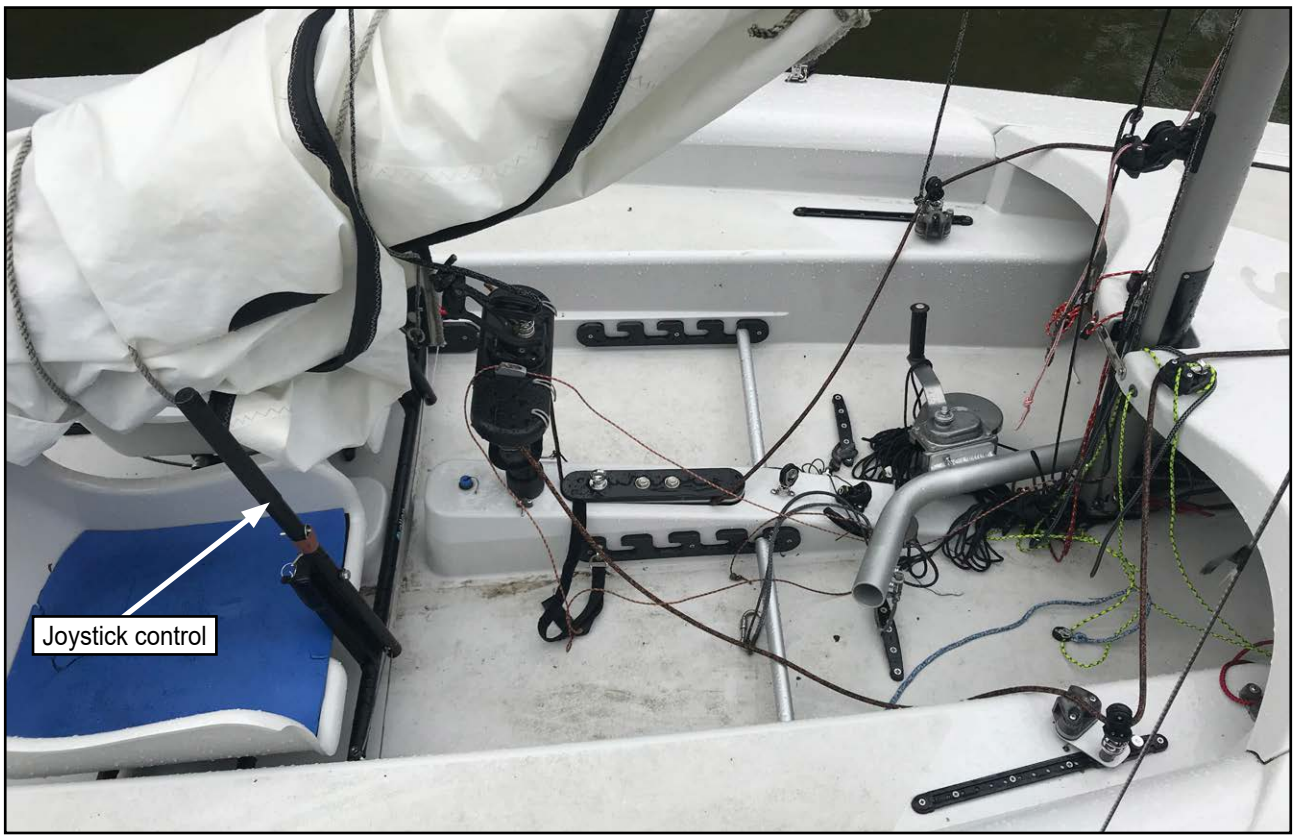

Figure 3: Joystick control

1.3.2 The accident

RSVC 307 was the fastest of the three sailing boats, and the wind conditions allowed it to be manoeuvred at speed. Although it was breezy, the wind's strength and direction were variable and the Lune Whammels' progress through the Narrows was slow. To maximise sailing time on the lake, on the advice of the safety boat crew, the Whammels started their engines to motor into the northern part of the lake.

By about 1215, the breeze had picked up and, although it remained predominantly from the north-west, there were gusts of wind from various directions. *RSVC 307* was frequently heeled over as Stephen and his crewman made the most of the conditions, enjoying the opportunity to manoeuvre the boat at speed in the vicinity of Slope Scar **(Figure 1)**. The Lune Whammels were sailing to the east of *RSVC 307* with *Joanna* being the closest.

As the wind strength continued to increase, Stephen's crewman used *RSVC 307*'s roller reefing system to reef the jib. At about 1220, with the boat on a beam reach[5] port tack[6], the boat was hit by a gust that caused it to heel to starboard and start to turn to starboard. The crewman let go the mainsail to depower it, but the boat continued to turn and was knocked down[7] to starboard **(Figure 4)**. Just before the masthead and sails hit the water, the crewman let go of the jib sheet[8] and instinctively grabbed hold of the boat's port gunwale to stop himself from sliding down towards Stephen.

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[5] Beam reach – sailing with the wind on the side of the boat; sails are halfway out.

[6] Port tack – the wind was blowing from the port side; the sails are carried over the starboard side.

[7] A knock down occurs when a sail boat lies over far enough to put its mast in or beneath the water.

[8] Sheet – a rope that controls a sail.

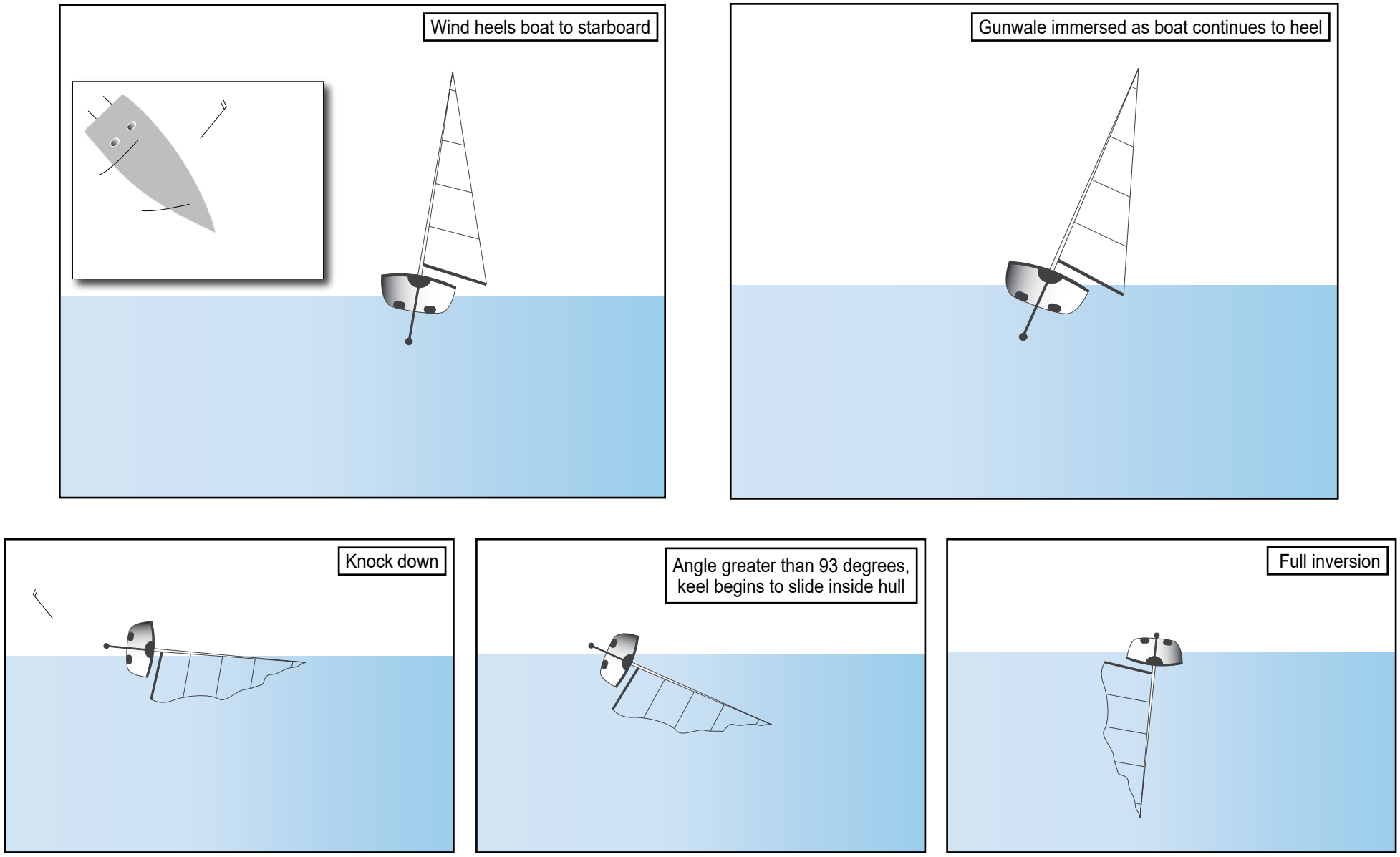


Figure 4: Diagram of inversion

After a few seconds on its side, *RSVC 307* inverted completely **(Figure 4)**. As it did so, Stephen and his crewman were caught under the boat's upturned hull. Almost immediately, the crewman pushed himself out of his seat and swam clear as his lifejacket automatically inflated. Once clear, he could not see Stephen and realised that he must be trapped under the upturned hull. Knowing that there would be very little space for an air pocket, the crewman took hold of the port side of the boat and tried to lift its gunwale.

1.3.3 Emergency response

RSVC 307's inversion was quickly noticed by the safety boat's helmsman, who had been operating close to *Joanna*. He shouted out to his crewman while heading at speed for the upturned hull. *Joanna*'s crew also saw what had happened, and dropped their sails and started the boat's outboard motor. *Freida* soon followed.

The safety boat was on scene quickly and its crew immediately noticed that *RSVC 307*'s keel had dropped back into its housing **(Figure 5)**. The helmsman manoeuvred the safety boat to *RSVC 307*'s port side, close to the crewman, who was still trying to lift its gunwale out of the water. As the helmsman stopped the safety boat's engine, his crewman, who had moved to the side of the boat to assist in lifting the hull, fell overboard.

At 1229, the safety boat helmsman called 999 on his mobile telephone and requested the assistance of the coastguard. Meanwhile, his crewman used the ladder at the stern of the safety boat to climb back on board. He then helped *RSVC 307*'s crewman into the safety boat. At the same time, *Joanna* arrived at the scene, and one of the assistant instructors and the college lead lecturer transferred to the safety boat to assist in the rescue. Between them, they managed to lift the port side of *RSVC 307*'s gunwale **(Figure 6)** about 15cm clear of the water, but they could not see Stephen and he did not respond to their shouting.

At about 1240, Windermere Lake Wardens arrived in their RIB, which was substantially larger than the safety boat. Working with the safety boat crew, the assistant instructor from *Joanna* connected the Lake Wardens' towline to *RSVC 307*'s keel bulb as he was unable to locate the port side shroud[9]. The Lake Wardens'

Figure 5: *RSVC 307* inverted showing keel bulb – still from video footage

[9] Shroud – the pieces of standing rigging that hold the mast up from side to side.

Figure 6: Lifting the portside – still from drone footage

RIB was then driven astern, pulling *RSVC 307* upright and releasing Stephen from beneath its hull. Stephen's lifejacket had inflated but he was floating face down in the water and not moving.

The Lake Wardens released *RSVC 307* and quickly transferred Stephen and the lead lecturer to their RIB before heading to shore at speed. During the transit, the college lecturer carried out cardiopulmonary resuscitation (CPR) on Stephen.

Stephen was taken to Bowness-on-Windermere's public jetty, where two off-duty paramedics assisted with CPR until the air and land ambulances arrived. Although a defibrillator was used, it advised no shock and Stephen was declared deceased by the attending paramedic at 1330.

1.4 POSTMORTEM REPORT

The postmortem report stated that Stephen's death was due to immersion in water and that he had a heart condition that would have affected his ability to cope with the accident. He had suffered bruising to his face and arms and there was evidence of drowning.

1.5 RS VENTURE CONNECT SAIL NUMBER 307

RSVC 307 was an self-righting RS Venture Connect. The hull **(Figure 7)** was constructed from woven layers of glass-reinforced plastic (GRP) under a double layered gel coat. It was 4.9m long, had twin rudders and was rigged with two forward facing seats for para sailing. The purchase of the boat was partly funded by Stephen Hague, and his mother's name had been painted onto the hull. However, the boat was known at the centre as "the RS".

Image courtesy of RS Sailing

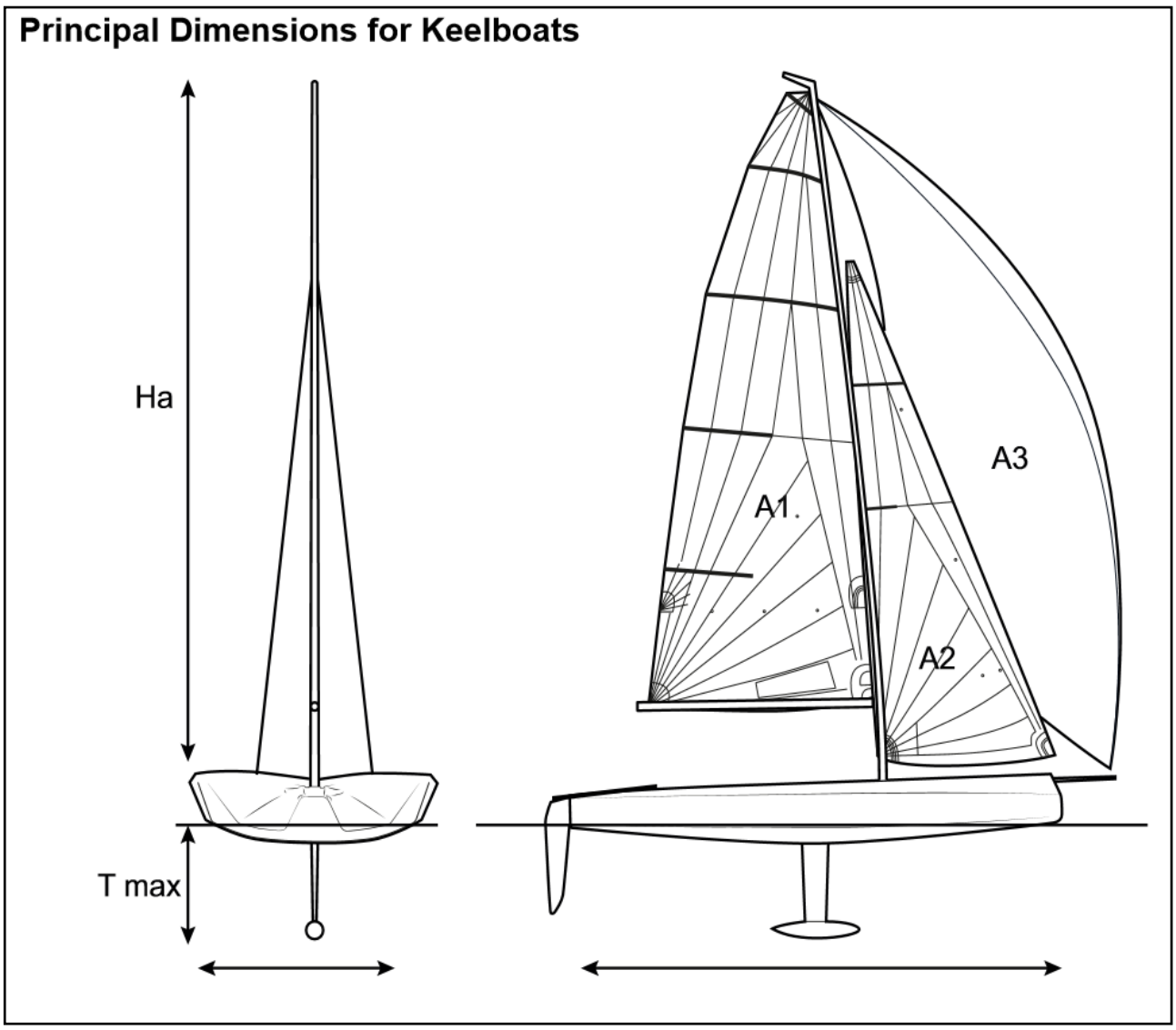


Figure 7: Diagram of an RS Venture Connect

The RS Venture Connect's keel had a bulb weighing 125kg, and was housed in a sleeve that allowed it to be retracted for transport, or deployed when sailing. When *RSVC 307* was not in use, it would be moved to a shallower berth, which required the keel to be raised. When deployed the keel should have been locked in place using the boat's Velcro™ restraint strap **(Figure 8)**. When an RS Venture Connect is knocked down and capsizes onto its side, the weight of the extended keel bulb should create a righting moment sufficient to cause the boat to return upright.

Inspection of *RSVC 307*'s Velcro™ keel strap after the accident identified that the strap had not been fastened **(Figure 9)**.

1.6 POST-ACCIDENT TRIALS

Trials conducted by RS following this accident showed that an RS Venture Connect, lying on its side with the mast head in the water would:

1. Be heeled over to an angle exceeding 93°, at which point an un-restrained keel would retract into the hull under its own weight, and the boat would invert fully **(Figure 10)**.

2. With the keel strap in place, the keel would remain deployed and the boat would quickly self-right from its knocked down position.

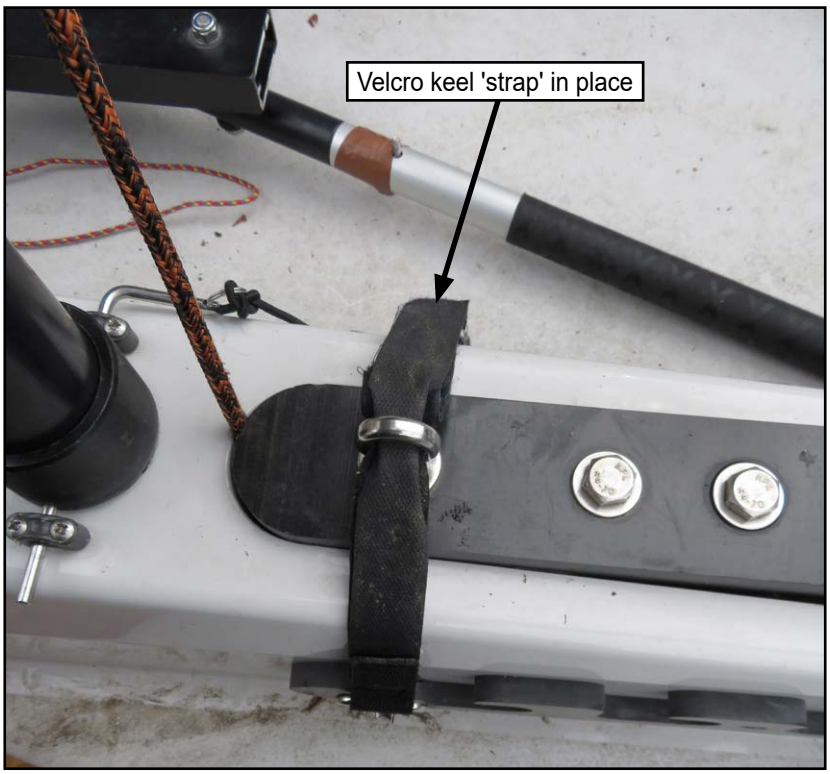


Figure 8: The Velcro™ keel strap

Figure 9: *RSVC 307*'s keel strap as found after the accident
(note: jib sheet caught in keel housing as the boat was righted)

Figure 10: RS Venture Connect at 93°

1.7 BOAT CREW

1.7.1 RS Venture Connect sail number 307

Stephen Hague was 57 years old; he had sailed in his youth and enjoyed being on the water. He was 35 years old when he was struck by a drunk driver while on duty with the police. His injuries were so severe that he spent 4 months in a coma before he could begin his recovery. The accident left him with permanent mobility issues with his legs and arms. Fiercely independent, Stephen was able to drive his adapted car and was able to walk, with some assistance, although he also used a wheelchair at times. He had completed a programme of sail training with Blackwell Sailing following which the centre considered him to be a competent sailor.

RSVC 307's crewman was 66 years old and had been an assistant instructor[10] at Blackwell Sailing since 2016. He obtained his first sailing qualification with the Scout Association in July 1972 and completed the RYA's Coastal Skipper and Yachtmaster Offshore shore-based course in March 1984. On the day of the accident, he was wearing casual clothing, oilskins and an auto-inflation lifejacket with 150N of buoyancy. He usually wore his own auto-inflate lifejacket, but on the day of the accident he had forgotten it and had borrowed one of Blackwell Sailing's auto-inflate 150N lifejackets.

1.7.2 Safety boat

The safety boat helmsman had been a volunteer assistant instructor at Blackwell Sailing since 2016. He obtained his RYA Powerboat Level 2 at the Royal Windermere Yacht Club in November 2014 and Safety Boat certificate at Blackwell Sailing in October 2017. He had also completed the RYA disability awareness training. On the day of the accident he was wearing casual clothing, waterproof sailing trousers and jacket and a 150N auto-inflate lifejacket.

[10] Assistant instructor certificate was a locally awarded qualification, valid only at Blackwell Sailing and achieved after the volunteer had shown that they were competent with the centre's boats.

The safety boat crewman was a former Royal Navy sailing instructor and had been a volunteer assistant instructor at Blackwell Sailing for over 20 years. He held RYA Powerboat Level 2 and Safety Boat certificates and a first-aid certificate. He had also completed the RYA disability awareness training. On the day of the accident he was wearing casual clothing, a waterproof jacket and trousers, and a 50N buoyancy aid.

1.7.3 The Lune Whammels

Blackwell Sailing's Principal was an experienced sailor and had been pivotal in the formation and setting up of the sailing centre. He held an RYA Senior Instructor certificate, which was one of many requirements necessary for Blackwell Sailing to comply with the conditions necessary to retain RYA Training Recognition. He also held a Safety Boat certificate, first-aid certificate and had completed the RYA's disability awareness training course. On the day of the accident he was wearing casual clothing, waterproofs and a 50N buoyancy aid.

The other three volunteer crew sailing the Lune Whammels, *Freida* and *Joanna*, were volunteer assistant instructors.

1.8 SAFETY BOAT

Blackwell Sailing's safety boat was a 4.7m Zodiac PRO 500 RIB **(Figure 11)**. It was purchased in 1999 and was fitted with a Tohatsu 30 horsepower (22.1 kilowatt) four-stroke outboard engine. The RIB had a central console with a single seat and was equipped with a small boarding ladder on its port transom.

Figure 11: Blackwell Sailing's safety boat

1.9 RS SAILING

RS Sailing is the trading name of the UK dinghy design and manufacturing company H. Taylor & Son (Brockley) Ltd, which was founded on 29 October 1957. The company released the RS Venture in 2011 in response to increased demand for multi-purpose boats. The RS Venture proved to be very popular. It was capable of deploying a mainsail, jib and spinnaker, and had a retractable centreboard.

After the success of the original RS Venture, RS Sailing went on to develop a choice of standard or ballasted centreboards along with a lifting keel version, the RS Venture Connect. The RS Venture Connect was very similar to the base model but had the weighted liftable keel **(Figure 12)** rather than a centreboard, making the boat a keelboat. The RS Sailing website[11] stated the following:

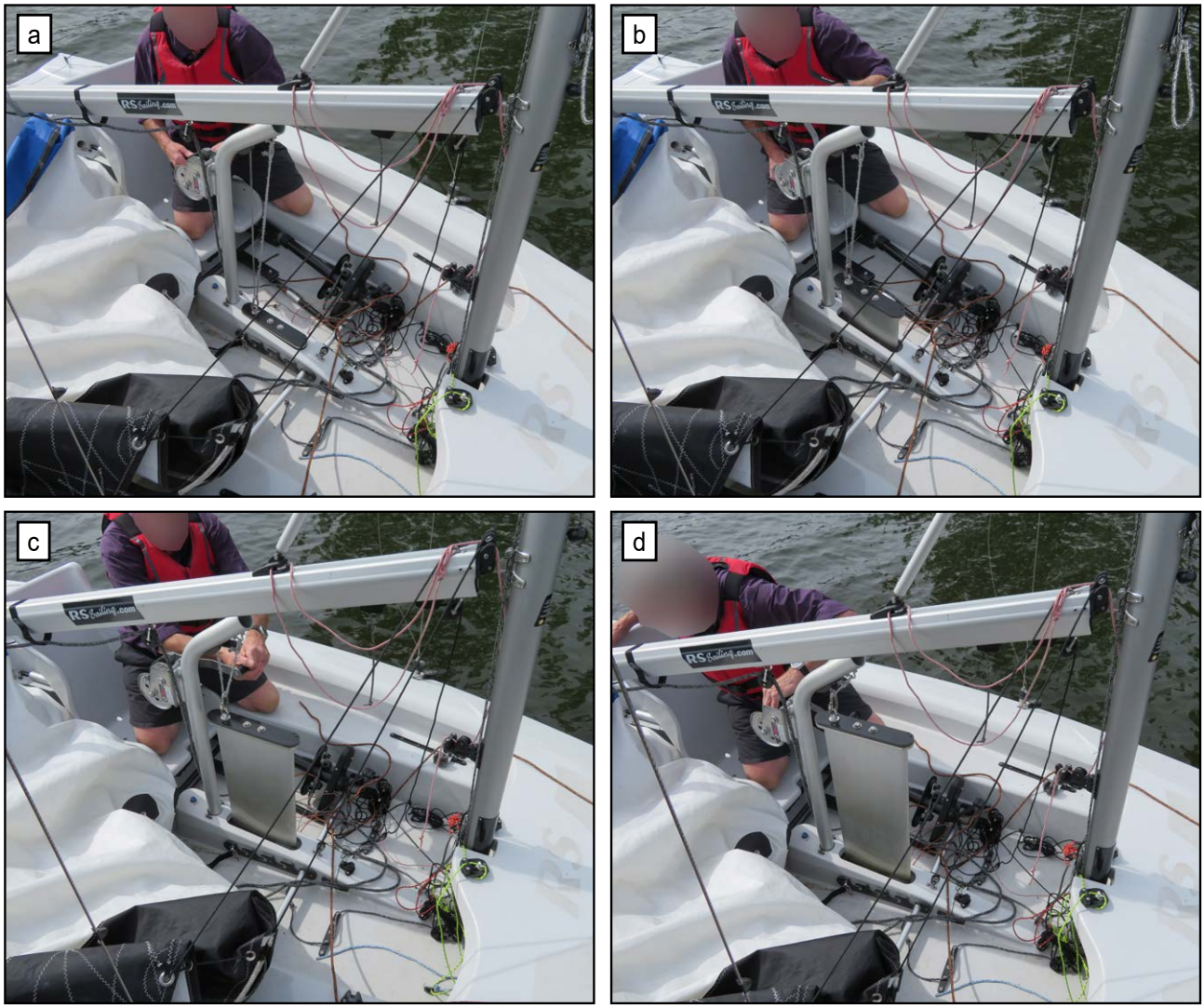


Figure 12: The liftable keel

RS Venture Connect

This is the self-righting keelboat version of the RS Venture, with a lifting bulb keel for exceptional security and seaworthiness. Its large, self-draining cockpit makes the RS Venture Connect perfectly suited to unforgettable family adventures afloat. And it offers training centres a secure, multi-person boat for confidence-inspiring tuition. Designed with plug & play para sailing equipment

[11] https://www.rssailing.com/project/rs-venture-connect/.

options, the RS Venture Connect can be set up for almost any disability – and changed between sessions as required. From able-bodied to sip / puff electronic control, the RS Venture Connect does it all. A game changer with sparkling performance that everyone will love.

1.10 BLACKWELL SAILING

1.10.1 General

Blackwell Sailing was established in 1993 and was a registered RYA Sailability Foundation Site, and an RYA training centre. The centre was awarded RYA Sailability Centre of Excellence status in 2007[12]. It had a variety of boats, including: three Lune Whammels **(Figure 13)**, two 303 Hansas and four open canoes. The sailing boats were supported by a RIB that was used as a safety boat.

Originally manned solely by volunteers, in 2004 Blackwell Sailing employed a part-time manager to co-ordinate the centre's activities. The manager was also Blackwell Sailing's RYA School Principal and Chief Instructor, and was assisted by a number of volunteer instructors.

Figure 13: Lune Whammels

[12] The RYA Sailability Centre of Excellence award has since been discontinued.

1.10.2 Safety Management

Blackwell Sailing's safety precautions for sailing activities were described in its *Sailing – Benefits and Risk Assessment Plus Operating Procedures* document **(Annex A)**. The document described the benefits of water-based activities, the hazards and risks associated with them, and the steps to be taken to reduce risk. The risks listed included accidental capsize and drowning; the document did not specifically discuss the risk of entrapment as the result of a capsize or inversion. The document stated that:

> *It is expected that sailing members are encouraged to be as independent as possible when it comes to the use of the changing area and the rigging of boats.*

Similar safety guidance was provided for RYA powerboat and safety boat courses in the sailing centre's *Safety Boat – Benefits and Risk Assessment Plus Operating Procedures* document **(Annex B)**. The risks listed in the document included *falling in whilst attempting rescues*.

The sailing and safety boat procedures documents were last reviewed on 25 February 2019 and 11 March 2019 respectively.

The sailing centre's safety management documents also included a *Health and Safety Policy Statement*, an *Emergency Action Plan* and *Ten Tips for Taking Charge – of a Whammel Boat*. One of the ten top tips for the Whammel boats was:

> *If another Whammel boat is in obvious trouble – gear failure, client problem or capsized; start engine, drop sails and stay in vicinity to offer extra assistance.*

There was no equivalent guidance for *RSVC 307*.

In addition to the documents discussed above, an obsolete document titled *Blackwell Sailing Operating Procedures* **(Annex C)**, which summarised the staffing, preparation and safety equipment requirements for the sailing boats and safety boat was posted on the wall in the equipment shed.

1.10.3 Safety equipment

Blackwell Sailing provided its students with sailing waterproofs, fleeces, hats and wellington boots to help ensure that they were safe and adequately protected against the environment. Personal flotation devices were also provided, and it was mandatory for each person to wear either a buoyancy aid or auto-inflate lifejacket when on or near the water. The *Sailing – Benefits and Risk Assessment Plus Operating Procedures* document stated that:

> *Suitable personal buoyancy to be worn by all participants whilst sailing and on the jetty.*

The *Safety Boat – Benefits and Risk Assessment Plus Operating Procedures* document stated that:

> *Personal buoyancy to be worn by all. 45/50N suitable for most, a lifejacket and dry suit recommended for those with epilepsy, diabetes or a heart condition.*

The *Blackwell Sailing Operating Procedures* document posted in the equipment shed repeated the need for buoyancy aids to be worn by all and the guidance that 50N should be suitable for most. It also stated that:

> ***Orange 100N lifejacket for those suffering from additional disabilities – epilepsy, diabetes or heart condition***.

The minimum safety equipment required to be carried in the Blackwell Sailing safety boat was: *Spare fuel (i.e. more than enough)*; *Spare "kill cord"*; *Paddles*; T*ow/throw rope*; *Basic First Aid Kit*; *Fire extinguishe*r; and *Bailer*. Additional equipment available to be used at the instructor's discretion included boat hooks, lifebuoy, extra warps for towing alongside, anchors and a RIB tube inflation pump.

1.10.4 Blackwell Sailing instructors

The sailing centre maintained a list of its senior instructors, instructors, and assistant instructors. The document included lists of those who held safety boat and first-aid certificates, and those who had received disability awareness training.

Blackwell Sailing did not regularly run practical drills in rescue or recovery. However, at the start of the sailing season, a yearly refresher training session, which focused on how to prepare for a sailing event, was held for all volunteer instructors. There was no requirement for the volunteer instructors to attend this.

1.11 ROYAL YACHTING ASSOCIATION

1.11.1 Purpose

The RYA is the UK national body for watercraft activities and a representative for inland waterways cruising. According to its website:

> *The RYA's Purpose is to Promote and Protect Safe, Successful and Rewarding British Boating. Our mission for 2017-21 is to be more tailored in everything we do in order to increase our relevance and value to members, affiliates and stakeholders.*

1.11.2 Organisational structure

The RYA has four main divisions divided into three home countries: RYA Scotland; RYA Northern Ireland; RYA Cymru Wales; and seven regions that extend over England. Within each area of the RYA there are regional development officers who are available to provide advice and guidance to members, affiliate organisations, Sailability centres and training centres.

The RYA is governed by a board of directors whose role is to supervise the management of the RYA's business. Different areas of the RYA's remit, for example Sailability or Cruising, are headed up by experienced managers who have a number of paid staff. In addition, there are volunteers who belong to the RYA's policy making committees within the governance structure of the organisation.

1.11.3 Guidance

The RYA provides guidance to all organisations regardless of which level of recognition has been awarded. Guidance is available through the regional development officers, assessors and the RYA's website, which provides comprehensive direction on subjects such as safety management, clothing and equipment and risk assessment.

1.11.4 Royal Yachting Association recognition

The RYA has numerous complex relationships with a variety of different stakeholder organisations. For the purpose of this investigation the various relationships relating to Blackwell Sailing include:

- RYA Affiliated Club
- RYA Sailability Programme member
- RYA Recognised Training Centre

Each of these relationships entails a different interaction with, and levels of influence by the RYA. A brief explanation follows:

Affiliated Club

A club or class association may affiliate itself to the RYA. An annual fee provides the organisation with a range of affiliated RYA benefits including but not limited to: a range of advice and guidance, legal and general information service, safeguarding support, use of the Racing Rules of Sailing, examples of good practice and so on. The organisation remains completely responsible for its own operation and, whilst the RYA provides the organisation with advice and guidance, it is not conditional to follow it. There is no inspection process and the RYA has no authority over the running of the organisation.

RYA Sailability Centre

RYA Sailability is a charity and supports a total of 232 Sailability centres around the UK. These organisations are all independently run. They are not obliged to be members of RYA Sailability but choose to do so due to their shared objective of facilitating disabled people to go boating in a safe environment.

Sailability is a programme that is intended to share good practice and to support centres in their efforts to offer safe and engaging activity to the disabled. There is no requirement for an individual or an organisation that facilitates boating activity for the disabled to be a member of any organisation. However, Sailability centres have access to the collective resources of the RYA, to subject matter experts and to sharing good practice with other like-minded providers. Sailability centres may be charities, clubs or commercial centres, or a combination of the three. Most Sailability activity is delivered via volunteers. The organisation has its own procedures and, similar to an affiliated centre, there is no inspection process. The Sailability centre has the discretion to follow RYA guidance or advice if it so chooses.

RYA Recognised Training Centre

RYA Recognised Training Centre (RTC) is the only form of “recognition” provided by the RYA. RTCs are contractually bound to comply with a range of RYA training recognition requirements, known generally as “Training Guidance”. These include, but are not limited to, minimum qualification requirements for instructors working or volunteering on-site, safety boat requirements, equipment requirements, student-to-instructor ratios, operating procedures and risk assessments. RTCs delivering practical training are subject to annual inspection by an RYA appointed centre inspector. The inspection process will usually generate an action plan outlining any areas of deficiency, which the centre must rectify within a timeframe dictated by the seriousness of the deficiency (A, B or C: A being safety related and urgent, and C being more advisory in nature). In extreme cases of non-compliance an RTC may have its status suspended or withdrawn altogether. RTCs are the only organisations over which the RYA has the authority to dictate standards of operation, or to actively manage performance to an explicit standard.

1.11.5 Blackwell Sailing annual Royal Yachting Association inspections

Blackwell Sailing’s last RYA RTC inspection prior to the accident was conducted on 6 June 2018, and the inspection report identified two items that required action before the next inspection. Both items were related to administrative shortfalls, with the inspector making the following comments:

- Item 1 – *Tidy up system for recording and checking staff qualifications*.
- Item 2 – *Review system for recoding accidents easier retrieval of information*.

The RYA inspector’s overall assessment was that the training centre was well run and had good water activities. No items relating to the centre’s water activities had been identified as needing action in any of the previous five RYA annual inspection reports **(Annex D)**.

1.12 RYA TRAINING AND GUIDANCE

RYA RTCs offer many courses aimed at the beginner, advanced and commercial students. The courses are practical courses that aim to equip people with the knowledge and skills to make the activity safe and accessible.

1.12.1 Powerboat courses

The RYA provides a 1-day Level 1 course that introduces users to powerboating and teaches basic safety and boat handling skills. On completion of the course the certificate holder is assessed to be able to drive a powerboat under supervision. The RYA’s 2-day Powerboat Level 2 course develops the skills that have ideally been learnt during Level 1 to a degree where the certificate holder is able to drive a powerboat unsupervised.

1.12.2 RYA Safety Boat course

The RYA Safety Boat course trains powerboat users to provide safety and support cover for a range of small craft, including sailing dinghies, canoes and windsurfers. An RYA Powerboat Level 2 certificate is a pre-requirement for the 2-day Safety Boat

course. Many organisations involved in the facilitation of watersports activity require anyone involved with the provision of safety cover for on-water activities to have completed the RYA Safety Boat course.

The course syllabus includes the recovery of persons from the water, towing of small craft, and the righting of capsized or inverted small craft. The course is supplemented by the RYA Safety Boat Handbook[13], which provides guidance for those taking the course, but also for anyone who is involved in providing safety boat cover for water activities.

The RYA Safety Boat Handbook includes guidance on clothing and personal equipment, and states that:

> *The safety boat crew should be willing to enter the water in carrying out their duties. It is important to be prepared – here are some things to think about:*
>
> > *In general a buoyancy aid is more suitable than a lifejacket because it allows considerable mobility in the water.*
> >
> > *An inflated lifejacket is cumbersome, allows little movement in the water and often snags on rigging etc. However in certain conditions, such as coaching in hot weather, there may be arguments for a Manual gas inflation lifejacket.*
> >
> > *Safety boat crews often sit still in the boat for a long time, so it pays to stay dry. A drysuit is a wonderful asset if you have one. A wetsuit and waterproofs can also be very effective.* [sic]

The Safety Boat Handbook's guidance on inverted dinghies **(Annex E)** identifies two methods of righting an inverted boat. For smaller boats where the centreboard is accessible, it may be possible to right the boat by standing on the gunwale of the inverted boat and using weight on the centreboard to create a righting moment. For larger boats, the handbook recommends the use of the safety boat to pull the inverted boat upright. To achieve this, a towline is passed over the hull and attached to the far side shroud **(Figure 14)**. The safety boat helmsman should then apply reverse power to pull the boat upright.

The RYA handbook also provides guidance on how to prevent inversions:

> *If appropriate during dinghy training sessions, boats can be prevented from inverting by tying an air bag to the top of the mainsail.*

And how to rescue crew who are trapped under a boat:

> *If one of the crew is known to be trapped under the dinghy, call for help as soon as possible via VHF with a Mayday call, or via the base station ashore.*
>
> > *1. The best strategy is usually to right the boat. Ask the remaining sailor for information on the missing crew member's last location…*

The guidance then goes through righting an inverted boat, as described above **(Annex E)**.

[13] RYA Safety Boat Handbook (G16), published 2007 IBSN 978-1-905104-383.

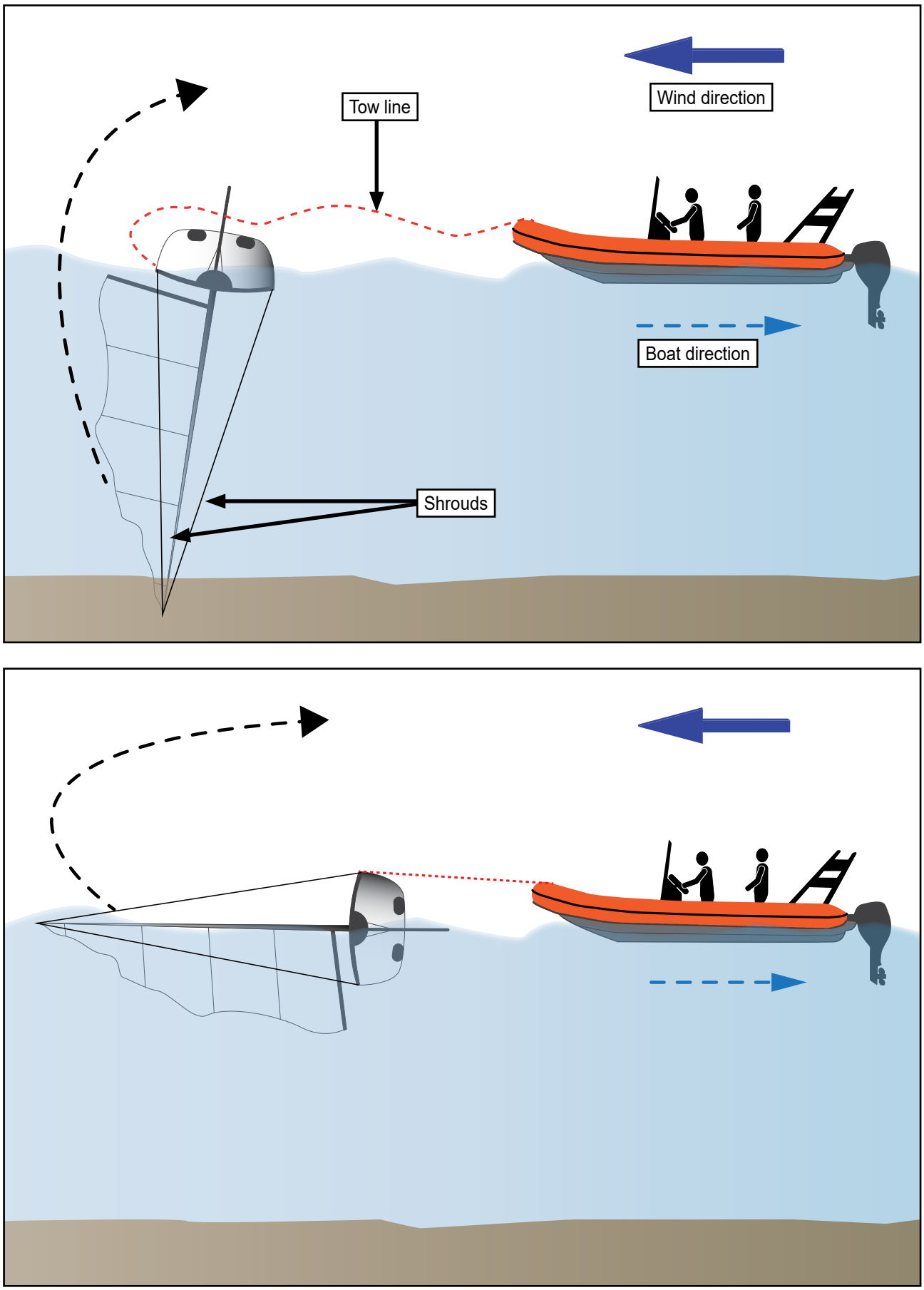


Figure 14: Diagram showing righting a boat using the shroud

1.12.3 Disability awareness training

The RYA provides a 1-day course aimed at increasing awareness of how to communicate and achieve the best outcomes with persons with disabilities. The course is recommended for instructors at Sailability centres but was not a mandatory requirement.

1.12.4 Risk assessment

The RYA's guidance on risk assessment provides a five-step process to assist organisations through the process:

- Step 1 requires the hazards to be identified and suggests a walk around the facility to see specifically what could potentially cause harm.
- Step 2 requires the identification of those who could be harmed by the hazards.
- Step 3 asks the assessor to evaluate the risks arising from the identified hazards so that existing precautions can be examined to identify if more control measures are required.
- Step 4 suggests that a record of the findings be kept, although it does specify that if there are fewer than five employees a written record is not required.
- Step 5 draws attention to the need to review the assessment when new equipment is used.

1.13 RECREATIONAL CRAFT DIRECTIVE

Directive 94/25/EC on recreational craft and personal watercraft was introduced by the European Commission to harmonise the European Union Member States' differing national legislation for recreational craft. Directive 2013/53/EU was adopted on 20 November 2013 and entered into force on 18 January 2016. It repealed Directive 94/25/EC and defined 'recreational craft' as '*any watercraft of any type, excluding personal watercraft, intended for sports and leisure purposes of hull length from 2.5 m to 24 m, regardless of the means of propulsion*'.

In the UK, the Recreational Craft Regulations 2017 (RCR) brought the Recreational Craft Directive (RCD) into UK law on 3 August 2017. The RCR requires manufacturers to declare their products' conformity with the RCD.

Chapter II, Article 7 of the RCD specifies the obligations of the manufacturer and provides that:

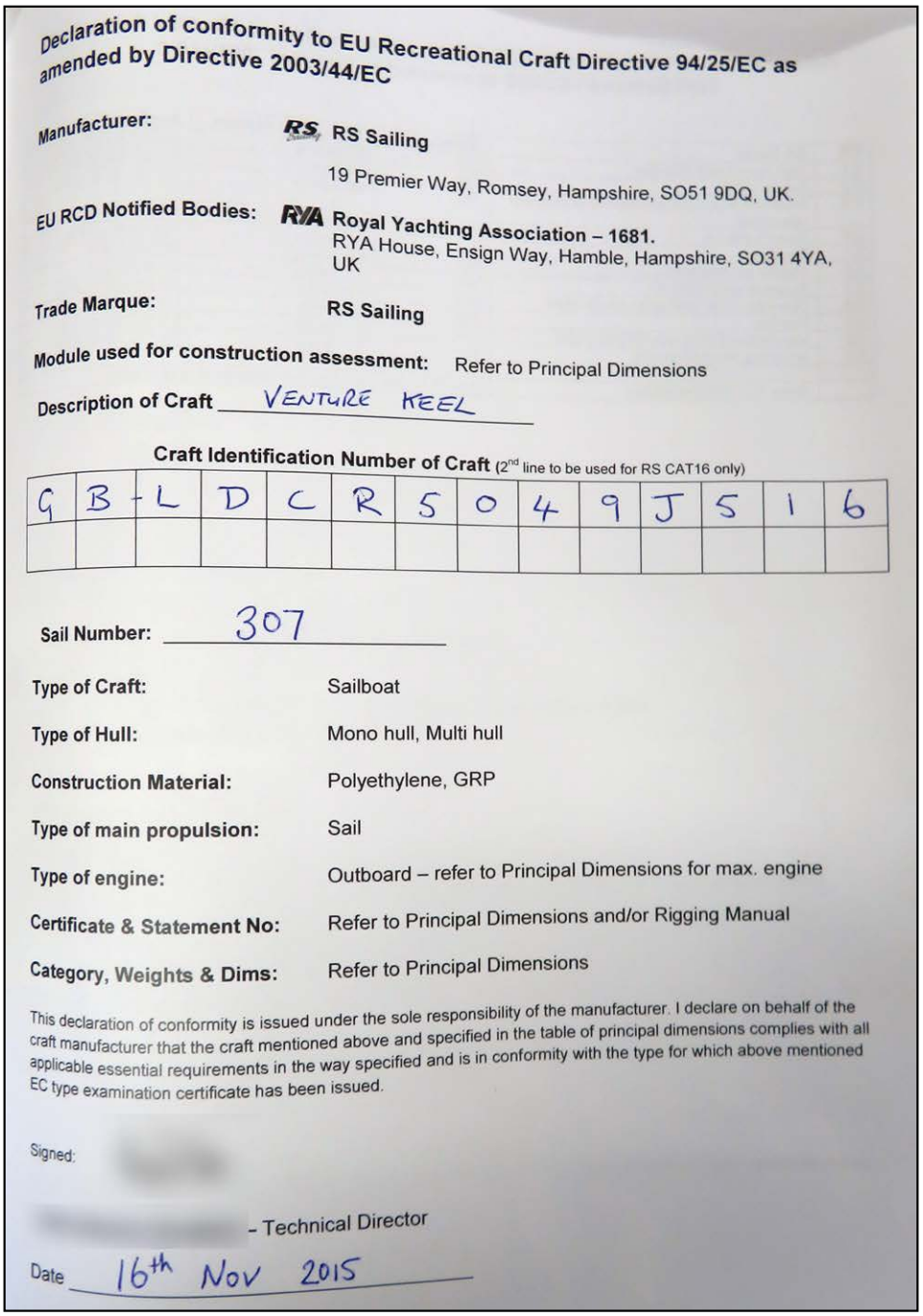
> *7. Manufacturers shall ensure that the product is accompanied by instructions and safety information in the Owner's Manual in a language or languages which can be easily understood by consumers and other end users, as determined by the Member State concerned.*

Annex 1 – section 2.5 of the RCD, *Essential Requirements – Owner's Manual*, states:

Each product shall be provided with an Owner's Manual in accordance with Article 7(7) and Article 9(4). That Manual shall provide all the information necessary for safe use of the product drawing particular attention to set up, maintenance, regular operation, prevention of risks and risk management.

RSVC 307 was constructed in accordance with the requirements of the RCD and was issued a certificate of conformity **(Figure 15)** on 16 November 2015. The boat was delivered to Blackwell Sailing at the end of May 2016 with a copy of the RS Venture Connect Owner's Manual. The Owner's Manual contained several warnings **(Annex F)**, and emphasized the need to:

Always rig your boat as per the rigging manual which can be downloaded from www.RSsailing.com.



Declaration of conformity to EU Recreational Craft Directive 94/25/EC as amended by Directive 2003/44/EC

Manufacturer: RS Sailing

19 Premier Way, Romsey, Hampshire, SO51 9DQ, UK.

EU RCD Notified Bodies: RYA Royal Yachting Association – 1681.
RYA House, Ensign Way, Hamble, Hampshire, SO31 4YA, UK

Trade Marque: RS Sailing

Module used for construction assessment: Refer to Principal Dimensions

Description of Craft VENTURE KEEL

Craft Identification Number of Craft (2nd line to be used for RS CAT16 only)

G	B	-	L	D	C	R	5	0	4	9	J	5	1	6

Sail Number: 307

Type of Craft:	Sailboat
Type of Hull:	Mono hull, Multi hull
Construction Material:	Polyethylene, GRP
Type of main propulsion:	Sail
Type of engine:	Outboard – refer to Principal Dimensions for max. engine
Certificate & Statement No:	Refer to Principal Dimensions and/or Rigging Manual
Category, Weights & Dims:	Refer to Principal Dimensions

This declaration of conformity is issued under the sole responsibility of the manufacturer. I declare on behalf of the craft manufacturer that the craft mentioned above and specified in the table of principal dimensions complies with all applicable essential requirements in the way specified and is in conformity with the type for which above mentioned EC type examination certificate has been issued.

Signed: [redacted]

[redacted] - Technical Director

Date 16th Nov 2015

Figure 15: *RSVC 307*'s certificate of conformity

This RS Venture Connect Rigging Guide included guidance on how to fit the keel strap, and warned of the importance of doing so **(Figure 16)**. Blackwell Sailing did not have a downloaded copy of the Rigging Guide at the time of the accident.

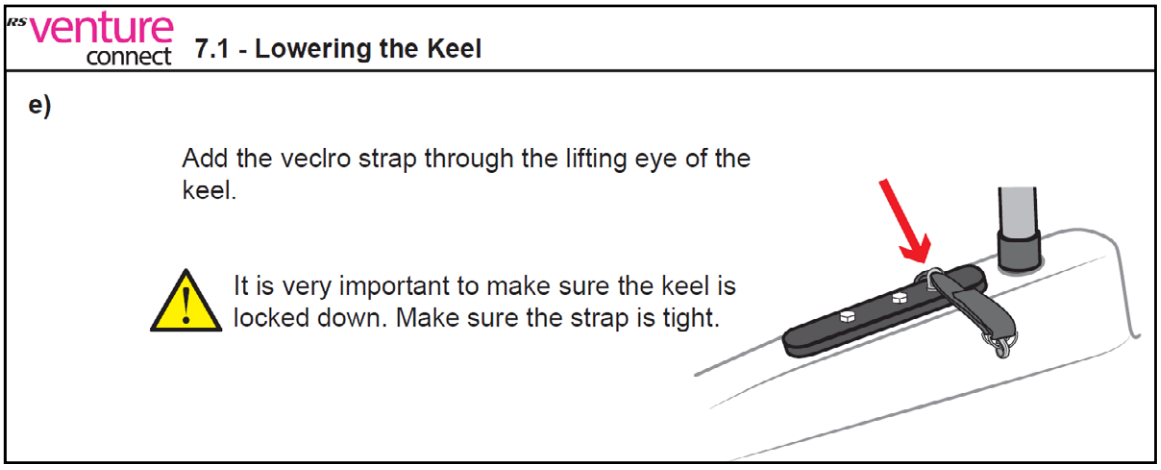


Figure 16: Extract from the RS Venture Connect Rigging Guide

1.14 SIMILAR ACCIDENTS

1.14.1 Blackwell Sailing Lune Whammels

Blackwell Sailing had recorded two capsizes of its Lune Whammels, both during attempted gybes and during which no injuries were sustained. These reports were several years old and there were no other details available. However, the Lune Whammels were sufficiently different in design to *RSVC 307* to limit the applicability of any of the lessons from these capsizes to the circumstances of this accident.

1.14.2 Dart Sailability Hawk *Equaliser*

On 27 August 2011, during a Dart regatta, Dart Sailability Hawk *Equaliser* was accidently gybed when running downwind under spinnaker. The vessel subsequently suffered a full inversion. The three able bodied crew were quickly recovered from the water but the helm, who was paraplegic and strapped into his seat, was unable to free himself.

Three RIBs were quickly on scene and, after lines had been attached to *Equaliser*, one of the boats was able to partially right the vessel, allowing the helmsman to be released. He was unconscious and not breathing, but his rescuers provided immediate first-aid and the helmsman later made a full recovery in hospital.

The accident was investigated by the RYA; its investigation report concluded, inter alia, that the automatic-inflation lifejackets worn by two of the three able-bodied crew, and by the casualty himself, limited their ability to assist the trapped helmsman. The report also noted that the self-righting capabilities of the vessel had been compromised by its centre plate not being in the down position. A recommendation included the suggestion that:

> *users may wish to consider some form of modification to allow the centre plate to be locked in the down position, subject to advice from the manufacturer.*

The RYA highlighted its findings and recommendations in its publications and during a Sailability Safety Workshop in 2012.

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 ACCIDENT

Stephen Hague died because he became trapped under *RSVC 307*'s upturned hull and could not be freed before he was overcome. In this section of the report the reasons why *RSVC 307* was knocked down and inverted instead of self-righting will be analysed. The likely causes of Stephen's entrapment and the emergency response will also be discussed.

2.3 THE KNOCK DOWN

A sailing boat heeling over until the rigging hits the surface of the water is known as a 'knock down'. Boats can suffer knock downs as a result of wave action, wind or a combination of the two. A knock down or capsize during dinghy sailing is an expected event and not exceptional in gusty conditions with an inexperienced helmsman. However, keelboats such as *RSVC 307*, are rarely knocked down as the keel provides significant additional stability. Furthermore, when knock downs are experienced, a keelboat is designed to right itself. It is this ability that makes boats such as the RS Venture Connect particularly suitable for disabled sailors.

RSVC 307 was sailing on a beam reach **(Figure 17)** with its sails out to starboard just before the accident. In the breezy wind conditions on the lake, the wind would shift and vary without warning. One such shift was coupled with a strong gust, causing the boat to heel suddenly to starboard despite its reefed sails. It is possible that, in his attempt to stay in his seat, Stephen inadvertently moved the joystick, causing the boat to turn to starboard, exacerbating this heel. In any event, the boat was knocked down due to the effects of gusting winds.

2.4 THE INVERSION

RSVC 307 was designed to self-right even after a knock down. However, instead of self-righting, the boat inverted. When its crewman surfaced from under the upturned hull he saw that its weighted bulb keel had dropped down into its housing.

RSVC 307 did not self-right as designed, and inverted because its weighted bulb keel slipped back into its casing when the boat was knocked down.

2.5 KEEL RETRACTION

RSVC 307's keel retracted when the boat was knocked down because the keel strap was not fitted in accordance with the manufacturer's Rigging Guide.

During the sailing season, on days when *RSVC 307* was not in use, it would be moved to shallower water, which required the keel to be raised. When the boat was put back into use the keel would be lowered again. Despite the regularity of the keel being raised and lowered, few of the Blackwell Sailing staff, including the instructors

Image courtesy of the RYA

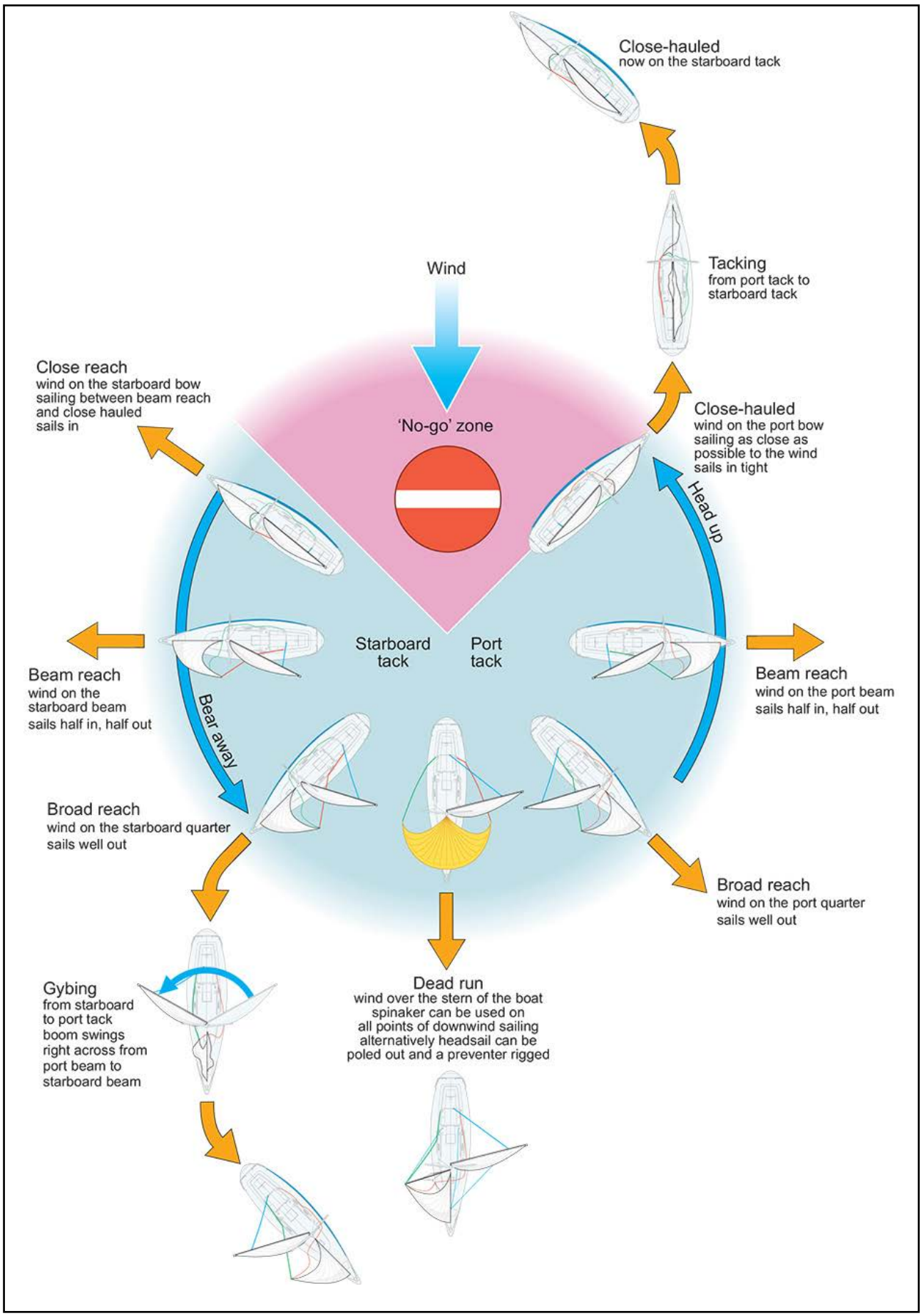


Figure 17: Points of sail

involved in the rigging or use of the boat on the day of the accident, were aware of the keel strap's function or of its importance. Therefore, it is very unlikely that this strap had ever been rigged to secure the keel.

In the context of the activities at Blackwell Sailing, the predominant use of the Lune Whammels for sailing, and the Rigging Guide being available only online, it is easy to see how the keel strap could be overlooked. Of note, RS's own promotional video for the RS Venture Connect also showed the boat being sailed without the keel strap in place **(Figure 18)**.

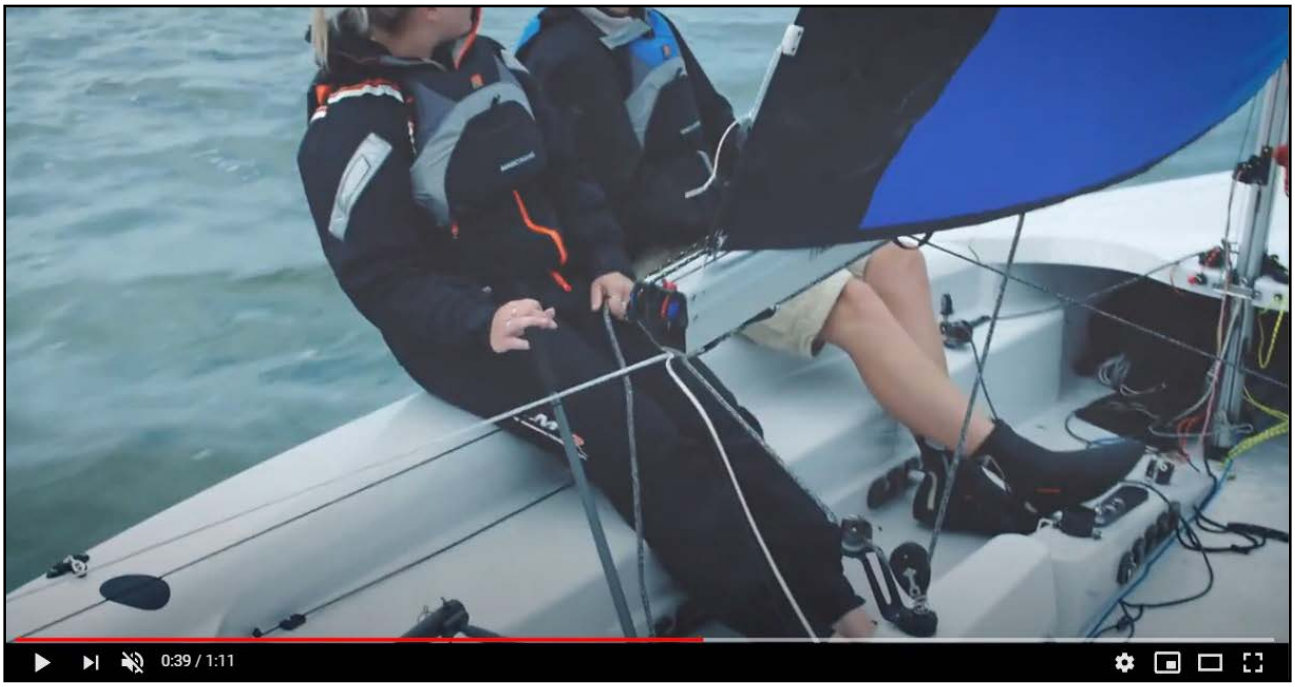


Figure 18: Still taken from RS Venture Connect's promotional video

2.6 RIGGING GUIDANCE

The requirement for the Velcro™ keel strap to be fastened before using the boat was clearly illustrated in the RS Venture Connect's Rigging Guide, which was available to download from RS's website. However, no reference to the fitting of this strap was contained in the Owner's Manual that was supplied with *RSVC 307* when purchased. Reliance on owners to download documentation is not an effective means of promulgating essential safety information.

The RCD requires owners' manuals to *"provide all the information necessary for safe use of the product drawing particular attention to set up…"*. The RS Venture Connect's Owner's Manual stated that the boat should always be rigged in accordance with the Rigging Guide. However, it was not made clear that the stability, self-righting and, as a result, suitability for use by disabled sailors, was dependent on information in the Rigging Guide. An experienced sailor would be unlikely to consider it necessary to follow the Rigging Guide when preparing the boat for use, especially when there had been a lengthy handover from the manufacturer. Furthermore, in keeping with other fixtures on the boat, the Velcro™ strap was black, which gave no indication of its critical role.

It is likely that none of the staff at Blackwell Sailing were aware of the function and importance of the keel strap. Blackwell Sailing's SOPs did not specify the steps required to rig the boats for use. There were no instructions or guidance for *RSVC 307*, and the ten tips for the Lune Whammels did not include rigging. Instead, there was a reliance on the experience of the volunteers and their ability to rig a sailing boat. Additionally, there was no requirement for those assigned to certain boats to prepare that particular boat, and the SOPs did not refer to *RSVC 307*. The assistant instructor assigned to *RSVC 307* had not prepared the boat for use that day but, given his considerable sailing experience, it is highly likely that, had he known of the importance of the keel strap being fastened, he would have checked it. Stephen had been sailing the boat since it had been purchased by the centre and was very familiar with its rigging. Had he been aware of the purpose and importance of the keel strap, it is very likely that he too would have checked it.

The RYA investigated the 2011 Dart Hawk 20 accident and highlighted its findings and recommendations in its publications and during the Sailability Safety Workshop of 2012. However, the report's findings regarding the vessel's stability being reliant on the position of the weighted centreboard were specific to the Hawk.

Following this accident, the MAIB issued a safety bulletin on the securing of retractable keels and weighted centreboards **(Annex G)**.

2.7 ENTRAPMENT

When *RSVC 307* was knocked down, both Stephen and his crewman would have expected it to quickly self-right. Stephen, in the lower seat, would have thought that his best option was to remain seated and wait for the boat to come back upright. As a result of the angle of heel, the crewman would have struggled to remain in his higher seat and so would have entered the water, allowing him to escape from the boat as it went over.

When *RSVC 307* began to fully invert, Stephen rolled with the boat, causing him to remain under the starboard side of the hull. His lifejacket would have inflated very quickly when he entered the water, and initially this might have allowed Stephen to keep his head above water. However, the RS Venture Connect had a moulded hull, with fitted seats. When inverted, there was very little air space in which a trapped person could breathe.

It is likely that Stephen's disability significantly reduced his ability to free himself and swim clear of the upturned hull. With his 150N buoyancy lifejacket inflated his chances of escape would have been reduced further. While the crewman attempted to lift the side of the boat to help Stephen, he had limited buoyancy and no leverage, and so was unsuccessful.

2.8 EMERGENCY RESPONSE

The safety boat crew's effective monitoring of the three boats allowed them to quickly identify a boat in trouble. When the safety boat helmsman noticed that *RSVC 307* had inverted, he proceeded at speed to be on scene very quickly.

Once on scene, the safety boat crew joined the crewman in trying to lift *RSVC 307*'s port side to create an air pocket and reach Stephen. They were shocked to see that the keel had slid back into the hull with just the bulb remaining visible **(Figure 5)**,

and were aware that there would be very little air space under the inverted hull. In this condition there was no means by which the rescuers could deploy the keel and use it to right the boat.

The safety boat crew were both experienced, had completed the RYA Safety Boat course, and were aware of the methods that should be used for righting an inverted hull. Although it is possible to raise the edge of a small boat onto the sponson of a safety boat to create an air pocket, *RSVC 307* was too large and heavy for this approach; even with four people it was difficult to lift the gunwale above the water.

The recognised and taught method of righting a boat in this condition was to pass a towline across the inverted hull and attach it to a shroud and then reverse the safety boat away from the opposite side of the upturned hull. An adaptation of this method was later used successfully by the Lake Wardens when they reached the scene. Had the safety boat's crew used this method immediately, *RSVC 307* would have been brought back to the knock down position, if not fully upright, freeing Stephen more quickly. However, it cannot be known if this would have altered the outcome of this accident.

2.9 EMERGENCY PREPAREDNESS

2.9.1 Safety boat crew

The safety boat qualified instructors at Blackwell Sailing had never anticipated having to rescue *RSVC 307* from a situation in which it was fully inverted with its keel inside the hull. The boat had been chosen for its self-righting capabilities and, although the Lune Whammels were known to capsize on occasion, this was a rare event. However, the safety boat was well equipped and had sufficient power to be able to right any of Blackwell Sailing's sailing boats.

Stephen and his crewman were known to be experienced and capable sailors. Although the conditions were breezy, the boat was reefed and carrying an appropriate amount of sail. Consequently, when *RSVC 307* was knocked down the expectation was for the boat to self-right. A total inversion of the boat, with the resulting dangers to its crew, had not been identified as a risk and so the safety boat crew were insufficiently prepared. This led to them focusing their efforts on trying to reach Stephen or provide him with an air pocket in which to breathe while awaiting rescue.

Drills and refresher safety training do not need to be complicated to prepare personnel for incidents by providing them with additional, practised, skills. Regular practical rescue exercises with the centre's boats might have led to the volunteers choosing the most effective method for righting *RSVC 307* from the outset of this accident.

2.9.2 Personal flotation devices

Blackwell Sailing's SOPs specified a minimum requirement of buoyancy for PFDs as well as the use of lifejackets. However, they did not distinguish between students and instructors. The safety boat helmsman and the assistant instructor who was sailing as Stephen's crewman were both wearing auto-inflate lifejackets. Although the RYA guidance permits the use of lifejackets by safety boat crew, it refers to manual inflation lifejackets since they must be prepared to enter the water in order to

complete a rescue. This consideration could also be extended to the role of *RSVC 307*'s crewman in this accident. In addition, the advice contained in its guidance on clothing and equipment (RYA document Regulation Guidance Note C3) states that on keelboats without guardrails, buoyancy aids should be worn. However, given Stephen's mobility issues and the expectation that *RSVC 307* would self-right, it is considered appropriate for him to have been wearing a lifejacket rather than a buoyancy aid.

In other Sailability centres, the selection of appropriate PFDs is aided by a simple decision tree within their SOPs. It ensures that those who are unable to swim or maintain their head above water wear lifejackets, and that those who are comfortable in the water or may be expected to enter the water to provide assistance, are wearing buoyancy aids or manual inflate lifejackets. This can also act as a useful reminder to staff to review their choice of PFD according to their role on the day.

Practical drills involving the safety boat crews would have identified the limitations of crew wearing auto-inflate lifejackets, potentially leading to alternative buoyancy aids being recommended for specific roles in Blackwell Sailing's SOPs.

2.10 RYA GUIDANCE AND OVERSIGHT

2.10.1 Risk assessment

Blackwell Sailing's risk assessments were written, but they were rudimentary and incomplete in that they did not include reference to *RSVC 307* or people of limited mobility.

The RYA safety management guidance was web-based and so relied on organisations proactively seeking it out. Organisations that did not do so, such as Blackwell Sailing, were wholly reliant on the annual RTC inspections by the RYA inspectors or advice from regional development officers to prompt reviews of risk assessments and associated procedures. None of the RYA RTC inspection reports of Blackwell Sailing mentioned the addition of *RSVC 307* to the fleet, or prompted the centre to reassess any associated risks; it is likely that the positive annual RTC inspection reports gave the Principal false assurance that the centre's risk assessments were all in order.

2.10.2 Training and drills

Completion of an RYA Safety Boat course was appropriate training for Blackwell Sailing's safety boat crews. However, as with any skills, those skills taught during training would have naturally declined unless regularly exercised through drills or refresher safety training. Neither the safety boat crews nor the instructors at Blackwell Sailing had completed any drills or skills' review since their initial training.

The value of maintaining skills and practising them when new equipment or boats were introduced was not identified by Blackwell Sailing. Furthermore, it was not identified by the RYA Inspector during the annual inspection. Effective safety management, by Blackwell Sailing, working with the RYA regional development officer might have identified drills and training needs appropriate to the boats and the qualification and experience of its staff.

2.10.3 External Oversight

Blackwell Sailing was subject to annual RTC inspections by an RYA inspector. Three of the five inspections completed prior to this accident found that no remedial actions were required for the centre to retain its RTC status. It is possible that such positive findings led the centre to assume that no further internal reviews were required, and generated a false confidence in the robustness of its wider risk assessments and operating procedures. However, the Sailability aspects of Blackwell Sailing's activities were not specifically included in the scope of those inspections. RYA Sailability is a voluntary programme, and for that reason Sailability activities were not subject to the rigour of the inspections applied to RTCs.

Regular re-evaluation of risk assessments, practices and operating procedures is essential to ensure that they are effective, aligned, and that the safety of operations is maintained. However, it can be difficult for staff to step back from their routine activities sufficient to take an objective review. At Blackwell Sailing, the introduction of *RSVC 307* in 2016 had not prompted the generation of risk assessments and operating procedures specific to that type of craft, nor had it been specifically incorporated into safety training and drills.

While internal reviews are an essential part of effective safety management, organisations can gain significant benefit from periodic objective external reviews. Given the kudos associated with the RYA Sailability brand, it would be appropriate for the RYA to offer this service to RYA Sailability centres.

SECTION 3 – CONCLUSIONS

3.1 SAFETY ISSUES DIRECTLY CONTRIBUTING TO THE ACCIDENT THAT HAVE BEEN ADDRESSED OR RESULTED IN RECOMMENDATIONS

1. *RSVC 307* failed to self-right as its weighted keel was not secured and retracted into its casing when the boat was knocked down [2.4]

2. None of the Blackwell Sailing instructors involved in the rigging or use of the boat on the day of the accident were aware of the keel strap's function or importance. [2.5]

3. The requirement for the Velcro™ keel strap to be fastened was not stated in the Owner's Manual [2.6]

4. A total inversion of the boat, with the resulting dangers to its crew, had not been identified as a risk and so the safety boat crew were insufficiently prepared. [2.9.1]

5. Blackwell Sailing's risk assessments were incomplete in that they did not include reference to *RSVC 307* or people of limited mobility. [2.10.1]

6. The RYA inspections of Blackwell Sailing did not mention the addition of *RSVC 307* to the fleet or prompt the centre to reassess its risks. [2.10.1]

7. Neither the safety boat crews nor the instructors at Blackwell Sailing had completed any drills or skills' review since their initial training. [2.10.2]

3.2 SAFETY ISSUES NOT DIRECTLY CONTRIBUTING TO THE ACCIDENT THAT HAVE BEEN ADDRESSED OR RESULTED IN RECOMMENDATIONS

1. When *RSVC 307* was knocked down, both Stephen and his crewman would have expected it to quickly self-right. [2.7]

3.3 OTHER SAFETY ISSUES NOT DIRECTLY CONTRIBUTING TO THE ACCIDENT

1. Practical safety boat drills would have identified the limitations of crew wearing auto-inflate lifejackets, potentially leading to alternative buoyancy aids being recommended for specific roles in Blackwell Sailing's SOPs. [2.9.2]

2. Periodic objective external reviews of Blackwell Sailing's safety management systems and risk assessments could have added benefit by identifying shortcomings not immediately apparent to its staff. [2.10.3]

SECTION 4 – ACTION TAKEN

4.1 MAIB ACTIONS

The MAIB issued Safety Bulletin 2/2019 in relation to the securing of the keel or weighted centreboards.

4.2 ACTIONS TAKEN BY OTHER ORGANISATIONS

RS Sailing has:

- Reviewed the information provided in the Owner's Manual to include the use of the keel straps. Hard copies of both the Owner's Manual and Rigging Guide are now supplied with new boats.
- Contacted owners of RS Venture Connects to highlight the keel securing issue.
- Retro fitted new yellow Velcro strap and separate keel pin **(Figure 19)** to *RSVC 307* and other RS Venture Connects.
- Supplied stickers **(Figure 20)** that highlight the need to fasten the keel straps to owners for placement next to the keel housing.
- Supplied masthead floats free of charge to RS Venture Connect owners.
- Reviewed the handover procedure for new boat owners, to ensure key information is included.
- Completed a series of inversion trials.

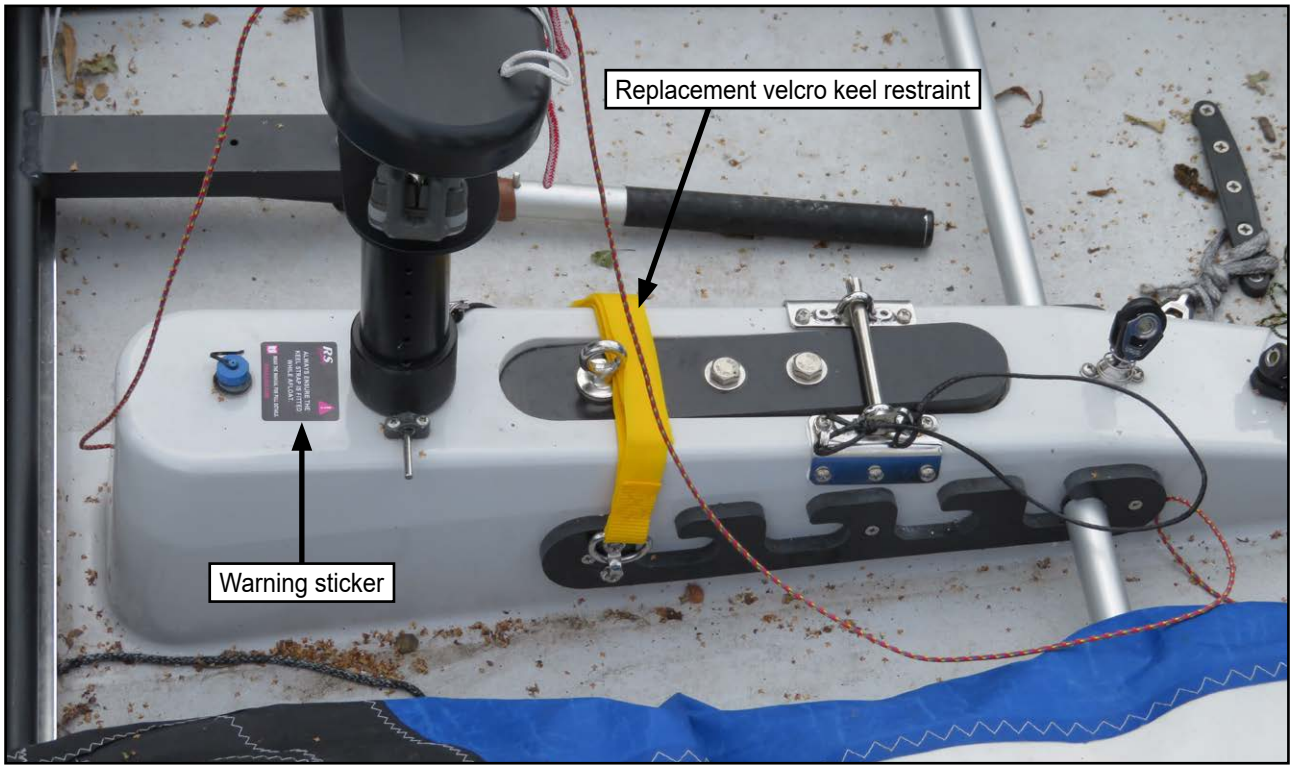


Figure 19: Retro fit new yellow Velcro™ keel strap

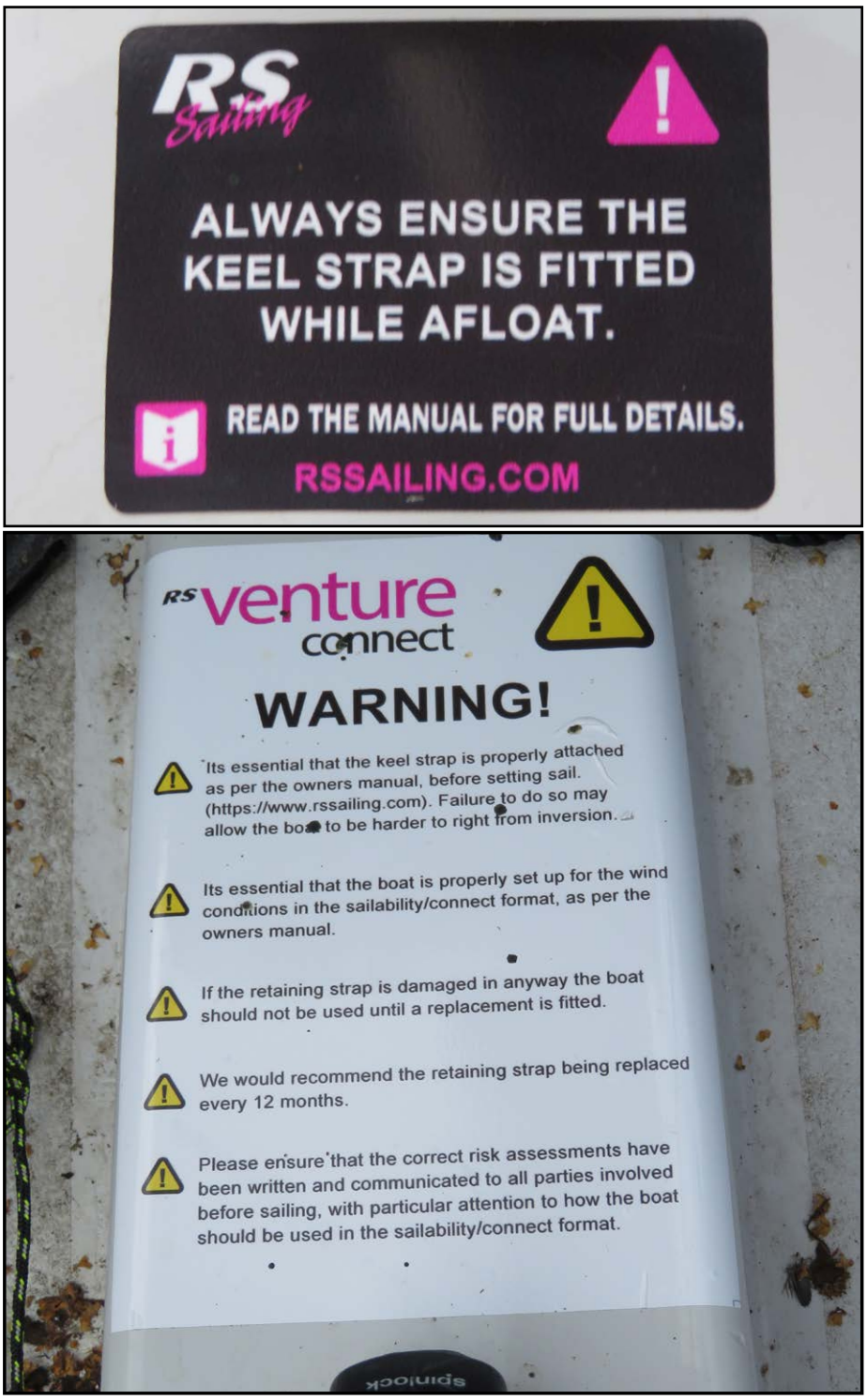


Figure 20: Retro fit warning labels

Blackwell Sailing has:

- Completed a training day with volunteers that involved the inversion and righting of *RSVC 307*.

- Reviewed and amended its Risk Assessment and Operating Procedures to:

    - include an instruction that keel restraining devices on *RSVC 307* and the Access Boats are always in place, and;

    - ensure that automatic lifejackets and higher spec buoyancy aids are not worn by volunteers.

- Labelled the Access Boats to remind staff to secure the keel.

- With the assistance of the RYA and RYA Sailability, commenced a review of the risk management procedures.

The **Royal Yachting Association** has:

- Undertaken a review of the Safety Boat course and the accompanying handbook.

- Promulgated the MAIB safety bulletin to relevant RYA Recognised Training Centres and at its instructors' conferences held in early 2020.

- The RYA has undertaken steps to conduct remedial training for the inspectors involved in the Blackwell Sailing inspections as well as to all inspectors aimed at assisting them in risk identification.

- Assisted Blackwell sailing in the review and drafting of its risk assessments and operation procedures.

- Implemented a plan to provide further guidance on the creation of risk assessments and operating procedures at Sailability Centres

- Issued an Advice and Guidance Note to Sailability Centres entitled *Safety on the water*, included at **Annex H**. This includes the following:

  Procedures and drills for recovering a 'self-righting' boat should include scenarios where a) the boat has inverted with the keel in the lowered position and b) where the keel or centreboard has retracted from its 'lowered' position. Where sailors may have restricted mobility or ability to help themselves if they ended up in the water or where they are secured to the vessel in any way, it may be appropriate to consider:

  - *mast head buoyancy*
  - *reducing sail area*
  - *the level of safety cover to ensure supervision in the immediate vicinity*
  - *when the conditions may limit operation (see manufacturers recommendations)*

  If you are righting boats with a ballasted lifting keel, like the RS Venture, then while the standard techniques work you do need to consider the power you need to right the boat. The preference is to right a knocked down or inverted boat in reverse, with the engine away from anyone who may be in the water, but to ensure you have enough power you could consider using a longer tow rope and recover by driving forwards.

SECTION 5 – RECOMMENDATIONS

Blackwell Sailing is recommended to:

2020/141 Seek an authoritative external review of its safety management system, once its internal review and updating process is complete.

The **Royal Yachting Association** is recommended to:

2020/142 Consider offering RYA Sailability centres the benefit of voluntary participation in external audits of their safety management systems, undertaken by its cadre of trained RTC inspectors.

Safety recommendations shall in no case create a presumption of blame or liability

Marine Accident Report

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