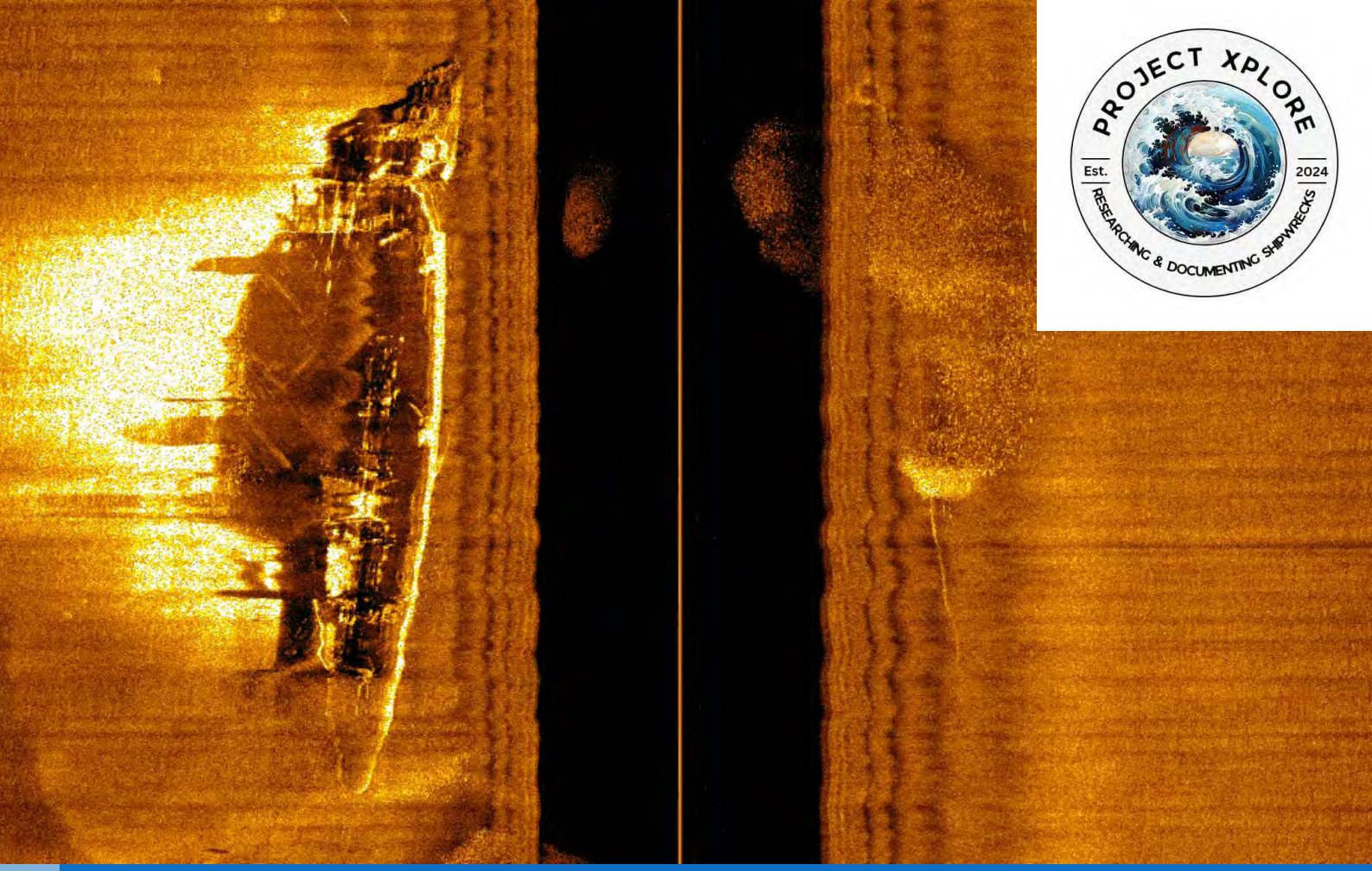

The discovery of HMS Nottingham

The Last Scout

This report outlines the discovery, identification and documentation of *HMS Nottingham*, the last missing British cruiser of the First World War, and veteran of battles at Heligoland Bight, Dogger Bank and Jutland, torpedoed and sunk by German submarine *U-52* on 19 August 1916.

By Leo Fielding and Dan McMullen, July 2025

Contents

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- Underwater photography: Steffen Scholz
- Surface and underwater videography: Rogier Visser
- Project divers: Dan McMullen, Leo Fielding, Dominic Willis, Joe Colls-Burnett, Steffen Scholz, Joe Robinson, Alexandra Pischyna, Rogier Visser, James Sanderson and Andrzej Sidorow

Executive summary

After eight months of preparation, on 22 April 2025, ProjectXplore divers, supported by skipper Iain Easingwood of MarineQuest on board the dive charter *MV Jacob George*, successfully discovered the wreck of *HMS Nottingham*, approximately 60 miles offshore in the North Sea.

On 24 April 2025, further survey work was carried out using a towed side scan sonar (SSS), a down scanning sonar (DSS) and a single-beam echo sounder (SBES). Subsequently, on 16 July 2025, ProjectXplore divers documented the site.

Based on the ship's name stamped across the top of the stern, her dimensions, main armament, anchor equipment, armour, propulsion and the fact that her condition on the seabed today closely matches reports of the circumstances of her loss, we are in no doubt that this is the wreck of *HMS Nottingham*. Our summary findings are as follows:

- *HMS Nottingham* today sits in 82m of water, lying bow north / stern south, with a 45-degree list to port, as expected from both British and German reports that she heeled to port. In places, the wreck rises 8 to 10 metres high from the seabed. Much of her superstructure is still in place above her.
- Her main armament of 9 x 6-inch guns with barrels measuring approximately 711cm in length remained in place: 2 on the forecastle, 2 amid-ships between the foremast and 1st funnel, 2 amid-ships between 3rd and 4th funnel, 2 aft of the mainmast, and 1 at the stern on the centre line.
- With the exception of the bow area, the wreck's state of preservation was excellent. The lettering is embossed 'NOTTINGHAM' across the top of the stern, next to a porthole looking into the Captain's day cabin. The wooden decking laid astern and amidships was still in place, with the davits lying across the deck.
- Her anchor equipment – comprising 3 Hawse pipes with 3 kedge anchors, 1 each on her port side and 2 each on her starboard side – was confirmed present. The 3 kedge anchors were on the seabed with the anchor chains fully paid out.
- On the port side behind the bridge, white plates were found stamped with a Royal Navy blue crown emblem, depicting alternating stern and sail motifs. The bridge itself had fallen forward and to port. The engine revolution telegraph on the bridge was located.
- Her four funnels with a distinctive appearance ("the characteristic thin:thick:thick:thin arrangement of the funnels of the 'Towns'") were located. Her dimensions were also confirmed via SSS imagery and GPS to match the dimensions of *HMS Nottingham*: 139m long x 15m beam.
- There was a clear break forward of the bridge at its largest on the port side. This matches reports that two of the torpedo explosions struck abreast her bridge on the port side, between watertight bulkheads No. 28 and No. 40.

ProjectXplore: introduction, methods and aims

ProjectXplore is a Global Underwater Explorers project that connects divers with opportunities for shipwreck exploration. It aims to locate, dive, identify and document historically significant uncharted shipwrecks using expedition-style survey and diving techniques in offshore locations all around the UK. ProjectXplore is organised by Dan McMullen and Leo Fielding.

ProjectXplore's methodology is to carry out detailed archival research to determine an appropriate search box for SSS survey, as well as ship's plans and other documents to assist with identification. The team then uses SSS to locate and survey the shipwreck, before using project divers to document the wreck using photography, photogrammetry, video and line survey.

"ProjectXplore is a GUE project that connects divers with opportunities for shipwreck exploration."

This information is combined with archival research to produce a post-project report. The intention is that this report will commemorate the sailors who lost their lives, and provide an insight into the history of the shipwreck for members of the public who may not have the opportunity to visit the wreck themselves.

For nearly 110 years, mystery had surrounded the location of *HMS Nottingham*. Despite the fact that various dive teams had searched for several decades, her location remained elusive. Her extensive service record at the battles of Heligoland Bight (1914), Dogger Bank (1915) and Jutland (1916), the ongoing puzzle over the circumstances of her loss, the wider importance of remembering the sailors who lost their lives, and the challenges posed by the shipwreck's remote possible resting place and relative depth, encouraged the ProjectXplore team to investigate further.

The aims of the *HMS Nottingham* project in 2025 were three-fold, namely:

1) to locate and identify the wrecksite of *HMS Nottingham*;

2) to document the wreck in order to better understand the ship's design, the circumstances of her loss and her condition today; and

3) to commemorate the sailors who lost their lives in the 19 August 1916 action.

Overview of British cruisers in the First World War

According to *Friedman*[1], "*The name [cruiser] implies a ship capable of cruising independently on a foreign station, which in the age of steam machinery entailed an ability to make running repairs far from home, as well as a long radius of action … British cruisers had three roles. One was to protect seaborne trade against surface raiders. A second was to support the battle fleet, both as scouts and by beating off enemy torpedo attacks. A third was to maintain order in the massive British Empire … Cruisers also operated with the fleet. As scouts, they were expected to find the enemy fleet (and discover its disposition, course and speed) while screening their own fleet from enemy discovery*."

An overview of British cruisers in the First World War is set out in *Lyon*:[2]

"*The traditional cruiser-duties were those of a maid-of-all-work, the true general-purpose ship. A cruiser should be able to go anywhere and do anything, particularly trade-protection and scouting for the battlefleet. The cruiser was the smallest ocean-going warship and the largest ship which could be built in large numbers. Such ships needed a balanced combination of weapons, speed and protection to complement good endurance and sea-keeping capabilities.*

Although cruisers should make good commerce raiders, and therefore would be useful to the weaker naval power, they were above all the chief enforcers of sea supremacy, the most active element of the forces of the predominant naval power. It is not surprising, therefore, that the Royal Navy has produced so many excellent cruiser designs, and few of those have been better or more successful than the group of ships known as the 'Towns' which rendered such sterling service during the First World War.

The 'Towns' served in every major theatre of the naval war and took part in every kind of action. They were not a class, but a group of classes, representing a steady improvement in seagoing and fighting ability which ended with arguably the best cruiser design of the First World War, the Chester.

The under-publicized and underestimated 'Towns' were arguably the best cruisers of the First World War. Certainly they, (and for that matter British cruisers generally) seem to have been better ships, better armed and with better seakeeping qualities, than their German contemporaries (also named after towns). No other navy, before World War I at least, was attempting to build this type of cruiser; most (the Italian Navy being a good example) were constructing light scouts and large armoured cruisers with nothing to fill the gap in between."

"A cruiser should be able to go anywhere and do anything, particularly trade-protection and scouting for the battlefleet."

[1] *Friedman*, p.8 and ff.
[2] *Lyon*, Part 1, page 50 and ff.

The merits of the 'Towns' are emphasized in *Conway's*:[3]

"*The battlecruiser was far too expensive to be built in sufficient numbers to guard merchant shipping, and destroyers were too small for scouting duties … the resulting 'Town' classes were fine ships, robust enough to scout for the Fleet in all weathers and having sufficient fuel and gunpower to operate on the trade routes. War service amply proved their qualities, and it was no coincidence that the only new wartime design was called an 'Improved Birmingham' … To sum up, British cruisers turned out to be considerably superior to their German opponents, better armed and more seaworthy.*"

According to *Friedman*[4], "*The 'Towns' were the last classic cruisers the Royal Navy built before the end of the First World War, in the sense that they were intended for long-range independent deployment. During the war they served as the Grand Fleet's scouts, in the 'A-K Line' deployed ahead of the battleships. The scouting line became a fixed feature of post-First World War Royal Navy fleet formation."*

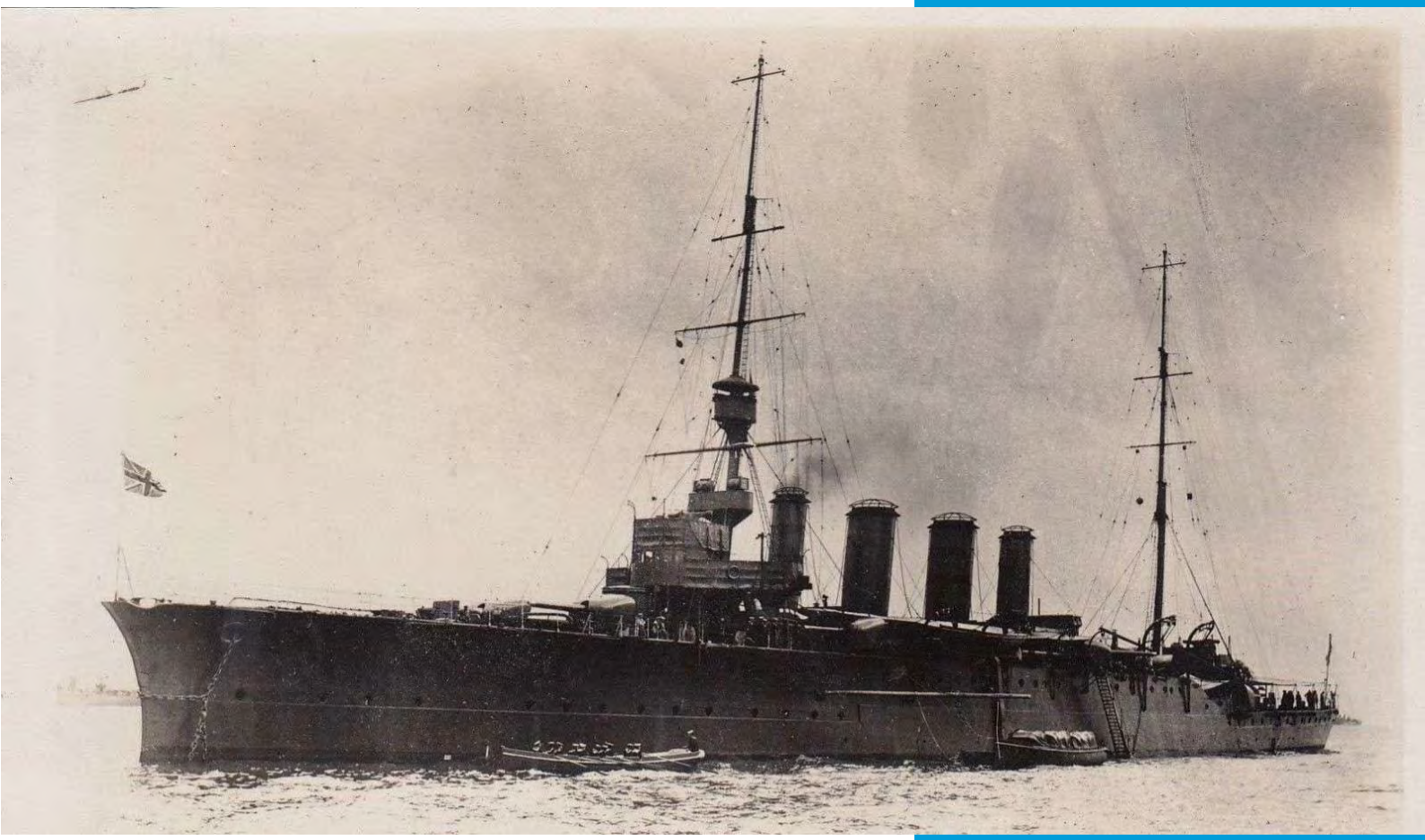


Figure 1 - *HMS Nottingham*.

[3] *Conway's*, p.1.
[4] *Friedman*, p.29-30.

HMS Nottingham: her design, construction and early service record

HMS Nottingham was one of three *Birmingham*-class light cruisers, the two other cruisers being *HMS Birmingham* and *HMS Lowestoft*. Design work began in March 1911. She was built at Pembroke Dockyard with machinery by Hawthorn Leslie: laid down on 13 June 1912, launched on 18 April 1913 and completed on 1 April 1914. Her cost including armaments was £339,751.[5]

"The 'Towns' were the last classic cruisers the Royal Navy built before the end of the First World War."

Key aspects of *HMS Nottingham*'s design included: [6]

- **Displacement**: 5440t nominal
- **Dimensions**: 139.3m / 457ft (LOA) x 15.2m / 49ft 10 inches x 4.9m / 16ft
- **Propulsion**: 4-shaft Parsons impulse turbines, 4 funnels of distinctive appearance ("the characteristic thin:thick:thick:thin arrangement … of the 'Towns'"), 12 Yarrow small-tube boilers, rated to 25,000shp = 25.5 knots. Coal 1165t, oil 235t. Quadruple screw. Range 4,140nm at 16kts.
- **Main armament**: 9 x 6-inch (15.2cm)/45cal BL Mk XII guns.
- **Secondary armaments**: 2 x 21-inch (53.3cm) submerged torpedo tubes, and 4 x 3-inch (47mm) Mk I anti-aircraft guns.
- **Belt armour**: 3-inch belt armour, comprising 2-inch nickel steel on 1-inch shell plating.
- **Deck armour**: 3/8 inch over most of its length; ¾ inch over machinery and 1.5 inches over the steering gear.
- **Anchor equipment**: 3 Hawse pipes with 3 kedge anchors, 1 each on her port side and 2 each on her starboard side.
- **Complement**: 480.

The 6-inch gun was considered the natural gun for a relatively small cruiser, because it was the largest gun whose shell could be handled by a single man, hence the largest which did not require a powered hoist and elaborate loading arrangements.[7]

The *Birmingham*-class cruisers were given two 6-inch guns on the forecastle side-by-side (rather than just one gun on the forecastle on the centreline per the predecessor *Chatham*-class cruisers). This arrangement, side-by-side on the forecastle, was a hallmark of the *Birmingham*-class cruisers, to improve ahead fire.[8]

The *Birmingham*-class also had a distinctive funnel arrangement. The middle pair of funnels were wider because they combined the uptakes

[5] *Lyon*, Part 3, p.51.
[6] *Friedman*, p.384 and *Conway's*, p.53-54. *Lyon*, Part 1, Table 1, p.57 references the LBP length (Length Between Perpendiculars) of 430 feet instead of the LOA (length overall) length.
[7] *Friedman*, p.19.
[8] *Conway's*, p.54 and *Friedman*, p.29.

from the after end of one boiler room with those from the fore end of the adjacent one.[9]

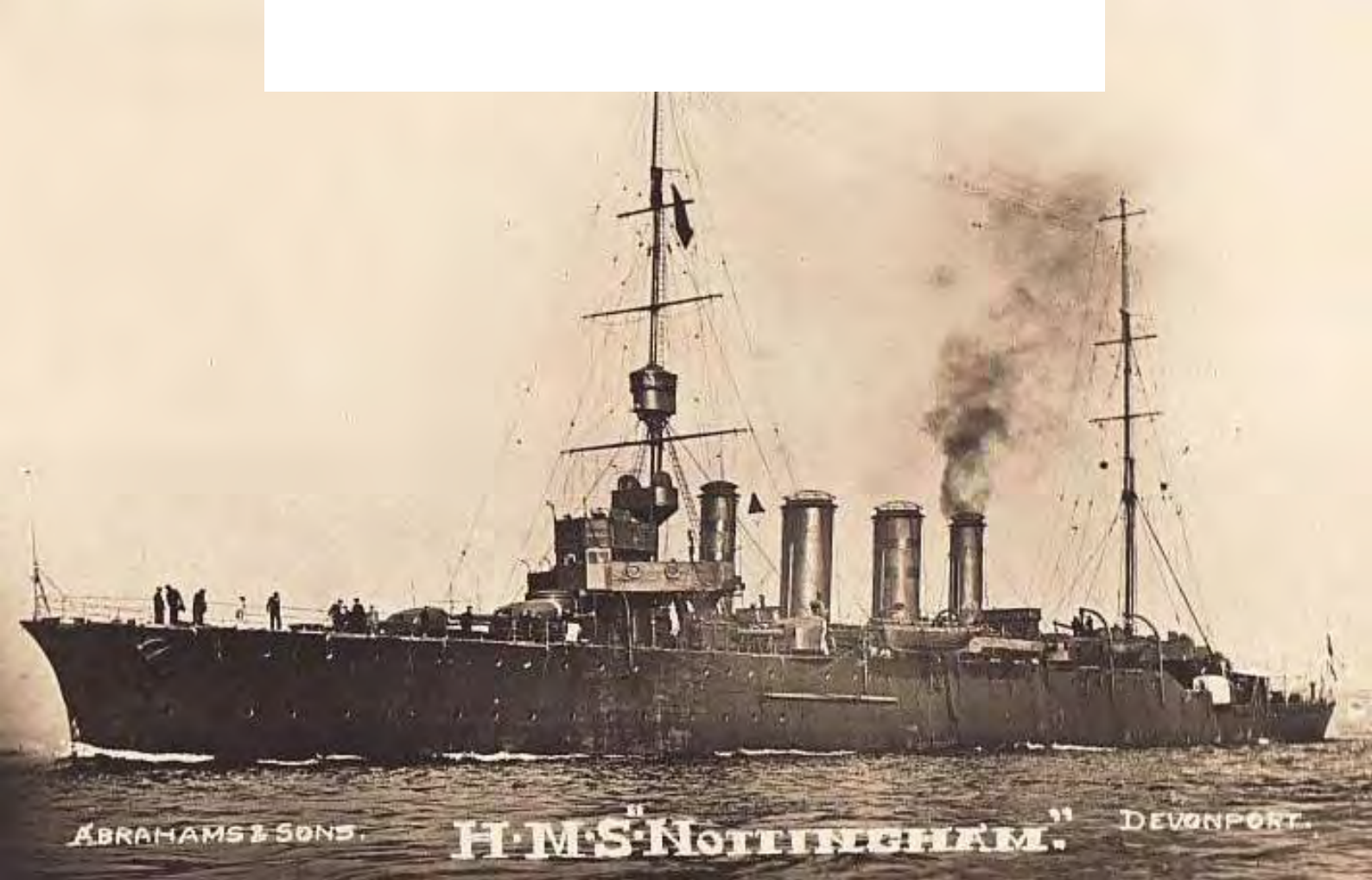
Prior to the 19 August 1916 action, *HMS Nottingham* gained an extensive service record. She served in most of the key fleet actions, including the battles of Heligoland Bight (1914), Dogger Bank (1915) and Jutland (1916).

At the battle of Jutland, *HMS Nottingham* was heavily engaged, alongside its fellow light cruisers *Birmingham*, *Southampton* and *Dublin*, in a major close-quarters battle with the cruisers of Germany's 4th Scouting Group – *SMS Stettin*, *München*, *Frauenlob*, *Stuttgart* and *Hamburg.*

According to *Newbolt,* "*They were very close, and clearly on a converging course … Captains C. B. Miller and A. A. M. Duff of the* Nottingham *and* Birmingham *had judiciously kept their searchlights quiet, and the enemy, unable to see them, left them alone to develop a rapid and destructive fire … In a quarter of an hour it was all over. The* Southampton *had all her midship guns' crews and most of her searchlight parties wiped out, she was blazing like a beacon with cordite fire, expecting every moment to blow up, and her casualties were thirty-five killed and forty-one wounded … As for the Germans, seeing that for those deadly minutes the* Nottingham *and* Birmingham *had been pouring in rapid fire at point-blank practically undisturbed, they can scarcely have suffered less.*"[10]

[9] *Friedman*, p.21.
[10] *Newbolt*, Volume 3, p.393-394.

"The under-publicised and underestimated 'Towns' were arguably the best cruisers of the First World War."



HMS Nottingham: her role in the 19 August 1916 action

The 19 August 1916 action in which *HMS Nottingham* was lost remains a pivotal battle of the First World War.

According to the Naval Staff Monographs ("NSM"):[11]

"*The operations of Saturday, August 19, 1916, stand out in dim perspective as one of the great beacons of the war at sea. It was the last time that the German Fleet pushed right out against the English coast. It was the first and last day on which German submarines worked in close conjunction with the Fleet controlled by their leader's signal from the bridge of a battleship. On the British side, too, it was a red letter day of reconnaissance, for it was E.23 which sighted the German Fleet as it left the Bight, and announced its position to the Commander-in-Chief, hastening down from the north. Strategically its outcome was of the first importance, for it was decided that it should be the last time that the Fleet should push so far down the North Sea, and on the German side it was practically the last effort of its kind. Scheer's plan was based on the principles laid down by him in February [1916]. The Fleet was to sail by night, advanced towards the English coast, and, unless the enemy was encountered or the German line of retreat threatened, was to push across and bombard Sunderland*."

"*It was the last time that the German Fleet pushed right out against the English coast.*"

On 18 August 1916, communications intercepted by the British suggested that the entire German High Seas Fleet, with the exception of the 2nd Battle Squadron, was putting to sea that night at 9pm.[12]

Consequently, the British Grand Fleet put to sea with a plan to intercept. The battleships sortied from Scapa Flow, and the battlecruisers from Rosyth. *HMS Nottingham*, part of the 2nd Light Cruiser Squadron, screened ahead of the battlecruisers, zig-zagging by 10 degrees on each side of the proper course every 5 minutes. However, a line of German submarines was lying in wait to ambush them.

[11] *NSM*, p.93 and ff.
[12] *NSM*, p.95.

HMS Nottingham: the circumstances of her loss and rescue of survivors

The circumstances of *Nottingham*'s loss during the 19 August 1916 action are described in *Newbolt*:[13]

"*It was daylight between four and five [on the 19th]; but the morning was very hazy. At about half-past five, a small sail was sighted right ahead of the* Dublin*. The navigator [Lieutenant G. W. Hill], who took it for a small fishing-boat, lost sight of it a few minutes later, and thought that the movement of the ship had obscured it behind some part of the upper works. This was unfortunate, for he had actually sighted U 52 manoeuvring into an attacking position; and twenty-four minutes later the* Nottingham *was shaken by two violent explosions.*

Although one of the torpedoes fired had been seen from the Dublin*, which was working with the* Nottingham *on the screen, Captain C. B. Miller had sighted nothing, and thought that his ship had struck a mine. Neither of the two ships was in touch with the next groups on the screen, and it was not until half an hour after the disaster that the news was received by Admiral Beatty, who at once detached the destroyers Penn and Oracle.*

The Nottingham *remained on an even keel, but her fires and lights were put out; the vessel was thus without power of manoeuvre, with everything below the upper deck in darkness.*

The Dublin *strove to keep down the submarine; but was herself attacked, and at twenty-five minutes past six another torpedo struck the* Nottingham *on the port side. Captain Miller had, by then, got his crew into the boats, and about ten minutes before the ship went down the two destroyers arrived and helped in the work of rescue, although they were, in their turn, attacked. At ten minutes past seven the* Nottingham *sank, and the weather was, at the time, so thick that the* Dublin *was out of touch with her.*"

According to the *NSM*, torpedoes struck three times on the port side: the first torpedo struck "*the port side forward*", the second "*amidships the port side, probably blowing the bottom out of B. boiler room*" and the third "*abreast of the foremost funnel*". As a result, she "*heeled heavily to port*" and "*sank by the head*".[14]

> *"The navigator … had actually sighted U 52 manoeuvring into an attacking position."*

[13] *Newbolt*, Volume 4, p.34-35.
[14] *NSM*, page 100.

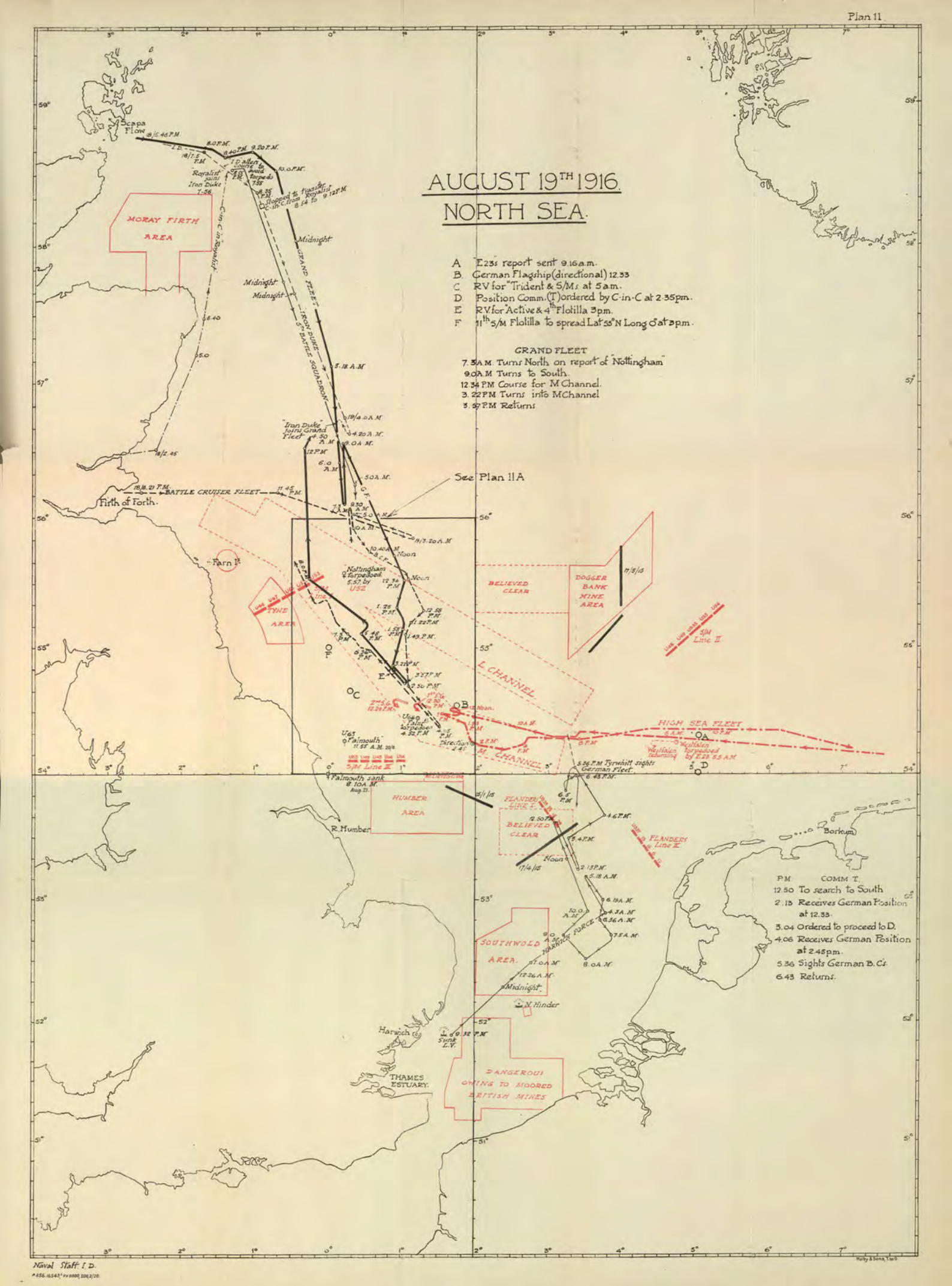


Figure 2 – Plan of the battlefield on 19 August 1916 extracted from the *Navy Staff Monographs*.

Captain Miller of *HMS Nottingham* reported: "*She was struck by two torpedoes, fired from a submarine, on her port side, the first bursting between 28 and 40 station, the second, within a very few seconds, abreast No. 2 boiler room. The ship settled down considerably and water appeared in the central passage above No. 2 boiler room. However, by closing the necessary doors and shoring up No. 40 bulkhead the damage was localised and the ship retained her buoyancy. The explosion had damaged the steam pipes and thereby stopped the engines; it had also carried away both topgallant mast heads and rendered the wireless aerial useless … About 6.25 a periscope was sight on port side and fired at, but a torpedo was observed to be approaching the ship which struck her abreast No. 1 boiler room on port side. The ship then began to settle down by the head, taking a slight list to port, and although the guns continued to fire on the periscope whenever opportunity offered, and some shots fell very close to it, I do not think the submarine was damaged.*"[15]

"*Attacking* [HMS Nottingham] *with the stern. Firing two torpedoes out of tubes 3 and 4. Direct hit to the bow could be spotted.*"

With thanks to project diver Steffen Scholz for the translation, *U-52*'s KTB states:

"*Four small cruisers separated into two groups. Going high speed. Zigzag course. Approaching view from the North … Alarm. Quick dive. Attack on group (currently stopped). Attacking with the stern. Firing two torpedoes out of tubes 3 and 4. Direct hit to the bow could be spotted. After that, the periscope cut under the surface. Making distance under water. Periscope depth to check situation.* Lowestoft-*class cruiser … stopped without speed and the bow deep in the water. The other cruisers are keeping a great distance and going high speed with changing course. As the cruiser is not sinking and no lifeboats have been lowered, decided to attack a second time. Attacking with the bow. 8h24 Shooting from tube 1. Detonation after 90 seconds. Direct hit midships. Cruiser is listing towards port side. Lifeboats are lowered. Descending to 30m in order to reload tube 1. Ascending to 12m, the cruiser sank. The place where she sank, two torpedo boats waiting stopped. Lifeboats and other Cruisers disappeared … 9h10 attack on the destroyers. Attack using bow torpedoes. The destroyers are named: G 27 and G 50. … 9h19 firing using tube 2. Depth setting for torpedo: 1 ½ m. Surface runner. Torpedo boats draw asides. Abandoned idea of further attacks. Depth 40m. Making distance … Decreasing depth to 12m. Small Cruiser with two destroyers as U-boat guards are visible. In direction of the starboard side securing, at a distance of about 700m turning towards the target and attacking with bow torpedoes. During the next lookout, the cruiser turned to starboard. Distance approx. 200m and nearly parallel to* U-52. *The destroyer is at a distance of 100m as well. Dangerous situation. No opportunity to fire. Increasing depth to 50m. Making distance. Ascending to 12m. Cruiser and torpedo boats disappearing direction north. 12:00 surfacing and full blow.*"

[15] ADM 137.3624, Letter dated 26 August 1916 from Captain Miller.

Discipline was in keeping with the highest traditions of the Royal Navy, with Captain, Officers and crew abandoning ship only at the last minute. *Nottingham* reportedly continued firing at *U-52* until she sank.[16] The Paymaster successfully burnt the cyphers and codes "*with a huge quantity of paraffin*", asked Captain Miller's permission to go overboard, and having obtained it simply "*walked into the water*". Captain Miller himself left the ship "*as the waters rose round him*".[17] The Captain, 20 Officers and 357 crew were rescued by *Penn* and *Oracle*, but 38 crew were dead or missing (See 'Remembrance of the sailors who lost their lives' further below for details).[18]

Individual acts of heroism were also recorded. Able Seaman Richard Bawden, age 21, the Bowman of *Dublin*'s cutter, twice dived overboard to rescue exhausted sailors in the water. The records state: *"[Richard] Bawden … observed the last efforts of a survivor to retain his hold on a spar and, on seeing him loose his grip and sink, dived in after him, and succeeded in bringing him to the Cutter."*[19] Mr. Bawden was subsequently promoted to Leading Seaman and recommended for the Award of the Royal Humane Society Medal.

"Captain Miller himself left the ship 'as the waters rose round him'."

Eyewitness reports of the rescue operation emphasize that *Dublin*, *Penn* and *Oracle* were forced to play a potentially deadly game of cat-and-mouse with *U-52*. "*While employed in picking up the survivors several torpedoes were fired from one, or more, submarines, at HMS* Penn *which were evaded by the exercise of considerable skill and coolness on the part of her Commanding Officer*", stated Captain Miller.[20] Neither *Penn* nor *Oracle* were able to deploy depth charges on account of their proximity to *Nottingham*'s survivors.[21]

Subsequently, *U-52* managed to pinpoint the position of the attack. According to the KTB, *U-52* sent a radio message: "*Quadrat 132 Y5 … 4 small cruisers with northern course ... One destroyed.*" The reference to "*Quadrat 132 Y5*" is a reference to the Imperial Navy's grid reference system ("*Marinequadratkarte*"). The Imperial Navy used nautical charts divided into grids and letters of the Greek alphabet. The "*Y*" is the Greek letter "*Upsilon*" and "*Quadrat 132 Y5*" referred to a grid approximately 55 degrees 30 to 35 minutes North, 000 degrees 0 to 12 minutes West. This position was broadly consistent with the track of *U-52* sketched in the navigational track sketch ("*Wegekarten*"), appended to *U-52*'s KTB for the 19 August 1916 mission.

Some 10 hours after sinking *Nottingham*, *U-52* returned to the location to investigate 3 drifting lifeboats. Here, the crew found a surprise waiting for them. In their own words: "*6h00 Surfacing, full blow of tanks. 3 drifting lifeboats. Most likely remains from the destroyed cruiser, therefore stopped alongside. No hints in lifeboat number one. In the second boat, a rescue boy marked* HMS Nottingham *… In the third*

[16] ADM 137/2129, Letter dated 21 August 1916 from Rear Admiral Goodenough.
[17] *NSM*, page 100.
[18] ADM 116/1523 and ADM 137/874.
[19] ADM 137/874.
[20] ADM 137/3624, Letter dated 26 August 1916 from Captain Miller.
[21] ADM 137/874, Letter dated 25 August 1916.

boat, a motor boat, a small cat was found. All three boats belonged to the same vessel, as the bow ornaments where the same: a green cross designed of logs and three crowns on red background [i.e. the coat of arms of the city of Nottingham]. As the attacked cruiser was a Lowestoft *class, it is proven for me that the cruiser was HMS* Nottingham*."*

A ship's cat was a common feature on Royal Navy warships, for vermin control, protection of food stores and as a morale booster for sailors away from home. Sadly, history does not relate the fate of *Nottingham*'s cat. We hope that it recovered from its ordeal and was given a new job as a shore duty mouse-catcher in Germany.

Figure 3 – *U-52*'s crew in the harbour of Cadiz, 1917.

Archival research from September 2024

From September 2024, the team researched the wreck and the circumstances of her loss. We paid multiple visits to the National Archives in Kew, London, as well as to the National Maritime Museum, London, the Imperial War Museums (IWM) London, and the United Kingdom Hydrographic Office (UKHO).

The research covered Admiralty records such as ships' logbooks, telegrams, charts, Imperial German Navy records including *U-52*'s war diary ('Kriegstagebücher' or 'KTB'), real-world data (hydrographic data, marks from local fishermen and wreck databases), ship's plans for *Nottingham* and her sister ships *Birmingham* and *Lowestoft*, crew research, secondary texts, and online newspaper archives. A bibliography for further reading is included at the end of this report.

Two of the ProjectXplore team members – Steffen Scholz and Alexandra Pischyna – who are native German speakers, took the opportunity to carry out research in the German archives.

The workflow involved identifying the ships involved, assessing all sources relating to those ships, and plotting estimated positions on charts in SonarWiz. Research relevant to the wreck's location was recorded in a research tracker for team members to analyze.

"The workflow involved identifying the ships involved, assessing all sources relating to those ships, and plotting estimated positions on charts in SonarWiz."

“We paid multiple visits to the National Archives in Kew, London”

"Considerable attention was paid to the parameters of the survey, particularly the sonar frequency, the line spacing, the altitude of the towfish above the seabed and the survey vessel speed."

Side scan sonar survey in April 2025

After eight months of preparation, on 22 April 2025, ProjectXplore divers Dan McMullen, Leo Fielding and Dom Willis, supported by skipper Iain Easingwood of MarineQuest, loaded the dive charter *MV Jacob George* at 4am and set sail from Eyemouth harbour at 5am to search for the wreck of *HMS Nottingham*. To the team's relief, the sonar operator Leo Fielding arrived shortly after 2am, having completed a separate survey in the English Channel 450 miles further south the day before.

The aim was to locate the wreck ahead of the dates set aside for the project to maximize diving during the project itself.

We used a C-MAX CM2 sonar, which included a digital towfish with depth sensor, a counting pulley at the stern to record the length of towing cable used, an electric winch with 300m of armoured towing cable powered by 2 x 40Ah 12v car batteries with crocodile jaw jump leads, a winch control, a transceiver, a GPS receiver, a laptop and an additional external monitor. An additional 1kw generator was carried for power redundancy. Sonar data was acquired and processed in SonarWiz. GPS data was collected by a Quark Electronics AO12 receiver. The electric winch was secured to the deck using shackles and ratchets.

Considerable attention was paid to the parameters of the survey, particularly the sonar frequency, the line spacing, the altitude of the towfish above the seabed and the survey vessel speed. We decided to carry out the initial search on low frequency to maximize the sonar range, and then once detected switch to medium frequency to image the shipwreck in higher resolution.

We chose to space survey lines at intervals representing 75% of the total swath of 1000m i.e. 750m intervals. This strategy meant that 50% of each inner line was covered by the line before and after. This strategy is generally appropriate for large targets, smooth seafloor and operating conditions, an accurate navigation system, an experienced vessel pilot and where time is at a premium.

Given the general depth of the seabed in the search area (80m), we had no option but to fly the towfish at a relatively high altitude of 15 to 20m above the seabed. This approach brought with it certain benefits: 1) it gave the longest effective range; and 2) it lowered the risk of snagging the towfish on uneven ground or debris around the shipwreck. However, this approach also came with drawbacks. In particular, it meant that our images would contain less shadowing than usual and that the towfish would be too high off the seabed to effectively image the wreck at the highest frequency (780 kHz).

"We used an electric winch with 300m of armoured towing cable powered by 2 x 40Ah 12v car batteries."

The transit to the main search area was 85nm. After about five hours of transit, we were on site. Upon arrival, we ran four SSS survey lines covering an area of over 22km^2 that correlated to the archival research. While this area ultimately did not contain any contacts of interest, it was nonetheless useful in confirming a large area of seabed where we could be sure that the wreck was not located.

After completing the survey of the main search area, we agreed we would check an uncharted fisherman's mark, roughly 6nm West of the mid-point of our search area. Anticipation was high as we approached the mark. Eyes glued to the laptop, it seemed as if the waterfall was taking an eternity to update.

Suddenly, the faint but unmistakable straight, narrow lines of the hull of a warship appeared on the starboard channel of the waterfall.

Approximately 250m from the mark, we had located a large shipwreck in 82m. Based on the measurements taken on the sonar, she was an exact match for the dimensions of *HMS Nottingham*: 139m long and 15m beam. The wreck was lying roughly bow north/stern south. Additionally, huge shoals of fish, some shoals dozens of metres across, were confirmed in the vicinity as can be seen from the sea clutter in the waterfall – see cover photo.

"Suddenly, the faint but unmistakable straight, narrow lines of the hull of a warship appeared on the starboard channel of the waterfall."

We went around and passed the shipwreck again at closer range, picking her up again in more detail on the port channel of the waterfall. However, due to inconsistencies in the settings that calculate the distance of the towfish behind the vessel (known as 'layback'), we struggled to re-locate the wreck on a third pass and subsequent passes. At 5pm, with the afternoon drawing on, we decided to retreat to Eyemouth harbour to plan a further survey.

Having returned to Eyemouth harbour at around 11pm, we decided to spend 23 April 2025 sorting logistics. Back ashore, the 12v car batteries were charged. Also, with assistance from Chesapeake, Inc., we fine-tuned the SonarWiz settings to ensure that we were properly accounting for the location of the towfish relative to the boat. Special thanks are due here to the technical support staff at Chesapeake, Inc. in the USA for making themselves available to resolve this issue at short notice.

The following day, 24 April 2025, during further survey work using SSS, DSS and SBES, we successfully re-located *HMS Nottingham* and learned more about her condition. We established that the shipwreck was sitting with a 45-degree list to port as expected. Having run over the top of the shipwreck with the DSS and SBES so we could see the change of depth on the chartplotter, we confirmed that in places the wreck was rising 8 to 10 metres high from the seabed. Having also now had the opportunity to image the wreck from both the port and starboard sides, it became apparent that the shadowing on the port side was not a debris field after all and in fact much of her superstructure was still in place above her. There was a clear break forward of the bridge. Her

funnels and stern derrick were located as expected. We also identified 6-inch guns measuring 7m in length on the sonar located as expected (e.g. on the centre line at the stern – see cover photo).

The 24 April 2025 survey also raised further questions. We had noticed fuzzy, bright structures in the midships area of the SSS images, which could potentially represent snagged fishing nets. However, these points of detail would need to be confirmed by the project divers. The team began the long journey home pleased with the work accomplished. Events from there took a surreal turn as on the return journey the team befriended a small passing bird, which had fallen cold and exhausted onto the deck 60nm offshore. The team brought the bird into the wheelhouse where it warmed up, revived itself and proceeded to hop from shoulder to shoulder like the proverbial pirate's parrot, before being safely released ashore in Eyemouth harbour 5 hours later.

In the following days, the team compared the actual position of *HMS Nottingham* against the estimated positions for the wreck (EPs) given in the historical record. It became clear that *U-52*'s reported EP was far more accurate than the British equivalent.

Figure 4: Dan McMullen and Leo Fielding on 22 April 2025, after the team on *MV Jacob George* successfully discovered the wreck of *HMS Nottingham.*

Documentation by ProjectXplore divers in July 2025

From 14 to 20 July 2025, 10 project divers travelled from across the UK, Germany and Spain to document *HMS Nottingham*. The divers were equipped with GUE-configured JJ-CCR rebreathers and diver propulsion vehicles. Our hosts MarineQuest supported us with everything needed for a multi-day technical diving expedition: the harbourside location, and on-site trimix / O2 fills ensured logistics ran smoothly.

On 16 July 2025, the *MV Jacob George* set off from Eyemouth harbour at 3am and arrived on-site nearly 6 hours later. Placing a shot line in 80m / 262 ft of water is never easy. However, from the survey work in April 2025, our skipper Iain Easingwood had a clear sense of the orientation of the wreck. On entry, the tide was running gently southwards towards the stern and then swung north towards the bow later in the dive.

With the exception of the bow area, the wreck's state of preservation was excellent. The shot went into the starboard side, in between the 2 x 6-inch Mk XII guns aft of the mainmast and the single 6-inch gun aft on the centre line. The breech mechanisms were intact, and unused munitions were stowed nearby ready for use. Joe Colls-Burnett used a ruler to confirm the internal diameter of the muzzle.

Heading towards the stern, the team immediately noticed the lettering embossed 'NOTTINGHAM' just below the gunwales at the stern, next to a porthole looking into the Captain's day cabin. The wooden decking laid astern and amidships was still in place, with the davits lying across the deck. Her four funnels with a distinctive appearance ("the characteristic thin:thick:thick:thin arrangement of the funnels of the 'Towns'") were located.

Moving forward, on the port side behind the bridge, white plates were found stamped with a Royal Navy blue crown emblem, depicting alternating stern and sail motifs. The bridge itself had fallen forward and to port. The engine revolution telegraph on the bridge was located.

Moving towards the bow, there was a clear break forward of the bridge at its largest on the port side. This matches reports that two of the torpedo explosions struck abreast her bridge on the port side, between watertight bulkheads No. 28 and No. 40. Here, the 3-inch belt armour had peeled outwards. The deck gear in particular the capstans and chains were in place. The 3 kedge anchors were on the seabed with the anchor chains fully paid out.

"From 14 to 20 July 2025, 10 project divers travelled from across the UK, Germany and Spain to document HMS Nottingham."


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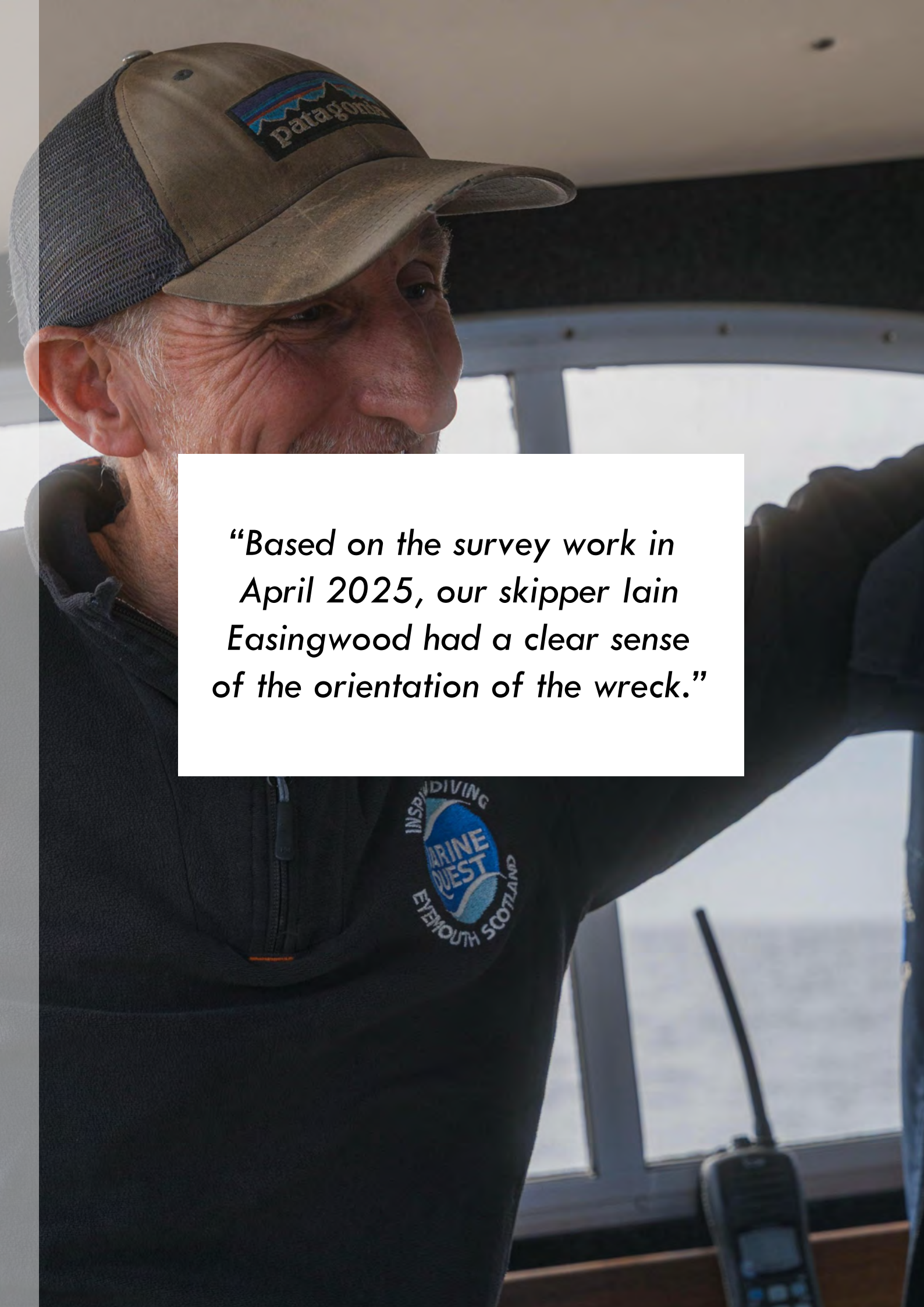
Figure 5: Part of the embossed lettering ‘Nottingham’ stamped across the top of the stern.

Figure 6: The engine revolution telegraph.



"Based on the survey work in April 2025, our skipper Iain Easingwood had a clear sense of the orientation of the wreck."

Remembrance of the sailors who lost their lives

From the outset of the project, we believed it was important to remember the sailors who lost their lives. The names of the casualties are recorded below.[22] Some were no older than teenagers at the time of the 19 August 1916 action.

	Surname	Forename	Age	Rank
1.	Baser	Ernest Rendle	27	Petty Officer Stoker
2.	Beck	William Charles	22	Stoker 1st Class
3.	Bernard	Patrick	25	Stoker 2nd Class
4.	Bibbings	Edward James	25	Stoker 1st Class
5.	Brotherhood	Ernest	34	Yeoman of Signals
6.	Buckingham	Edred	40	Chief Engine Room Artificer 1st Class
7.	Budge	Kenneth Bayard Corydon	20	Engine Room Artificer 4th Class
8.	Bunter	Frederick	Unknown	Chief Armourer
9.	Daley	William Edward Patrick	41	Sergeant
10.	Davis	William	41	Chief Stoker
11.	Dodsworth	Joseph	29	Stoker
12.	Dyer	Robert Lane	29	Stoker 1st Class
13.	Ennis	Robert	23	Stoker 1st Class
14.	Finch	Bert	21	Cook's Mate
15.	Flannery	William	Unknown	Stoker
16.	Garry	Arthur Foley	47	Engine Room Artificer 1st Class
17.	Godfrey	Robert Frederick	21	Able Seaman
18.	Griffiths	John	24	Stoker 1st Class
19.	Hatcher	Arthur Ernest	Unknown	Leading Stoker
20.	Hayes	Michael	Unknown	Petty Officer Stoker
21.	Hickery	William Henry	22	Stoker 1st Class
22.	Horwell	Albert Edward	35	Petty Officer Stoker
23.	Kinsman	Jabez	30	Able Seaman
24.	Kitching	Charles Reginald	26	Stoker
25.	Larcombe	Arthur Edwin	20	Able Seaman

[22] Sourced from https://livesofthefirstworldwar.iwm.org.uk/.

26.	Lloyd	Percy Norris	Unknown	Stoker 1st Class
27.	Marks	Maurice John	Unknown	Carpenter's Crew
28.	Mcilrath	James	32	Petty Officer Stoker
29.	Pearse		Unknown	Engine Room Artificer 1st Class
30.	Perring	William Thomas	19	Stoker 1st Class
31.	Pook	Charles	26	Stoker 1st Class
32.	Reed	William Henry	23	Leading Stoker
33.	Shanley	Peter	24	Stoker 1st Class
34.	Silk	Percival George	27	Engine Room Artificer 3rd Class
35.	Symons	Harry	30	Petty Officer Stoker
36.	Williams	Ernest Charles	19	Stoker 1st Class
37.	Woolcock	Ernest William	18	Stoker 2nd Class
38.	Wright	William	21	Stoker 1st Class

Figure 7 – The Galley's Crew of *HMS Nottingham*.

The wreck today

HMS Nottingham is the last ship of her kind. While she bears the scars of her attack by *U-52*, *HMS Nottingham* is without question the best preserved 'Town'-class cruiser in the world. Her state of preservation is testament to her robust construction, and the fact that the torpedoes struck a broadly similar area, as well as to the relative depth and undisturbed nature of the site.

The vast majority of the other 'Towns' – *Bristol*, *Glasgow*, *Gloucester*, *Liverpool*, *Newcastle*, *Dartmouth*, *Weymouth*, *Yarmouth*, *Chatham*, *Dublin*, *Southampton*, *Melbourne*, *Sydney*, *Brisbane*, *Adelaide*, *Birmingham*, *Lowestoft*, *Birkenhead* and *Chester* – were sold for breaking up in the 1920s, 1930s and 1940s.[23] Until her discovery, *HMS Nottingham* was the last missing Royal Navy cruiser of the First World War.

"Until her discovery, HMS Nottingham was the last missing Royal Navy cruiser of the First World War."

As with any conflict, the story of *HMS Nottingham* will forever have two sides to it. From a British perspective, we remember the tragic error of Dublin's Navigating Officer mistaking *U-52*'s sail for a fishing-boat, the grim loss of *Nottingham*'s 38 crew, the quick thinking of Captain Miller shoring up No. 40 bulkhead to keep the ship buoyant, and the discipline of *Dublin*, *Penn* and *Oracle* rushing into the line of fire to rescue survivors.

From a German viewpoint, we remember the ambition of the High Seas Fleet's final full-scale attempt to bombard the English coastline, the ingenuity of Admiral Scheer's submarine ambush, and the seamanship with which *U-52*'s navigator pinpointed the position of the attack using his *marinequadratkarte* – not to mention (we hope) the new rat-catching duties assigned to *Nottingham*'s ship's cat in Germany.

Given the shipwreck's unique historical significance, her excellent state of preservation, and status as the final resting place of 38 British sailors, we believe it is important to follow due process for reporting discoveries of this nature. Accordingly, the Royal Navy has been notified.

We wish to thank everybody who played a part in piecing together the story behind *HMS Nottingham*, her Officers and crew.

[23] *Lyon*, Part 3, page 51. *Falmouth* was sunk on the same date as *Nottingham* by *U-63*, but was subsequently heavily salvaged.


JACOB
GEORGE
Eyemouth

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