

New Pilot Boat for Falmouth Q&A



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UK's Atlantic gateway.

Introduction

Falmouth Harbour is looking to acquire a newbuild pilot vessel, in the 16 to 18m range, utilising a dedicated and specialist pilot boat design, in order to replace its existing 44-year-old vessel, the LK Mitchell.

The procurement is intended to modernise the service, securing safe and efficient operations for the future benefit of the port and its many stakeholders.

The organisation has now offered the new build opportunity to the UK's network of dedicated builders to receive proposals which make use of modern advancements in fuel saving technology and safety and crew welfare. The value of the project is expected to be in the region of £1.1 to £1.4 million and will take up to 3 years to complete (from project conception).

This is a once in 30-year project for Falmouth Harbour and will play a vital role in securing the future of commercial shipping within the port, supporting the continued economic benefit that it brings to the immediate area and wider Cornwall. It is critical that this project successfully brings a reliable vessel into service for the port without undue delay, cost overrun, or technical or safety problems.



What is Falmouth Pilot Services?

Falmouth Pilot Services is a service arm of Falmouth Harbour. As a Competent Harbour Authority the organisation provides pilotage for the Falmouth Pilotage Area which spans from Black Head to the Dodman including Falmouth Bay, the Carrick Roads, Helford River and the River Fal.

Falmouth Pilot Services supply safe and efficient pilotage for this whole area on behalf of the many businesses and organisations that operate within it.

The service operates 24/7 and 365 days a year and can operate across the full weather range in which shipping movements can take place within the area.

The service does not have private owners or shareholders and operates as part of Falmouth Harbour as a Trust Port organisation. This means that any surplus revenue generated is earmarked for running or investing back into the service.

The service experiences fluctuations in workload but aims to operate in surplus.

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What does a pilot do?

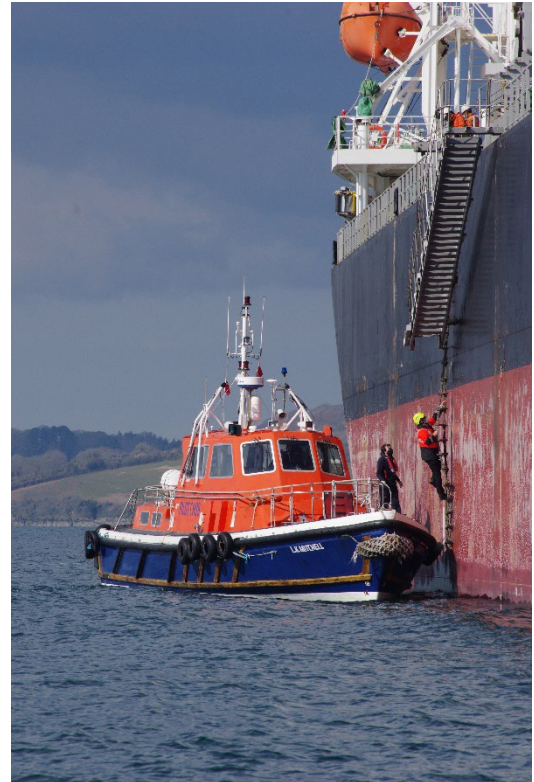
A pilot plays a crucial role in the safe navigation of large vessels in and out of harbour.

They are local navigation and ship handling experts who join the bridge team of a vessel where they share vital local knowledge, passage planning and ship handling experience. In many cases they will take on the physical manoeuvring or helming of the ship.

Large ships are complex machines which are driven by teams of operators rather than one individual. For example, the bridge team manoeuvring a large ship into port will typically consist of the captain who remains in overall command, the pilot who provides navigation advice to the captain or navigating officer, a 1st or 2nd officer and a helmsman whose job is to steer the vessel to compass points given by the navigating officer.

There are pilotage directions in place in Falmouth which means that vessels of certain sizes and characteristics are required to take a pilot depending on where they are within the area. These directions are bespoke for Falmouth and designed to make shipping within the area safer by adding a crucial layer of control.

In Falmouth, all pilots are Master Mariners, who have undergone extensive seagoing careers and are licensed to captain the largest ships in the world. The work of a marine pilot can be extremely challenging but also highly rewarding, fulfilling a key role in the port and local economy.



The difference between a Captain and a Pilot

The Captain (Master) always has command of the ship and thus has ultimate responsibility for the safety of the ship, its cargo and crew. The pilot (in the UK) has the legal conduct of the ship in the pilotage area and upon boarding a vessel provides a passage plan for the transit and directs the course and speed of the vessel to execute the passage plan.

A Captain, who's role is to safely navigate a vessel around the globe, simply cannot possess the knowledge required to navigate safely in and out of each port of call. So, harbour pilots fulfil this vital role and are resident in ports of all types across the world.

What is the role of the pilot boat?

The pilot boat is a Falmouth Pilots only means of access to and from ships in Falmouth (unless they are alongside a berth) and is therefore crucial that it remains not only fully operational but maintained to the highest standards.

The pilot boat must manoeuvre alongside ships where a pilot will transfer to a pilot ladder and climb onto the ship. The pilot boat must be capable of completing this task safely and in a variety of weathers, year-round, day and night.



The Arrow

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A pilot boat must conform with strict licensing under the MCA's Workboat Code, which stipulates high levels of stability, design characteristics and safety equipment. This means that pilot boats are generally specifically designed for the task.

Over years of operating pilot vessels in Falmouth we have found that pilot boats between 16 and 18 meters are the right size for safe boarding and landing in the weather that we are required to operate.

Falmouth Pilot Services currently operate the Arrow (16.7m) and the LK Mitchell (17.6m).

Why does the LK Mitchell need to be replaced?

The LK Mitchell has been a phenomenal vessel and asset for Falmouth Harbour since it was purchased in 1978 and the organisation will be extremely sad to see it leave active service. However, there are many reasons why it needs to be replaced and some are listed below:

- At 44 years old the boat is approaching a point where it is increasingly difficult to cost effectively maintain it to the high standards required of a 24/7 pilotage operation.
- Advancements in pilot boat technology mean that new vessels of the same length can be up to 40% more efficient, bringing huge financial and environmental savings.
- New vessels contain significant advancements in crew welfare and safety such as MOB hydraulic lifts, noise reduction and shock absorbing features.
- The LK Mitchell underwent a 10-year life extension refit in 2009 at Pendennis Shipyard including new engines and we are now well beyond that 10-year timespan.



LK Mitchell

It is a fact that no vessel will last for ever and pilot boats, typically speaking, are designed to be in operation for around 30 years of extensive operations. The LK Mitchell is well beyond its economic life and this is testament to the quality of the vessel.

This is a fantastic and exciting opportunity for Falmouth and we need to look forward to welcoming a new vessel.

What is the benefit to the Port area?

Investing in a new pilot boat will play a key role in securing the future of commercial shipping operations in the Falmouth Area. Benefits include:

- Helping to secure reliability of the service and its objective of providing 24/7 coverage 365 days per year (this requires reliability in the vessels).
- Enabling Falmouth Harbour to keep pilot boat operational costs under control by operating a vessel that is highly efficient in terms of fuel and through life maintenance costs.
- Putting Falmouth Harbour in a strong position to adapt to changes in port traffic volume for the next 20-30 years and beyond.
- Realising potential from new growth opportunities such as Floating Offshore Wind.

We must look forward positively for the future of this great port and the many businesses and individuals which work and live within it. An investment in a new pilot vessel is a major statement about the positive future of our harbour, it is not just an investment in Falmouth but an investment in Cornwall.

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Where has the money come from?

The management team at Falmouth Harbour Commissioners have been diligently building up surplus funds from the operation of the pilot boat service for over 15 years, including throughout the extremely busy periods between 2007 and 2012. This surplus is ring fenced and can only be used to support the use and operation of the pilot boat service and its intention has always been to enable the purchase of a new boat.

This puts Falmouth Harbour in an excellent position and is a direct benefit of Falmouth Pilot Services being operated by a Trust Port Organisation with a remit to invest back into the service.

The fact that this money is available to be invested in the service and the port can be of huge benefit to the port community, its stakeholders and the immediate economy.

Falmouth Pilot Services continue to run at close to break-even point with careful cost control measures in place, so this money has not been accrued by 'charging too much.' It has been accrued through years of hard work, discipline, and diligence by the team on behalf of the Harbour Area.

It is important to highlight that the money has not come from any of the organisation's other income streams such as leisure craft mooring fees, marina fees, Harbour Conservancy Charges, or car parking revenue and is not linked to the recent rises in charges for leisure users.

Pilot boat service funds can only be used to support or invest in the service, these monies cannot be used for other purposes. This is a statutory requirement of a Pilotage Authority.

Falmouth Harbour's audited accounts are publicly available via its website. [Governance and the Harbour Board - Falmouth Harbour, Cornwall](#)

So your pilot boat charges won't be going up to pay for this then?

No, not as a direct consequence of the new vessel. Our charges will not be directly affected by the purchase of a new vessel as the organisation already has the capital money available. When charges are set we have to consider coverage of service costs and long term responsibilities such as pension deficits and future investment. Our charges will and have always allowed for a prudent "sinking fund" to allow for major investment projects.

If anything, a new vessel will help us control our operating costs into the future and prevent them from spiralling out of control.

All our charges for providing services including pilotage are at market levels and due to our commercial remit and duties as a Harbour Authority, we are obliged to ensure price rises are:

- Commercial and competitive
- Fair and equitable
- Reasonable

Any surplus made from pilotage operations must be reinvested into the future operation, maintenance, and administration of the service.

Why are you going for diesel engines, what about electric hybrid or hydrogen?

We have completed a full review of the pilot boat market and are keeping up to date with technological developments as they come forward.

So far, just one hybrid electric pilot boat has come into operation in the UK, for use within the sheltered estuary waters of the Thames. This boat completes very short pilotage runs of just a few miles and then goes back on charge. We have trialled this boat and spoken to the boat builder who designed and built it. Whilst it is an incredible engineering achievement it simply would not work in Falmouth due to our operating area. Even the builder has recommended that we do not pursue this option.

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Hybrid electric options have a very limited operating range which simply would not suit the distances that we operate across in Falmouth.

Current accepted opinion in the marine industry is that hydrogen offers the best long-term option to decarbonisation, but commercial adoption of this technology requires major technological advancements before it can come into everyday use. It is generally accepted that this could be ten years away or more in a marine environment like we experience in Falmouth.

In the shorter term there are huge advancements in hull efficiency, weight saving and engine technology that can reduce a pilot boat's carbon footprint significantly.

- We think that a new boat may be up to 40% more efficient than the LK Mitchell.
- Plus, the requirement for an engine to be IMO tier 3 compliant means that the NOX and SOX emissions coming from the exhaust could be reduced by as much as 80%.
- State of the art modern engines could be around 8-10% more efficient than the models that we are currently running.

The marine industry is clear that any route to decarbonisation must include retrofit options to existing vessels and we believe that a new, modern pilot boat offers the best chance of future retrofit when new technology comes to the commercial market.

Modern pilot boats are designed so that engines and drive units can be easily changed.

There is also the option to move onto alternative fuels such as HVO which is a certified diesel alternative made from biomass waste. This is likely the quickest route to reduce the carbon footprint of workboats and pilot boats without compromising operating capability.

So having undertaken significant research and taken specialist advice, we feel that an efficient new vessel will significantly reduce the organisations carbon footprint without exposing it to undue risk and expense. A new vessel will stand ready to be adapted to meet technological advancements once they have been tried and tested throughout the industry. The new vessel will still be one of the greenest most sustainable pilot boats in service in the UK.

We are not expecting pilot boat designs to change wildly in the future, so any future technology will have to be designed to fit within the same space as conventional engines and should therefore be retro fit able.

What about rising fuel costs?

The major efficiency gains that could be made by operating a new vessel over the LK Mitchell are not just key to reducing the services carbon footprint but would put it in the best possible position to reduce the impact of rising fuel prices as the years go on.

A possible increase in efficiency of up to 40% from the LK Mitchell would be a huge step towards protecting the organisation from future rises in fuel prices.

It is also possible that rising fuel prices could increase shipping numbers in Falmouth. Higher fuel prices are a result of higher oil prices and there is some suggestion that Falmouth tends to experience an increase in vessels calling for bunkers in Falmouth Bay when higher oil prices are being experienced.

Higher fuel prices in the future could bring more work for Falmouth Pilot Services and therefore an increased need for a modern and efficient pilot vessel.

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Where do you buy a pilot boat and how are they built?

Pilot boats are specialist vessels which are built to certain design standards including strict stability requirements.

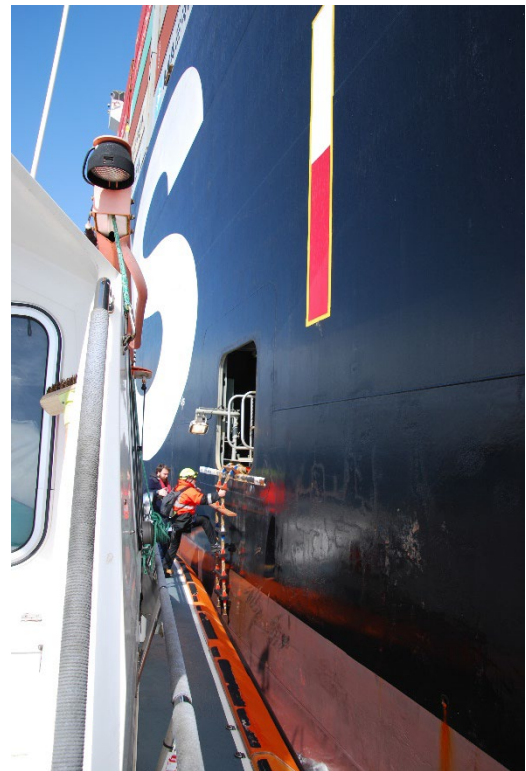
The difficulty in berthing a pilot boat safely alongside a moving ship should not be underestimated. There are often unique forces and turbulences created by the water moving past the ship's hull which only certain boat types can safely navigate.

This means that new pilot vessels are generally purchased from specialist builders who build to designs that have been refined by decades of development by specialist Naval Architects. In the UK there are several specialist builders who produce vessels to the highest quality from internationally recognised and utilised designs.

Falmouth Harbour is in the enviable position that it has access to these builders and the expertise that they possess at a price that is currently affordable.

GRP pilot vessels are built from a pre prepared mould to a set design, this brings the cost down significantly and improves standardisation.

It would be foolish to tamper with these designs or try to produce a bespoke design when there are specialist naval architects who have spent their careers working on designing and building the best pilot boats possible.



It sounds like, this limits local build options?

To purchase a pilot boat from a non-specialist pilot boat builder would add significant risk to the project as it would mean we would not be able to benefit from the extensive research and development that has already been completed within this niche area of the industry.

Cornwall has some exceptional boat builders, but none are specialising in pilot boats and therefore none offer off the shelf solutions. All options will be evaluated fairly to achieve the best possible outcome for the harbour.

A one-off build is likely to be significantly more expensive as the costs for creating a mould and associated tooling would have to be included in the cost of the project rather than shared across many vessels.

There is evidence of other ports who have taken this approach before and ended up with vessels with significant issues, so we will be acting to reduce risk where possible.

Wherever in the UK the new boat is built, Falmouth Harbour still sees this project as a significant investment in the local marine industry because the vessel will be operated and maintained within the port for its working life. This itself will bring economic benefits to Cornwall, not to mention the benefits that future proofing pilot boat operations will bring to the port.

Even if a vessel isn't built in Cornwall, Falmouth Harbour is passionate about supporting local industry and will be looking at ways to engage local suppliers from the outset.

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Have you considered using bio-resins or eco-composites in the build process to reduce the environmental impact of the boat?

We are considering all possible means to reduce the environmental impact of not only the Pilot Services but the organisation as a whole and the organisation recently won the Environmental Growth Category at the Cornwall Sustainability Awards. [Winners of the Environmental Growth Category at the Cornwall Sustainability Awards - Falmouth Harbour, Cornwall.](#)

GRP boat building is now significantly cleaner and less wasteful than it once was. We would expect a boat builder of the quality required for this project to be using the most modern resin infusion techniques which not only reduce waste but produce a higher quality product whilst improving conditions for workers at the same time.

Eco-composites, bio-resins and other forms of innovative material types are a relatively new feature of boat building but one that will play a key role in reducing the environmental impact of both leisure and commercial vessels.

Falmouth Harbour would like to support this where possible but will not be experimenting in a way that potentially adds additional risk to such a crucial project.

The priority of this project is to create a safe and efficient boat that will stand up to the rigorous life that it will face. As part of the specification, boat builders will be asked to outline how they intend to reduce the environmental impact of the boat during the three stages of its life: build, operation and eventually decommissioning.

Why can't you just buy a second-hand boat?

It is very difficult to find and purchase a modern second hand 16-18m pilot vessel in the UK that is still in good condition. They do not come onto the market very often and if they do they are usually being sold on by a large and busy port because they have come to the end of their reliable or economic life.

These types of vessels have usually been worked extremely hard and ports have purchased them with the intention of keeping them in service for their whole economic life.

If a suitable second-hand pilot vessel could be found and purchased it is highly likely that it would result in a compromise from a state-of-the-art modern vessel meaning that the major gains in fuel economy, crew welfare, safety and vessel reliability could be compromised.

In addition, any second-hand vessel would likely require an extensive and costly refit on purchase meaning that the financial saving is not as large as might be expected.

By the time these compromises have been made and a second-hand vessel purchased and refitted to the required standard of reliability, the organisation will have used up most of its new pilot boat fund and find itself in a position where it likely has two vessels around 15 – 20 years of age with no real plan or means to purchase a new one.

So even if a suitable boat could be found, a purchase and refit of a second-hand vessel would be a major compromise. It might save money now but would likely only compound the issues that Falmouth Pilot Services and Falmouth Harbour can expect to face in the future.

Equally the cost of new vessels is only going up, if the organisation does not act now, it could face being priced out of the market in the not-too-distant future and miss this once in a generation opportunity.

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Can't you go for a smaller boat?

We have trialled pilot boats of all shapes and sizes over the last 3 to 5 years and any reduction in vessel size will result in a direct reduction in our ability to operate in difficult weather conditions, leading to a negative impact on shipping operations in the area.

Whilst a key feature of Falmouth Harbour is its shelter in the prevailing westerly winds, the position of the pilot station, at approximately 4 nautical miles south of Pendennis Point, is just outside of the shelter provided by the Lizard Peninsular. It is common for us to board pilots at the pilot station in rolling Atlantic swells whilst the anchorages of Falmouth Bay may be completely calm.

We see significantly smaller vessels (below 15m) as a compromise in safety, not only in poor weather but during day-to-day operations. It is our view that a pilot boat must form the safest working platform possible for transferring a pilot to and from a pilot ladder. This can be the riskiest part of the job and should not be underestimated.

Smaller pilot vessels behave differently alongside a ship. They tend to pitch and drop off waves much quicker than larger vessels, making for a less stable platform. This increased violence of motion can have a significant impact on safety and reduce the operating window in which we can operate effectively.

Having a pilot boat of the right size is the first part of making the job safe.

We are also seeing a gradual increase in the size of ships that we are working with. For example, in April we brought a 360m container ship to anchor in Falmouth Bay (pictured). The Arrow, at 16m long, felt incredibly small alongside this vessel and the coxswain had to work the vessel hard to navigate alongside and break away safely whilst making the pilot transfer.



We are expecting to see growing numbers of vessels at 300m plus in length. The forces associated with vessels of this size are enormous and a suitably sized and dedicated pilot vessel is the key to making the operation safe and future proof.

There has also been much speculation about whether the influence of global warming is making weather patterns more violent and unpredictable. Any new vessel needs to have the same operating capabilities of our current vessels at the very least to ensure it is climate change resilient.

Will you be looking at taking on additional work for the boat having made such a major investment?

The main priority for Falmouth Pilot Services is the safe and efficient supply of pilotage to the Pilotage Area.

The organisation endeavours to supply pilots with as close to 1 hour's notice as possible. This can be extremely challenging in Falmouth where shipping movement times often change last minute and are very ad hoc in nature. This means that committing crews and boats to other tasks can often cause challenges in keeping up with last minute requests for pilots.

Our pilot vessels are available for hire and regularly take on additional tasks including; over carried pilot transfers for ports like Milford Haven, crew transfers, technology testing, filming work as well as performing statutory functions for the Harbour Master.

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Falmouth Pilot Services are always open to completing other work for the benefit of the service or the wider port area, as long as it does not prevent it from completing its overarching objective of supplying safe and efficient pilotage.

Falmouth Harbour is also actively working to promote the area to the wider shipping community with the objective of increasing enquiries and ship visits, this includes website and online content, industry networking and by being members of major trade groups such as Cruise Britain. We believe that Falmouth Harbour has significant potential that it is yet to realise.

Have you considered a dual role vessel?

Yes, we have considered this, but feel that any move away from a completely dedicated pilot vessel will compromise our objective of providing safe and efficient pilotage to the Falmouth Pilotage Area.

Adding additional functionality to achieve a dual role vessel will undoubtedly cause a shift away from the dedicated pilot boat design that brings so much in terms of safety and efficiency, leading to a less effective pilot boat. Any duality is also likely to add considerable costs at build stage.

We will be considering limited ways to add functionality to the vessel at build stage depending on budget constraints, as an example this may include strengthened bollards for emergency tow work, but the boat will be a dedicated pilot vessel first and foremost.

Isn't everything going to be autonomous in a few years anyway?

We are closely monitoring developments in autonomous shipping which is frequently discussed at national level ports associations and working groups.

We think that it is extremely unlikely that we will see autonomous shipping to a level where physical pilotage will not be required during the lifecycle of a new pilot vessel.

There are real challenges that the global shipping industry must overcome for automation of shipping to become a reality, namely cohesive legislative change across the world via organisations like the International Maritime Organisation (IMO) alongside significant technological advancement. This will take many years to become a reality.

We may see a part automation of ships as technological advancements are used to make navigation safer and perhaps to improve fuel efficiencies, but **total automation** of shipping is a long way away and certainly beyond the life of the new vessel.

There are ships being built today and on the order books for shipyards around the world for the next 5 to 10 years which do not have any autonomous elements within their design. Once in commission these ships will have a 30-to-40-year economic lifespan and will require traditional pilotage for their whole working life. Even if the technology accelerates, we envisage an interim period where trials and testing will be required and a possible hybrid environment could exist alongside traditional methods. In addition, point to point freight into bespoke ports are likely to be the first stage and these will be a relatively small part of the market.